UNIVERSITI TEKNOLOGI MARA

THE IMPACT OF ESG REPORTING ON POST-IPO PERFORMANCE AND SURVIVAL

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of the requirements for the degree of
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ABSTRACT

This study investigates the influence of Environmental, Social, and Governance (ESG) practices reporting on companies' initial performance, long-term performance and survival in the Malaysian market. This study discovers a declining trend of companies' initial performance, consistent long-term underperformance phenomena, and alarming statistics of companies' survival post-IPO in the Malaysian market. To address the issue, using signalling and legitimacy theories, ESG practices reporting prior to the companies' listings are proposed as a predictive factor for the companies' post-IPO performances and survival. A total of 100 IPOs listed between 2012 and 2019 are examined. The analysis employed multiple regression analyses with several measurements and methods for extensive analyses. Findings reveal that total ESG practices reporting significantly enhance initial performance. However, reporting on ESG practices negatively influences long-term performance and survival. Notably, ESG individual reporting significantly affects companies' post-IPO performances and survival. While environmental practices reporting contributes positively to initial performance, a high social and governance practices reporting may incur reputational and operational costs, adversely affecting companies' initial performance, long-term performance and survival. This study highlights the role of ESG practices reporting as both a strategic signalling tool and a long-term accountability mechanism that should legitimize business activities, if greenwashing is absent. It contributes to the growing literature on IPOs and ESG in emerging markets by providing empirical evidence from the Malaysian context. Practical implications are offered for policymakers, issuing companies, and investors, with recommendations for enhancing ESG reporting quality and integrating sustainability strategies pre-IPO for long-term outcomes.

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LIST OF ABBREVIATIONS

Abbreviations

ACE	Access, Competitive and Efficient
AFT	Accelerated Failure Time
AGE	Company Age
AIC	Akaike Information Criterion
AIM	Alternative Investment Market
ASEAN	Association of Southeast Asian Nations
BG	Breusch-Godfrey
BHAR	Buy-Hold Abnormal Return
BNM	Bank Negara Malaysia
BOD	Board of Directors
CAAR	Cummulative Average Abnormal Return
CAPM	Capital Asset Pricing Model
CCPT	Climate Change and Principle-based Taxonomy
CMSA	Capital Market Services Act
COX	Cox Proportional Hazard
CT	Calendar Time
E.g.	Example
EBIT	Earnings Before Interest and Tax
ESCORE	Environmental Practices Reporting Score

ESG	Environment, Social and Governance
ET	Event Time
ETF	Exchange-Traded Fund
FTSE	Financial Times Stock Exchange
FTSEBMEI	Financial Times Share Exchange Bursa Malaysia Emas Index
GC	Going Concern
GSVS	Google Search Volume Score
HR	Hazard Ratio
GN3	Guidance Notes 3
GSCORE	Governance Practices Reporting Score
i.e.	That is
IPO	Initial Public Offering
J-B	Jarque-Bera
K-M	Kaplan-Meier
KLCI	Kuala Lumpur Composite Index
KLSE	Kuala Lumpur Stock Exchange
LEAP	Leading Entrepreneur Accelerator Platform Market
MCCG	Malaysia Corporate Code of Governance
MESDAQ	Malaysian Exchange of Securities Dealings and Quotation
MOF	Ministry of Finance
NPP	Normal Probability Plot
OLS	Ordinary Least Square

OTC	Offer-to-Close
OTO	Offer-to-Open
OWNER	Insider Ownership
PCCM	Pearson Correlation Coefficient Matrix
P.G.	Prospectus Guidelines
PLCTP	Public Listed Companies Transformation Programme
PN17	Practice Notes 17
PRO	IPO Proceeds
R&D	Research and Development
REITs	Real Estate Investment Trusts
RESET	Ramsey Regression Specification Error Test
RO	Research Objective
ROC	Registrar of Companies
RQ	Research Question
SEBI	Securities and Exchange Board of India
SCM	Securities Commission of Malaysia
SIZE	Company Size
SMEs	Small, Medium Enterprise
SPAC	Special Purpose Acquisition Company
SRG	Sustainability Reporting Guide
TOTA	Total Assets
TR	Time Ratio

UAE	United Arab Emirates
U.K.	United Kingdom
U.S.	United States
UW	Underwriter Reputation
VC	Venture Capitalist
VIF	Variance Inflation Factor
WR	Wealth Relative

CHAPTER 1
INTRODUCTION

1.1 Background of Study

Capital is the first element companies require when starting a business. To gain capital, companies can decide between the two primary paths: debt or equity financing. Debt financing involves borrowing money from lenders (e.g., banks and bondholders) with an interest rate and a repayment schedule. While debt financing allows companies to maintain existing shareholders' ownership, it may create a financial burden and can be risky if companies generate insufficient revenue (Adachi-Sato & Vithessonthi, 2019). Alternatively, companies may shift their option of gaining capital to equity financing, involving selling shares to prospective investors, who will become shareholders with a potential share in future profits. This approach possibly provides long-term capital for the companies without fixed repayment obligations, allowing for greater financial flexibility for growth prospects.

To further propel the companies' growth and solidify their market position, companies opt for the initial public offering (IPO) to raise significant capital, which is crucial to finance their future investment opportunities and boost the liquidity of the companies' shares. Several reasons for each company choosing to be publicly listed can be found in its prospectus[1] before its IPO, ranging from growth motives, debt repayment, business expansion, research and development, and working capital (Badru, 2021). Brau and Fawcett (2006) also postulate that companies' involvement in IPOs brings favourable implications, such as permitting shareholders to diversify personal holdings, widen the ownership base, and stimulate the company's reputation. However, the decision of a company to go public requires precise planning and commitment, as it can be risky and time-consuming.

The decision to go public is risky primarily for companies because of the high uncertainty level from an unknown history before the companies' listings. Specifically,

[1] A prospectus is a primary informational document prepared by IPO issuers that contains all the information required for investors to make informed investment decisions. It is required for all companies seeking first-time equity offerings. The information needed is determined by the guidelines in the most recent revised SCM Prospectus Guidelines (PG).

investors' limited information on the newly listed companies may result in speculation, inhibiting the subscription of their shares. The lack of investors' interest in subscribing to the shares will result in the companies experiencing undersubscription and losses from the unsold shares[2], leading to poor initial post-IPO performance. If fewer investors are actively participating in a share market, it may also result to a reduced liquidity and higher fluctuation in the companies' share prices (Wang & Wang, 2021), reducing the companies' chances to raise favourable capital for subsequent issues and to secure favourable performance in the long-run.

It has been proven necessary to identify public disclosures as a feasible factor to attract investors' interest and predict companies' performance from their initial listing days to survival in the long run (Wyatt, 2014). This is because of the on-going issue of information asymmetry arising from investment in IPOs. In the past decades, publicly disclosed information (financial and non-financial) in IPO prospectuses has narrowed the informational gap. Ahmad et al. (2021) posited that prospectuses are a primary official document to reduce uncertainty and predict companies' prospects during an IPO exercise. Meanwhile, disclosed information related to the global concern of sustainability reporting is considered the most value-relevant and essential information retrieved from prospectuses in today's era (Sverner et al., 2023).

The increasing attention of investors on how companies go public benefits the environment and social welfare suggests that disclosures of environmental, social, and governance (ESG) practices are crucial information in the capital market (Gillan et al., 2021). Giese et al. (2019) empirically reported a significant relationship between companies' ESG ratings and companies' performances and sustainability. The finding proposes that ESG information is a valuable indicator to investors. Additionally, the study suggests that at least three major factors are important in promoting sustainable investment among investors. First, to enhance the portfolio's risk-return characteristics through diversification of responsible investment compliance and activities. Second, investment portfolios should be matched to investors' beliefs in preserving the environment. Third, to boost impactful investing that allows the capital raised to be channelled to social or environmental change.

[2] In the Malaysian IPO market, the unsold shares will be purchased by the underwriter at a discounted price.

The aim of performing well in the earlier periods of listing to survive in the long-term should be one of the publicly listed companies' goals. Studies have shown that the companies' initial and long-term performance are integrated (e.g., Tsukioka et al., 2018; Yang et al., 2022). From a perspective, when companies are able to start a good public listing journey (positive initial performance), the companies should also have a favourable long-term performance because one would expect that the companies supposedly have acquired sufficient capital, good reputation, high investor confidence and participation from the initial issuance. Nonetheless, studies have reported that the underperformance of companies in the long-run is the norm of newly listed companies, although they perform favourably from their first day of listing (Jaskiewicz et al., 2005; Yang et al., 2022). Hence, understanding how companies' initial and long-term performance and survival post-IPO can be predicted should be of immediate attention by researchers, particularly in the Malaysian IPO market.

Initial performance refers to the investors' short-term shares' return post-IPO, measured by price differences between the share's offer price and initial trading days' prices (e.g., first to fifteenth-day share prices post-IPO). Meanwhile, long-term performance refers to the investors' long-term shares' return, measured by price differences between the share's first-trading day price and 1, 3, or 5 trading years' prices post-IPO. Mehmood et al. (2020) revealed that developing IPO markets usually reported positive companies' initial performance post-IPO, with China, Saudi Arabia, United Arab Emirates (UAE), and Bangladesh reporting the highest average initial performance, at 93, 264.5, 288.7, and 480.71 percents as of 2018. However, the study reported that the Malaysian IPO market offered one of the lowest companies' initial performance, at an average of 9.40 percent, as of 2018. A recent study using Malaysian IPOs by Che-Yahya et al. (2023) reported only a negative average initial performance of -1.50 percent from 2004 to 2020, indicating the possibility of loss when investors participate in this market.

Companies' negative initial performance could affect overall market sentiment (Funaoka & Nishimura, 2018). The negative initial performance post-IPO will transmit unfavourable signals to investors about the companies' prospects, increasing scepticism and eroding investors' confidence that the companies can make returns for their investment. Suppose the companies are unable to create profits even on the first trading day; the question of "Does the pattern of negative return persist to the long-term?" will be raised among investors, especially those aiming to build wealth from their investment

in IPOs in the long-term. Concerning that holding on to the shares for a longer period may result in additional losses, the investors will start withdrawing from their investment. A significant and persistent withdrawal of shares by investors can decrease demand and price for the companies' shares, resulting in negative long-term performance (Albada et al., 2022).

Reviewing IPO long-term performance, Ahmad-Zaluki (2012), Abdul Rahman and Che-Yahya (2019), and Nordin and Mohd (2011) reported an average of -30 percent to -42 percent of Malaysian IPOs 3-year performance listed from 1997 to 2014. Another recent study by Abbas et al. (2023) also reports an average of -4.8 percent and 36.12 percent for Malaysian IPOs 1-year and 3-year performance from 2007 to 2015. However, Abdullah et al. (2019) argued that companies' long-term performance post-IPO are inconsistent, as the most appropriate long-term performance measurement remains debatable in the literature. Regardless, average companies' long-term performance found to be negative in the Malaysian IPO market indicates companies' poor performance in the long-term, also known as long-term underperformance (Jog et al., 2019; Wang & Wang, 2021).

Past studies offered reasons to explain companies' long-term underperformance. Dolvin and Jordan (2008), and Francis et al. (2010) suggested that companies will have difficulty securing investors' future interests for their subsequent issues if their initial performance is not favourable. Another study by Ritter and Welch (2002) suggested that as the variety of opinions among investors decreases over time, the marginal investor's valuation converges towards the mean valuation, trading activities decline, and the price of shares falls. Another explanation of the long-term underperformance is that if speculative investors dominate the market[3], buying and selling new shares to gain short-term profits will increase the price volatility in the long-term, inducing uncertainty in the companies' long-term performance (Wang & Wang, 2021). Thus, considering the long-term underperformance of the Malaysian IPOs reported in past studies, this study is left with the question of "What happens if the companies are also unable to perform well long-term post-IPO?".

Wyatt (2014) proposed that the long-term underperformance of IPO companies can have negative implications for the companies' survival. To a certain extent,

[3] According to Mehmood et al. (2021), the regulatory structure in the Malaysian market is weak, giving rooms for speculative investors to gain substantially in the first day of IPO listings.

companies' long-term performance is an indirect measure of how the companies will survive in the long-run (Fu et al., 2022). Although examining companies' survival appears somewhat similar to examining long-term performance, examining companies' survival represents a distinct measurement of companies' sustainability, including estimating the time element (Chancharat et al., 2012). Unlike estimating initial and long-term performance, companies' survival allows the prediction of sustainability to be accurate by incorporating the status (survive or failure) that changes with time.

Companies' survival refers to their ability to continue operating and maintaining their listing status over an extended period. While there is no universally agreed-upon definition of companies' survival, past studies have often defined companies' survival as companies that remain listed in the share market (regardless of their status) (Cirillo et al., 2016; Zhang et al., 2018). In the Malaysian market, Alyasa-Gan and Che-Yahya (2022) report that almost half (53.18 percent) of Malaysian companies listed involuntarily delisted from the share market seven years post-IPO from 2000 to 2014. Ahmad et al. (2021) also highlight companies' alarming non-survival phenomenon from 1990 to 2017, with approximately 30 percent of companies delisted. While Malaysian IPOs face losses because of the recent negative initial performance and long-term underperformance (as discussed in previous paragraphs), this study discovers a similar trend for companies' survival: companies are experiencing unfavourable survivability long-run post-IPO.

In Malaysia, the Ministry of Finance (MOF) stresses the importance of improving companies' sustainability reporting and disclosure through ESG elements to create a more resilient economy. The availability of information disclosed holistically should drive investors' preferences to practice sustainable and responsible investment. On July 7, 2022, the Malaysian MOF exerted that the Budget 2023 has a sharper focus on holistic development and well-being, facilitated by improved income opportunities for all, including sustainable business activities that can offer investment opportunities to socially responsible investors (MOF, 2022). Indeed, the Malaysian Budget 2023 was designed with RM372.3 billion, offering tax incentives for companies committed to ESG practices in business activities (majorly in carbon emission) to support companies' sustainability agenda.

Other related initiatives in Malaysia, such as the Malaysian Code of Corporate Governance (MCCG) by the Securities Commission Malaysia emphasise ESG and sustainability reporting to mitigate climate and social risks. A newly designed program called the "Public Listed Companies Transformation Programme" (PLCTP) by Bursa Malaysia in March 2022, aimed to support the transformation and sustainable growth of listed companies, is also evidence that companies with similar direction as the global corporate world will reduce regulatory and legal intervention in their future business activities. Overall, these initiatives display that the Malaysian market regulators highly encourage companies to incorporate and disclose ESG practices to benefit from capital accumulation, responsible investment, and sustainable performances (Figure 1.1).

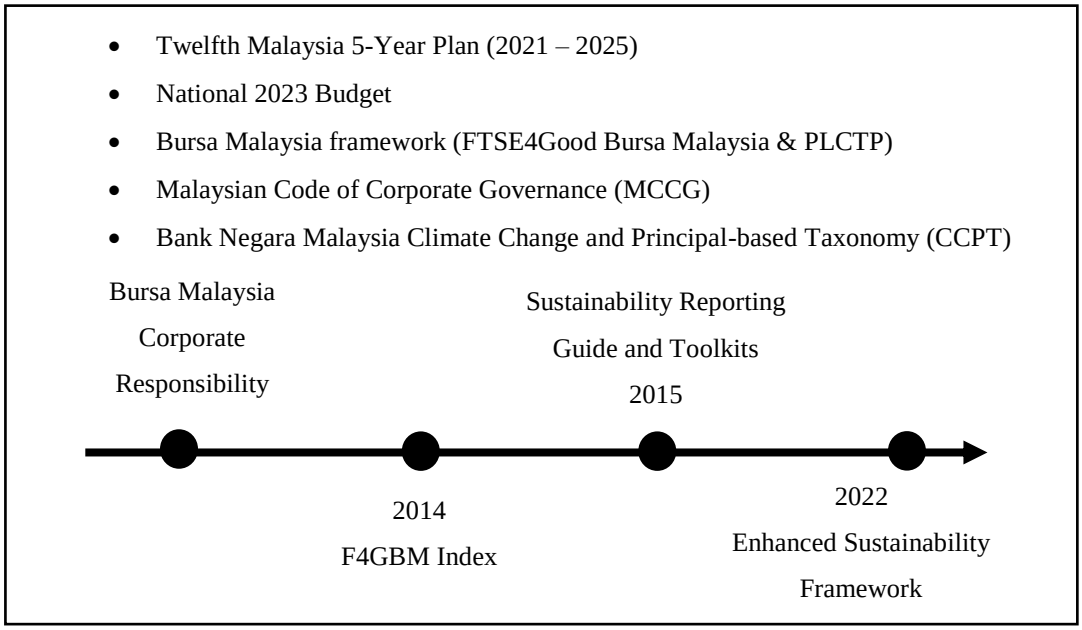


Figure 1.1 Regulatory Initiatives on ESG in Malaysia

Accordingly, this study posits a positive relationship between companies' disclosure of ESG practices and survival post-IPO for multidimensional reasons. Firstly, ESG practices are frequently overlooked in traditional investment reporting and analysis. Companies practising voluntary disclosure of ESG information provide the market with new data that can mitigate information asymmetry between the companies and prospective investors. Voluntarily disclosing ESG information can positively signal investors to increase their confidence, share subscriptions, and companies' capital acquisition. Secondly, ESG reporting reflects companies' efforts to address sustainability issues, meet the needs of stakeholders, and maintain a social licence to operate, contributing to the companies' strategic goal of preserving or reviving social legitimacy. Empirically, Albuquerque et al. (2019), Baker et al. (2021), and Benlemih

et al. (2016) revealed that reporting ESG increases companies' performances and sustainability in the U.S. market and the United Kingdom (U.K.) market.

This study adds to the increasing literature on ESG practices in the primary share market by examining how reporting ESG practices impacts companies' performances (initial and long-term) and survival post-IPO. This study argues that no study has investigated the impact of ESG practices reporting until companies' survival in the IPO market, except for a study in the U.S. by Fu et al. (2022). However, there are distinct differences between this study and Fu et al. (2022). First, unlike Fu et al. (2022), which examined the impact of ESG practices reporting only on companies' long-term performance, this study examines companies' post-IPO performance from two perspectives: initial and long-term performance. Second, instead of using logistic regression to predict companies' survivability, this study employs the survival analysis method, a more sophisticated method to examine companies' survival (Shumway, 2001). Third, this study focuses on the impact of ESG practices reporting on companies' post-IPO performances and survival in the Malaysian market, unlike Fu et al. (2022), which focuses on the U.S. market. In sum, this study examines the impact of reporting ESG practices on companies' performances (initial and long-term) and survival.

Past studies have also extensively examined several other determinants of companies' initial and long-term performances and survival, ranging from companies, issuance, and financial and market characteristics. In line with the empirical evidence found in past studies, this study includes company size (Guan-Yu & Si Lu, 2011; Rodoni et al., 2018), company age (Killins, 2019; Ozdemir & Upneja, 2016), IPO proceeds (Baluja, 2018; Kooli & Meknassi, 2007), underwriter reputation (Jain & Kini, 200; Tong & Ahmad, 2015), insider ownership (Albada et al., 2018; Shari, 2022), company assets (Ahmad et al., 2021; Liu & Li, 2014), company leverage (Ahmad et al., 2021; Anuar & Chin, 2016), sector (Fernandes and Paunov, 2015; Howell, 2016) and market condition (Baluja & Singh, 2019; Loughran & Ritter, 2004) as the other determinants of companies' post-IPO performances and survival.

1.2 Problem Statement

The companies' performances post-IPO have been extensively scrutinized, with debates on the presence of companies' abnormal initial performance and emerging long-term underperformance (Abdullah et al., 2019). Past studies on Malaysian IPOs found

a declining trend in companies' initial performance, witnessing a 65.48 percent decrease among companies listed from 1980 to 2015 (e.g., Jelic et al. (2001) at 99.24 percent from 1980 to 1995, Mohd-Rashid et al. (2014) at 29.44 percent from 2000 to 2012 and Albada et al. (2019) at 33.76 percent from 2000 to 2015). Examining long-term performance, studies on Malaysian IPOs initially reported outperformance (e.g., Paudyal et al. (1998) at 8.9 percent from 1984 to 1995, Bristin (1998) at 21.9 percent from 1980 to 1995, Corhay (2002), and Ahmad-Zaluki et al. (2007) at 41.7 percent and 32.6 percent from 1992 to 1996 and 1990 to 2000, respectively). However, current studies by Ahmad-Zaluki (2012), Abdul Rahman and Che-Yahya (2019), and Nordin and Mohd (2011) revealed an average of -30 percent to -42 percent of companies' long-term performance from 1997 to 2014. Based on the past studies reviewed, they reported a more than 30 percent decline in companies' long-term performance from 1984 to 2014, showing the presence of long-term underperformance among newly listed companies in the Malaysian market.

Extensively, past studies have also put forward the importance of extending the examination to companies' survival to identify the sustainability of the Malaysian share market (Shari, 2022). While the examination of Malaysian companies' average survival time is limited, Shari (2022) found that most non-surviving companies in the Malaysian market were delisted from the share market due to financial distress or unable to comply with listing requirements. Ahmad et al. (2021) reported that 30 percent of listed companies in the Malaysian market from 1990 to 2017 were delisted from the market. Over 50 percent of companies listed in 1990 have been delisted as of 2020. The study highlights that the alarming and continuous decline of companies listed in the Malaysian market serves as a motivation for conducting a survival examination of these companies. This study draws attention to the concerning paucity of recent studies investigating the post-performances and survival of companies. This is an impetus for this study to examine the three IPO anomalies in this market. However, to further observe whether the declining companies' initial performance, long-term underperformance, and unfavourable survivability occur, particularly in recent years in the Malaysian share market, is necessary before examining the cause of such anomalies.

Figure 1.2[4] and Table 1.1 display a downtrend in Malaysian companies' initial

[4] Initial performance is measured by finding the percentage difference of share's closing price and offer price.

performance from 2000 to 2023. The figure shows that the declining companies' initial performance in Malaysia reports a yearly average first-day return of 17 percent[5] from 2000 to 2023. There is approximately a 47 percent gap between the yearly average first-day return in 2000 (62 percent) and the yearly average first-day return in 2023 (15 percent). Out of the 24 years, 14 years reported a reduction in the yearly average first-day return, and the reduction is much more enormous than the yearly average first-day return reporting an increment, exhibiting a declining trend in companies' initial performance.

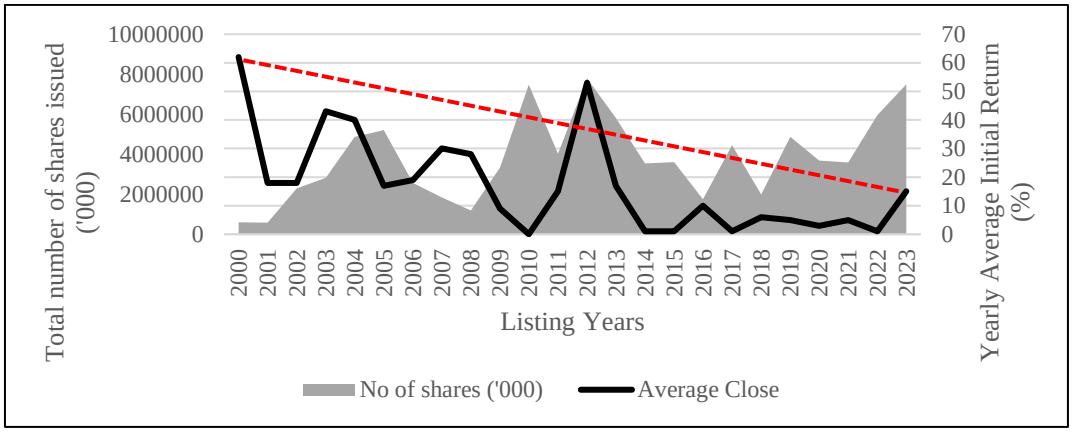


Figure 1.2 Average Companies Initial Performance in the Malaysian IPO Market

Source: Refinitv Eikon Datastream (2024).

Table 1.1

Average Yearly Return of Companies Initial Performance in Malaysia

Listing Year	Average Yearly Return (Closing Price) %	No of shares issued ('000)
2000	62	591,676
2001	18	586,720
2002	18	2,292,036
2003	43	2,826,225
2004	40	4,870,664
2005	17	5,200,952
2006	19	2,564,084
2007	30	1,840,391
2008	28	1,193,355
2009	9	3,333,652
2010	0	7,476,232
2011	15	4,019,781
2012	53	7,788,949
2013	17	5,820,542
2014	1	3,536,078
2015	1	3,599,947
2016	10	1,748,043

[5] Calculated by dividing 418 percent cumulative yearly average return with 24 years.

2017	1	4,445,708
2018	6	1,985,590
2019	5	4,862,111
2020	3	3,690,047
2021	5	3,587,508
2022	1	5,952,280
2023	15	7,499,332

Source: Refinitiv Eikon Datastream (2024)

For instance, 2012 reports a large increment from 2011, by 38 percent, but in 2013, the yearly average first-day return falls by 36 percent and declines by another 16 percent, resulting in the yearly average first-day return being as low as 1 percent on 2014. The trend persists to decline until 2022 (except 2016), reporting a 1 percent average first day return. Equally important observation from Figure 1.2 is that most recent listed companies from 2014 to 2023 generated a yearly average first-day return of lower than 10 percent. This is lower than the 9.4 percent Malaysian IPOs' average initial performance reported by Mehmood et al. (2021), further confirming the continuous inability of companies listed in the Malaysian market to generate favourable returns for investors on their first day of listing. Figure 1.2 confirms that companies' abnormal initial performance, as shown by past studies in the Malaysian market, is fading. Unlike the number of shares issued that show an inclining momentum from 2000 to 2023, the current trend of companies' initial performance reflects that companies underperform in the initial market post-IPO.

Comparably, Figure 1.3 and Table 1.2 illustrate the yearly average long-term performance (3-year observation window) of companies listed in the Malaysian market from 2000 to 2020. Using two different methods of calculating companies' long-term performance (BHAR and CAAR), this study observes that companies listed in the Malaysian market consistently face long-term underperformance over the 21 years. Figure 1.3 shows the average companies' long-term performance of -51 percent (BHAR) and -72 percent[6] (CAAR), respectively. Although the figure shows that companies' yearly average long-term performance trend is inclining, the negative percentages indicate that companies are consistently underperforming in the long-run and investors are bearing losses rather than gaining profits out of their investment. To compare, the highest companies' long-term performance was reported to be in 2000, which were -23 percent (BHAR) and -45 percent (CAAR). However, it indicates that if

[6] Calculated by dividing the cumulative yearly average return with 24 years.

investors were to hold onto their shares within 3 years after the companies' listing in the Malaysian market, they will still suffer losses instead of gaining profit. The figure also confirms an enormous loss as high as -114 percent (CAAR), indicating a 100 percent loss from investors' initial capital. It is also worth highlighting that 17 years in BHAR[7] and all 21 years in CAAR in this study disclose lower companies' yearly average long-term performance than the -30 percent in Abdul-Rahman and Che-Yahya (2019), and thus further confirming the presence and persistent occurrence of companies' long-term underperformance in the Malaysian share market.

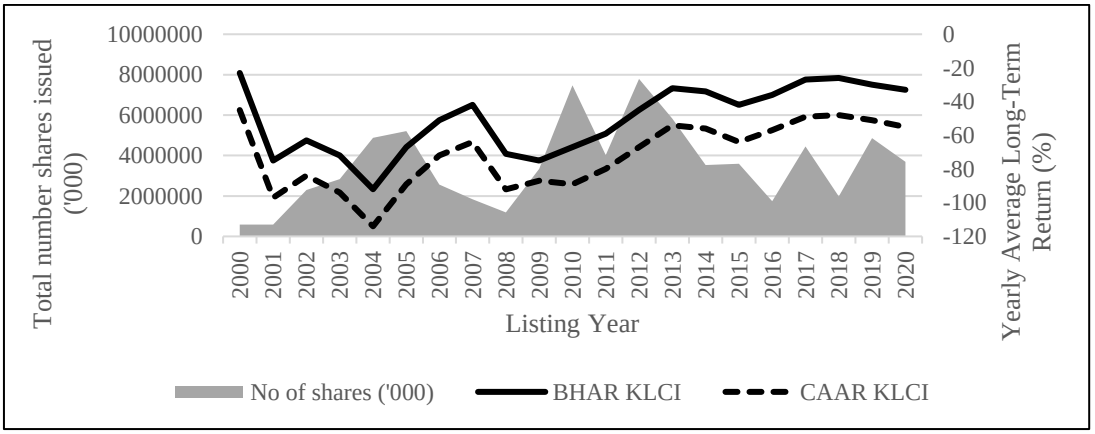


Figure 1.3 Market-adjusted (KLCI) Companies Long-Term Performance in the Malaysian IPO Market

Source: Refinitiv Eikon Datastream (2024)

Table 1.2

Average Yearly Return of Companies Long-Term Performance in Malaysia

Listing Year	BHAR KLCI (%)	CAAR KLCI (%)	No of shares issued ('000)
2000	-23	-45	591,676
2001	-75	-97	586,720
2002	-63	-84	2,292,036
2003	-72	-94	2,826,225
2004	-92	-114	4,870,664
2005	-67	-89	5,200,952
2006	-51	-72	2,564,084
2007	-42	-64	1,840,391
2008	-71	-92	1,193,355
2009	-75	-87	3,333,652

[7] 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2020.

2010	-67	-89	7,476,232
2011	-59	-80	4,019,781
2012	-45	-67	7,788,949
2013	-32	-54	5,820,542
2014	-34	-56	3,536,078
2015	-42	-64	3,599,947
2016	-36	-57	1,748,043
2017	-27	-49	4,445,708
2018	-26	-48	1,985,590
2019	-30	-51	4,862,111
2020	-33	-55	3,690,047

Source: Refinitiv Eikon Datastream (2024)

Figure 1.4 and Table 1.3 exhibit that the survivability trend of total listed companies[8] in the Malaysian market has gradually declined from 2006 to 2015 by 12 percent[9] and only started to incline in 2016, following the establishment of the Leading Entrepreneur Accelerator Platform (LEAP) Market. The number of companies listed in Main Market has consistently reduced since 2006. Some may contend that the decrease in the total active companies is not solely attributed to unfavourable circumstances. However, this study observes a consistent trend as reported in Alyasa-Gan and Che-Yahya (2022), that over 90 percent of inactive companies, as shown in Figure 1.4, either failed to meet listing requirements (e.g., defaulted on loan payments) or exhibited poor financial and operational performance. Upon further observation, the shortest duration for companies to be inactive in the Malaysian market between 2000 and 2023 is less than 12 months.

This study also unveils a 15 percent reduction among Main Market participants from the total listed companies since 2006. This creates a concern as, according to Bursa Malaysia (2023) under the "Selection of FTSE Bursa Malaysia KLCI Constituents", the Main Market participants' performance is set to be the benchmark index (i.e., KLCI) of the Malaysian share market performance. The reduction in the total number of Main Market participants indicates the overall share market's underperformance. The decline also results in fewer listed companies available for investment, providing investors with a limited pool of options to diversify their portfolios and potentially reducing potential

[8] Figure 1.3 is reporting the total listed companies that are currently active in Bursa Malaysia, including companies that are in PN17 and GN3.

[9] Total listed companies in 2006 was 1027 companies and in 2015 was 903. This study calculates using the percentage changes formula, $(P_1-P_0)/P_0$.

returns while increasing risk and dissuading investors from further participating in this market. In sum, Figure 1.4 provides further confirmation that the unfavourable survivability pattern of listed companies also occurs in the Malaysian share market.

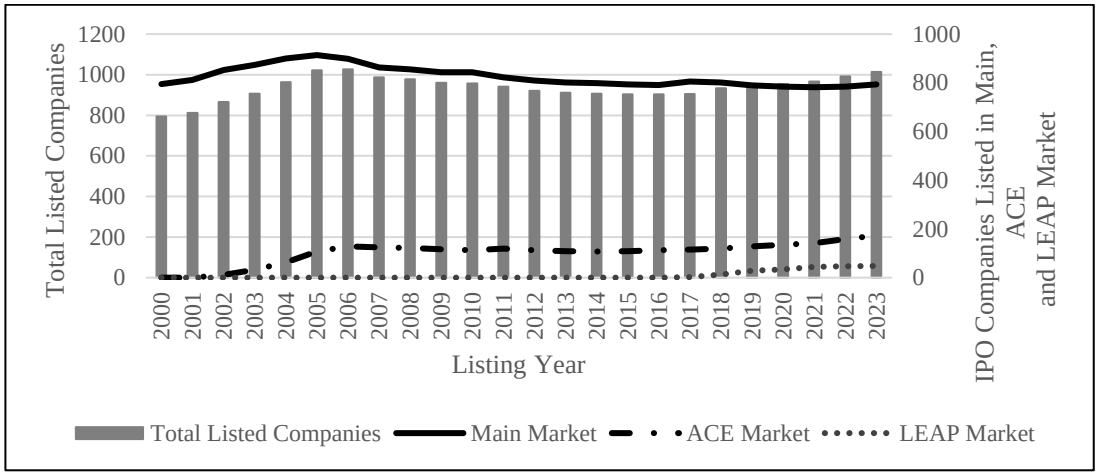


Figure 1.4 Total Listed Companies in Bursa Malaysia

Source: Bursa Malaysia website (2023)

Table 1.3

Listing Statistics on Bursa Malaysia

Listing Year	Total Listed Companies	Main Market	ACE Market	LEAP Market
2000	795	795	0	0
2001	812	812	0	0
2002	865	853	12	0
2003	906	874	32	0
2004	963	900	63	0
2005	1021	914	107	0
2006	1027	899	128	0
2007	987	863	124	0
2008	977	855	122	0
2009	960	844	116	0
2010	957	844	113	0
2011	941	822	119	0
2012	921	809	112	0
2013	911	802	109	0
2014	906	799	107	0
2015	903	794	109	0
2016	904	791	113	0
2017	905	806	115	2
2018	933	801	119	13
2019	947	790	129	28
2020	954	785	135	34
2021	967	782	141	44
2022	991	785	159	47

2023	1014	793	173	48

Source: Bursa Malaysia website (2023)

Collectively, Figures 1.2 to 1.4 demonstrate the presence of companies' underperformance in the IPO market since their initial listing days in the share market. Since each phase builds upon the previous one, it is understandable that only companies with a favourable IPO experience fueled initial growth can provide resources for long-term development and continued viability. Capturing and maintaining investors' interest and confidence is essential to maintain the companies' relevancy in the market. A way to do so is by reducing the informational gap or information asymmetry by reporting high-quality information during the IPO exercise (Firmansyah et al., 2023; Reber et al., 2022). Since the early phase of being listed companies, the focus on reporting quality information should provide reliable information to build trust and confidence among investors and stakeholders. Companies must consider current information demand among investors and stakeholders to ensure favourable performance and survival. Furthermore, the shift in investors' interest toward prioritising information beyond companies' financial position (non-financial information) indicates the need for companies to be more diverse in their information disclosure to create long-lasting value.

In response to the growing demand for non-financial information disclosure, ESG practices reporting has emerged as an essential informational mechanism to reduce uncertainty in the capital market (Baker et al., 2021). In Malaysia, the MCCG recommends that the company's owners disclose their ESG policies and practices (SCM, 2021b). The introduction of a globally benchmarked ESG index, the FTSE4Good Bursa Malaysia (F4GBM) Index, launched in December 2014, also signifies Bursa Malaysia's strong commitment to encouraging Malaysian companies to disclose their ESG practices to support favourable company performance and survivability post-IPO. In fact, Jamaani and Alidarous (2025) found that companies voluntarily reporting their sustainability practices can reduce global[10] IPO withdrawals by 65 percent, reflecting the importance of meeting the demand of socially responsible investors in the current era for long-term value creation. This suggests that companies

[10] The study uses the G20 (Group of 20) countries as its sample. G20 consist of 19 countries, which are the European Union, and the African Union, representing the world's largest economies.

voluntarily reporting their ESG practices pre-IPO should signal high-quality IPO issuance. Consequently, information asymmetry is diminished, investors' confidence is enhanced, thereby promoting favourable capital acquisition post-IPO.

However, Mohammad and Waisuzzaman (2021) state that although policymakers consistently emphasise the importance of ESG practices reporting to companies, the lack of mandatory policies requiring companies to report ESG practices prior to IPO gives them the option to report minimal ESG practices in their prospectuses. Companies that are not transparent in their reporting allow investors to interpret this as a lack of alignment with current stakeholders' demand, leading them to lose confidence in the IPO issuance. Thus, this study postulates that it could be one of the main reasons for the underperformance and non-survival of Malaysian companies.

Incorporating companies' ESG practices disclosure in the IPO market is becoming essential for several reasons. Firstly, ESG considerations go beyond traditional financial metrics and focus on a company's environmental impact, its relationships with society, and the quality of its governance. Companies are expected to make a crucial initial impression by providing information on the role of ESG in their strategies, with a focus on the material value drivers and risks that can impact their financial position and performance (Economidou et al., 2022). Secondly, as companies go public, they enter a new phase of scrutiny from investors, analysts and the public. Many institutional investors and asset managers consider ESG practices integral to their investment decision-making. Companies that demonstrate strong ESG practices are more likely to attract a pool of capital and interest from a broader range of investors while maintaining good relationships with them (Wong & Zhang, 2022). The rise of sustainable investing will lead to a growing pool of capital allocated to companies with strong ESG practices.

Despite the growing recognition of ESG disclosures as value-relevant information and their potential role in mitigating information asymmetry, limited attention has been given to whether ESG practices reporting pre-IPO influences companies' initial performance, long-term performance, and survival. Existing ESG studies predominantly focus on the secondary market (Ahmad et al., 2021; Bazrafshan, 2023; Cao et al., 2022; Chen et al., 2023; Firmansyah et al., 2023; Garcia et al., 2017). At the same time, IPO research has largely concentrated on traditional financial determinants of performance (Au et al., 2023), leaving the role of pre-IPO ESG reporting underexplored. This gap is especially apparent in emerging markets such as

Malaysia, where ESG disclosures prior to IPO remain largely voluntary.

Companies that invest in ESG signal that they are heading in a similar direction as the global corporate world, reducing regulatory and legal intervention in their business activities. Not only will the ESG practices reporting provide a positive first impression, but the ESG practices are also often indicators of long-term risk mitigation and opportunities. Overall, reporting higher ESG practices information during the IPO process will help companies identify and mitigate potential risks that affect their valuation, from the initial stage through their long-term performance and survivability. Thus, to close the literature gap, this study suggests that the effect of companies' ESG practices reporting pre-IPO be examined to understand their role in explaining companies' post-IPO performance (initial and long-term) and survival.

1.3 Research Objectives

This study postulates that reporting ESG practices in prospectuses has a significant relationship with the companies' post-IPO performances and survival. To be precise, the main objectives of this study are:

1. To examine the impact of environmental, social and governance reporting on companies' initial performance.
2. To examine the impact of environmental, social and governance reporting on companies' long-term performance.
3. To examine the impact of environmental, social and governance reporting on companies' survival.

The construction of the objectives is in accordance with the consideration of other independent variables found as established predictive factors of post-IPO performances and survival. Thus, the secondary objectives of this study are:

4. To examine the impact of company-specific characteristics (company size, company age, total assets and leverage) on companies' initial performance, long-term performance and survival.
5. To examine the impact of issuance-specific characteristics (IPO proceeds, underwriter reputation, insider ownership, and company sector) on companies'

initial performance, long-term performance and survival.

6. To examine the impact of market-specific characteristics (market conditions) on companies' initial performance, long-term performance and survival.

1.4 Research Questions

In line with the research objectives, this study's research questions are:

1. What is the impact of environmental, social and governance reporting on companies' initial performance?
2. What is the impact of environmental, social and governance reporting on companies' long-term performance?
3. What is the impact of environmental, social and governance reporting on companies' survival?
4. What is the impact of company-specific characteristics (company size, company age, total assets and leverage) on companies' initial performance, long-term performance and survival?
5. What is the impact of issuance-specific characteristics (IPO proceeds, underwriter reputation, insider ownership, and company sector) on companies' initial performance, long-term performance and survival?
6. What is the impact of market-specific characteristics (market conditions) on companies' initial performance, long-term performance and survival?

1.5 Significance and Contributions of Study

1.5.1 Body of Knowledge

This study contributes to the growing literature on ESG practices in the primary market, assessing the effect of ESG practices reporting on companies' performances and survival post-IPO. Past literature has attempted to answer whether and how ESG practices explain companies' performances and value creation (Del Bosco & Misani, 2016; King & Lenox, 2000; Margolis & Walsh, 2016; Ruf et al., 1998). Mixed results were reported on the effect of ESG practices on companies' performances in the secondary market and whether ESG practices reporting can increase companies' performances (Deng et al., 2013; Dimson et al., 2015; Lins et al., 2017; Tang & Zhang,

2020) or decrease companies' performances (Bolton & Kacperczyk, 2021; Hong & Kacperczyk, 2009; Masulis & Reza, 2015). Thus far, no study has examined the relationship between ESG practice disclosure and companies' survival in the context of the IPO market. An exception is a study by Fu et al. (2022), which considered the impact of reporting ESG practices during an IPO on companies' long-term performances and survival (without considering survival time) in the U.S. market.

Several differences between this study and Fu et al. (2022) are identified. First, the study focused only on companies' long-term performances, but this study examines the companies' initial and long-term performance. Additionally, Fu et al. (2022) focused on only one measurement for long-term performance: the buy-and-hold abnormal return (BHAR) method. This study examines long-term performance using the cumulative average abnormal return (CAAR) and BHAR. Since BHAR is time-sensitive (rely on a specific holding period), CAAR supplements this limitation by capturing the short-term fluctuations or responses to events that occur within that period by cumulatively totalling abnormal returns over various sub-periods, providing a more nuanced view to reveal how returns evolve.

Second, instead of employing dummy variables coding "1" as involuntary delisted company and "0" as survival (logistic regression analysis), this study employs the survival regression analysis models (i.e., Cox Proportional Hazard and Accelerated Failure Time models) for a more reflective estimation and explanation of companies' survival. The significant difference between the survival model of Fu et al. (2022) and this study is the assumption of Cox Proportional Hazard (COX) and Accelerated Failure Time (AFT) models of the non-normality of survival data (Cleves et al., 2016). The traditional survival models, such as the logistic regression analysis model, only require satisfying the normally distributed survival data assumption and considering companies' status (1 or 0)[11]. In contrast, COX and AFT models include examining time-to-survive to observe companies' survival time from their listing date to the end of an observation period. As such, COX and AFT models are more appropriate to examine companies' survival post-IPO (Shumway, 2001; Espenlaub et al., 2012).

Third, Fu et al. (2022) conducted a study in the U.S. market, expressing that the changes in the business landscape since COVID-19 have forced companies to remain

[11] The value of 1 indicates surviving companies and 0 otherwise.

agile and sustainable. The study argued that companies must integrate ESG practices into their business activities in response to the continuous climb in sustainable investment assets in the U.S. This is, however, not a similar case for Malaysia. The number of ESG-compliant companies is still growing in Malaysia, with only 3 percent of the total listed companies in 2014 as ESG compliant and approximately 11 percent as of June 2022. Whether ESG practices reporting has a relationship with companies' post-IPO performances and survival remains unanswered. Thus far, disclosure of ESG practices has not yet been examined as a predictor of companies' performances and survival in the Malaysian IPO market. Thus, the stated differences and justifications are the main contributions of this study. Table 1.4 illustrates the differences between this study and Fu et al. (20222).

Table 1.4

Differences between Fu et al. (2022) and This Study

Differences	**Fu et al. (2022)**	**This study**
Sample	U.S.	Malaysia
Sampling Frame	1980-2021	2000-2023
Performance Observation	Long-term performance	Initial and long-term performances
Long-Term Performance Analysis Method	BHAR	CAAR and BHAR
Survival Analysis Method	Logistic model	Survival model
Motivation	High integration of ESG practices in response to the upward sustainable investment assets in U.S.	Low integration of ESG practices among public listed companies in Malaysia

This study also expands the current underlying theories that explain companies' performances and survival post-IPO (Ahmad et al., 2021; Alyasa-Gan & Che-Yahya, 2022; Shari, 2022), specifically in the Malaysian market. A commonality across studies on IPO performances is the adoption of signalling and agency theory, considering the presence of information asymmetry in the IPO markets. This study employs legitimacy theory to explain how ESG practices reporting during an IPO can assist investors in making optimal investment decisions. The information on ESG practices should assist investors in measuring the extent of companies' commitment beyond their market and intrinsic value, which may reflect the companies' favourable future value, performances, and survival post-IPO. This study highlights the relevance of its findings in suggesting that companies reporting information about their ESG practices gain legitimacy and maintain a positive reputation among investors for favourable post-IPO

performances and survival. Discussion of legitimacy theory is included in Chapter 2.

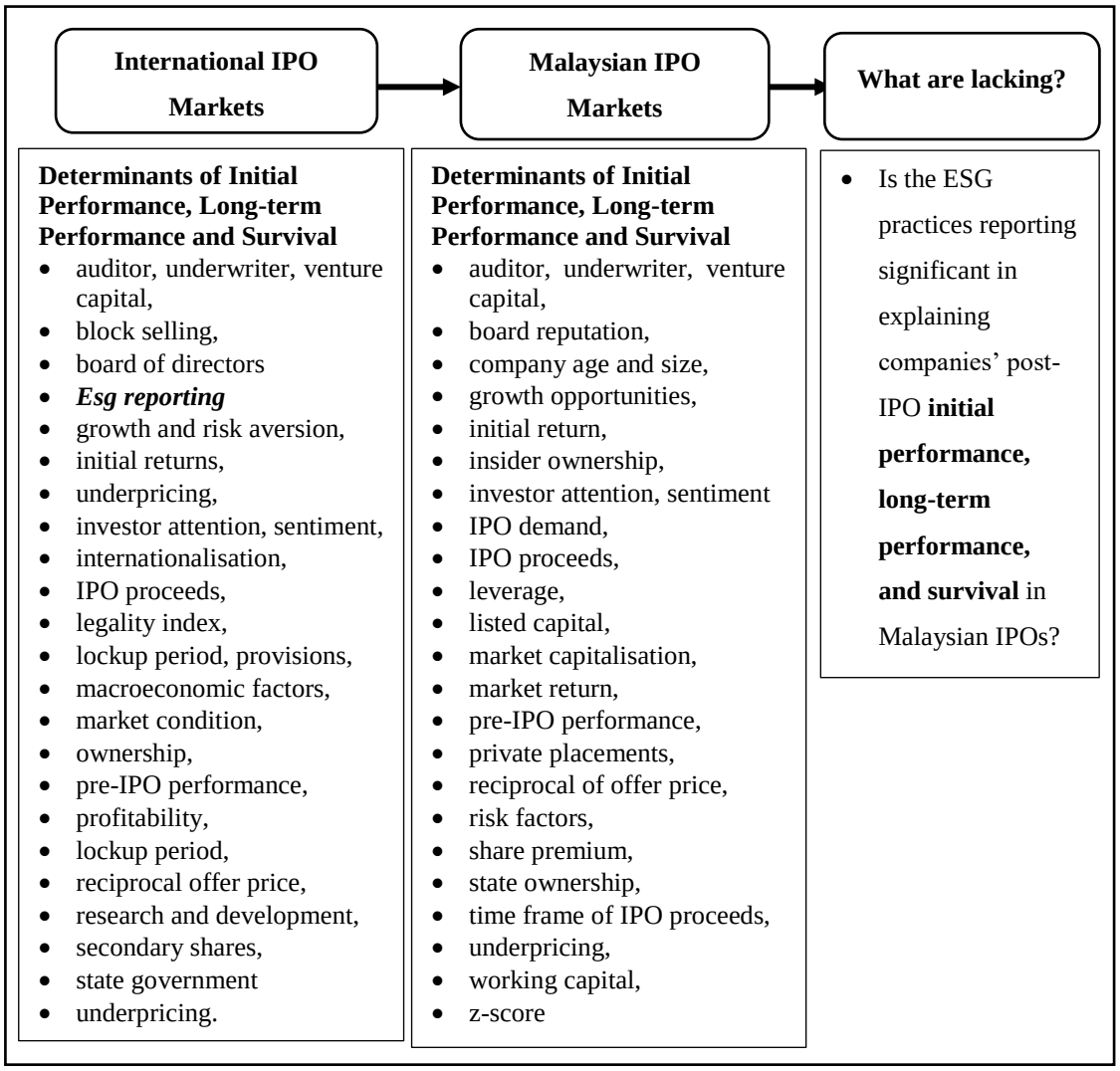


Figure 1.5 Gap in the literature on the determinants of companies' post-IPO performances and survival

Figure 1.5 shows the main contributions of this study to the body of knowledge. Unlike the international IPO markets, the Malaysian IPO market has yet to discover the relationship between the three ESG elements, i.e., the environmental, social and governance, and the companies' initial performance, long-term performance and survival. Most of the past studies in the Malaysian market focused on companies' financial information as the key indicator of companies' post-IPO performances and survival. This study proposes that the non-financial information in companies' prospectus is the current demand from investors of companies' information disclosure pre-IPO to determine companies' post-IPO performances and survival. Hence, this study intends to fill the literature gap by examining each ESG element disclosure's role

in companies' initial performance, long-term performance, and survival, post-IPO.

1.5.2 Policymakers

The urgency of conducting this study is justifiable by the regulators' emphasis on ESG practices reporting for companies' sustainability. For instance, the introduction of the F4GBM in 2014 promotes the importance of risk and investment management process, encouraging best practice disclosure for a favourable and sustainable business. According to Bursa Malaysia (2022), companies practising collective ESG elements in their business operations will perform better than their peers' average performance by at least 3 to 5 percent. In addition, Bursa Malaysia recently established a program called the "Public Listed Companies Transformation Programme" (PLCTP), aiming to support the transformation and sustainable growth of companies in Malaysia. The key areas highlighted by Bursa Malaysia are enhancing transparency in companies' ESG practices reporting to capitalize on market opportunities, mitigate challenges, and achieve long-term success. Thus, examining the relationship between ESG practices reporting and companies' post-IPO performances and survival proposed in this study can be timely and feasible in support of Bursa Malaysia's current initiative and commitment.

In playing a dynamic role in the Malaysian economy, companies are advised to practice and support sustainable and responsible investment to deliver value-enhancing investments in the capital market. SCM also seeks to improve sustainability-related disclosures through the Prospectus Guidelines , encouraging companies to disclose ESG risks, opportunities, and impacts relevant to their businesses under Chapter 5, Section 5.02: Business Overview. That is, companies must enhance their disclosures on ESG practices to align with the MCCG and GRI guidelines.

From the perspective of regulations and guidelines, this study realizes that although policymakers have highlighted the importance of reporting relevant ESG practices to promote resilience in the ecosystem, companies listed in the Malaysian market are still nurturing their awareness of the urgency of complying. The Capital Market Masterplan 3 (CMMP3) also prioritizes ensuring the economy's resilience in the era of heightened uncertainty, in which ESG practices reporting become the Masterplan major coverage from 2021 to 2025 (SCM, 2021). Overall, this study posits that examining the relationship between companies' ESG practices reporting and post-IPO performances and survival can be a significant contribution to visualizing the

importance of ESG practices while supporting current initiatives of the SCM.

1.5.3 Issuing Companies

The importance of reporting ESG practices has been consistently highlighted in Bursa Malaysia's Listing Requirements to inform companies of sustainability risks and opportunities. ESG practices reporting encourages companies to take a long-term view and consider the impacts of their operations on the environment and society at large. By integrating ESG into their business strategies, companies can identify opportunities for value creation beyond short-term performance post-IPO. This can lead to more resilient and adaptive business models, improved resource efficiency, and the ability to transition from an IPO's listing day. Further, an IPO represents an initial public debut, and positive ESG practices should contribute to a favourable public image. A strong brand image can enhance a company's market positioning and reputation.

The recommendations and urgency of companies reporting their ESG practices with higher transparency and meeting the Sustainable Development Goals (SDGs) have also been constantly highlighted in this study. Consistent with the recommendation, this study will shed light on the importance of ESG practices reporting to publicly listed companies, ensuring that they respond to the SDGs for sustainable survival. Since the awareness and integration of ESG practices among Malaysian companies are still low, the findings of this study will boost companies' confidence in the long-term benefits of reporting ESG practices. As mentioned in the background of this study, multiple positive outcomes come together with companies' commitment to integrating ESG practices in the long-term. Thus, this study should provide additional motivation to issuing companies to report ESG practices sufficiently during their public listing on the share market.

In summary, incorporating ESG practices into companies' business models in the IPO market aligns with investor preferences and contributes to risk management, valuation, and long-term sustainability. It enhances the companies' attractiveness to diverse investors and supports their positioning in an increasingly ESG-conscious market. As companies with more explicit disclosure on ESG practices grow and favourably sustain since their first listing day, companies with low transparency in the reporting of ESG practices will struggle to gain ESG risk-free status and ultimately face a probability of unfavourable post-IPO performances and survival.

1.5.4 Investors

This study encourages investors in the IPO market to view companies' exposure to ESG practices in multiple dimensions. As demand for information and the importance of ESG-related matters grow, investors consistently search for companies committed to competing with their investment interests. The information on ESG practices in the prospectus should assist investors in valuing companies' performances in weighing the sustainability of their investment strategies.

The increasing and positive returns of ESG-compliant companies in Malaysia (from -4.4 percent in 2018 to 20.2 percent in 2024)[12] indicate that the investors' demand and participation are skewed towards sustainable investment. From the view of this study, investors can confirm the association between the companies' ESG practices in their business activities and the companies' post-IPO performances. That is, companies with sufficient information disclosure on ESG practices can perform better, contributing to a longer survival post-IPO.

In line with MCCG, ESG elements often indicate various risks affecting companies' sustainability. Understanding how ESG practices reporting can influence companies' performances and survival post-IPO will help investors simultaneously assess and manage risks related to environmental impact, social responsibility, and governance practices. Specifically, this study can assist investors in assessing risks, identifying opportunities to gain sustainable returns and contributing to the growing momentum of responsible investing in the Malaysian market. Thus, this study contributes to investors by offering valuable information on the outcome of companies reporting ESG practices for optimal investment decisions.

1.6 Scope of Study

This study examines the impact of ESG practices reporting on companies' initial performance, long-term performance and survival. The sample of this study is 100 companies listed in the Main and ACE Markets of Bursa Malaysia from January 2012 to July 2019, observed until July 2024. Based on Mohammad and Wasiuzzaman (2021), the disclosure of information on ESG practices among companies listed in Malaysia

[12] Source: FTSE Russell Factsheet, FTSE4Good Bursa Malaysia Index.

only started to be apparent in 2012. Thus, this study adopts a similar starting year for its sample. This study observes companies' performance by estimating the first trading day share return and the third year share return post-IPO. Companies' survival is estimated from time-to-survive. This study employs the multiple linear regression analysis to examine the impact of ESG practices reporting on companies' post-IPO performances (initial and long-term) and survival.

1.7 Structure of Thesis

Chapter 1 begins with the background of this study, problem statement, research objectives and questions, and the significance and contributions of this study. Chapter 1 concludes with the scope of this study.

This proposal continues with the literature review on past studies in company post-IPO performances, the survival, the integration of ESG practices in companies' initial disclosure, and the other independent factors included in this analysis. Chapter 2 also introduces this study's theoretical underpinnings: the legitimacy and signalling theories. The hypotheses and the discussion of other variables conclude the chapter.

Chapter 3 describes the sample, data and sources, variable measurement, research methodology, and diagnostic tests prior to the regression analyses. Chapter 3 concludes by describing the linear regression model (OLS method) and survival analysis model (COX and AFT methods) to investigate the relationship between ESG practices reporting and companies' post-IPO performances and survival.

Chapter 4 presents the findings and discussions for the multiple regression analysis on the relationship between ESG and companies' post-IPO performances and survival. Chapter 4 begins with reporting the preliminary analysis findings, starting from the descriptive statistics of the dependent variable, and ends with the independent variables employed in this study. Chapter 4 continues with the reporting and discussions on the diagnostic tests and regression results, including the additional integration analyses between companies' initial performance, long-term performance, and survival. Chapter 4 ends with the discussion and analysis of relationships between the control variables, companies' post-IPO performances, and survival.

Chapter 5 concludes the findings. Chapter 5 discusses the limitations and recommendations for future studies. Chapter 5 summarizes the implications to the current body of knowledge, policymakers, issuing companies, and investors.

CHAPTER 2
LITERATURE REVIEW

2.1 Introduction

This chapter begins with an overview of the Malaysian market structure since its early development. It continues with a review of the dependent variables of this study, which are the initial performance of IPO (initial return), long-term performance and survival of companies post-IPO. This chapter continues with detailed systematic reviews of the theoretical and empirical literature on the initial performance, long-term performance and survival of companies in developed and developing markets. Next, the focus of this chapter deviates by introducing the overview and integration of the main independent variable of this study, the environmental, social and governance (ESG) practices disclosure. This chapter continues with an explanation of theoretical underpinnings to develop hypotheses regarding the relationship between reporting ESG practices and companies' performances and survival post-IPO. This study reviews the other independent variables in the last section of this chapter.

2.2 Malaysian Share Market

Malaysia's formal securities business organization, the Malayan Sharebrokers' Association was registered in 1937. The Malayan Share Exchange was established in 1960 to provide a platform for investors to trade for Malaysia companies'[13] common shares. In conjunction with the separation between Malaysia and Singapore in 1965, the Share Exchange of Malaysia became the Share Exchange of Malaysia and Singapore. However, due to the currency interchangeability between Malaysia and Singapore, the Kuala Lumpur Share Exchange (KLSE) was re-introduced in 1973 and registered as a limited company under the Companies Act 1965 guarantee, including only Malaysia-listed companies. As one of the biggest bourses in ASEAN, KLSE offered a centralized market for trading activities of a wide range of equity investment instruments. In 2004, KLSE was demutualised to Bursa Malaysia Berhad to strengthen its global

[13] During this period, Malaysia and Singapore was not seceded.

competitiveness and adapt to international trends in the exchange sector by making the share exchange more marketable- and customer-driven.

Three equity-listing boards were retained, the Main Board, Second Board and the Malaysian Exchange of Securities Dealings and Quotation (MESDAQ) board, since the era of KLSE before the restructuring in 2009. The merging of the Main and Second Board as the Main Market was to position the bourse as a competitive destination for capital raising among local and foreign companies, and the re-named of MESDAQ as the Access, Competitive and Efficient (ACE) Market was to offer a wider platform for small but high in growth technology companies in Malaysia. In conjunction with the two markets in Malaysia's share exchange, in 2017 Bursa Malaysia had established the Leading Entrepreneur Accelerator Platform (LEAP) Market for Small and Medium Enterprises (SMEs), tailored for sophisticated investors due to higher investment risks than the Main and ACE Market[14].

Today, with more than 900 constituents, Bursa Malaysia functions as an avenue of capital raising for companies ranging from large-cap companies to up-an-coming companies (SMEs) globally. Although Bursa Malaysia is considered a developing share market, its aspiration to become the leading and sustainable global marketplace has been proven by the growing number of companies seeking fund expansions in the market, indicating its importance in the global marketplace. This includes the increasing market value of 267.41 percent from 2005 to 2022 (from RM1963.1 Million to RM5244.25 Million)[15].

2.2.1 Regulatory Structure of the Malaysian Share Market

The Malaysian Ministry of Finance (MOF), responsible for the country's economic management and financial administration, is at the top tier of Malaysia's share market regulatory structure. The Securities Commission of Malaysia (SCM) was established in 1993, responsible for overseeing and regulating the capital markets in Malaysia. SCM also acts as the Malaysian MOF advisor under the CMSA 2007. Bursa Malaysia rules and regulates trading activities among market participants under the

[14] Sophisticated investors are those specified under Part 1 of Schedule 6 and Part 1 of Schedule 7 of Capital Market and Services Act (CMSA) 2007.
[15] Data extracted from Refinitiv Platforms Datastream.

Malaysian MOF and SCM ruling. In short, Figure 2.1 shows the regulatory structure of the Malaysian share market.

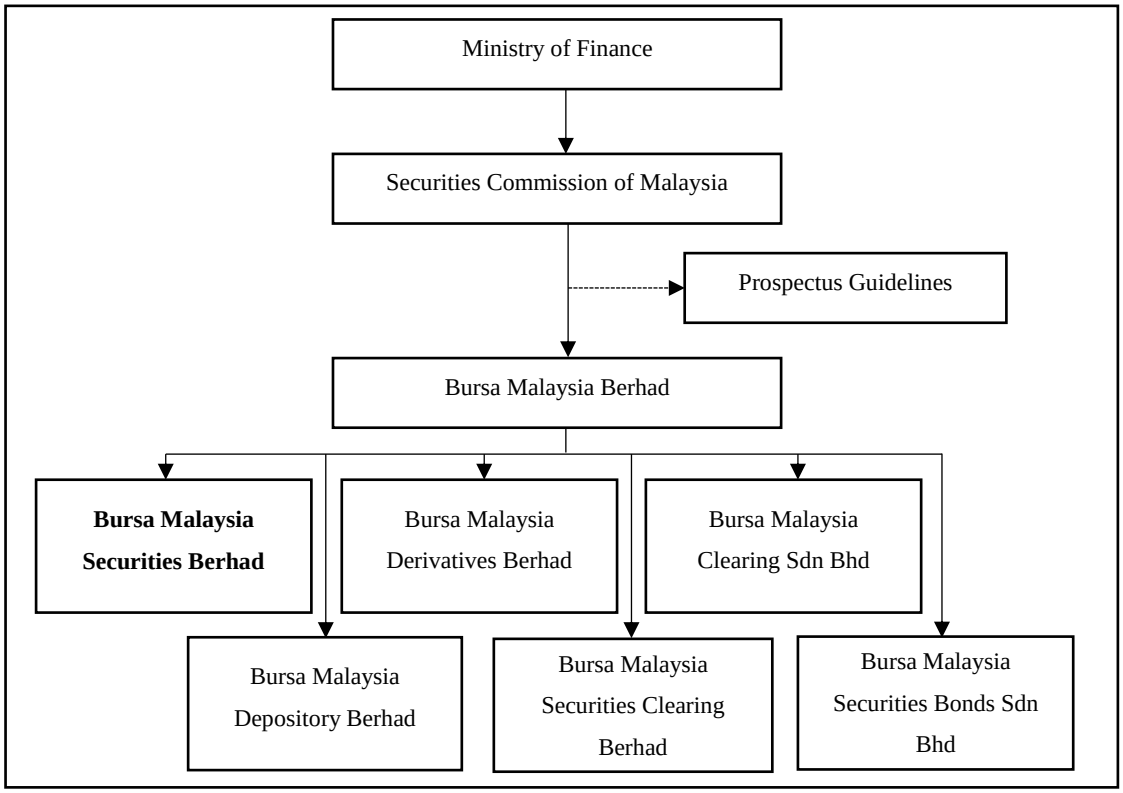


Figure 2.1 Regulatory Structure of the Malaysian Share Market

Source: Bursa Malaysia website (2024)

Before the listing in Bursa Malaysia, companies are mandated by the SCM to prepare an official document, the prospectus, containing detailed information about the company, its operations, financial performance, risk factors, and the proposed use of funds. All companies must comply with the Prospectus Guidelines (PG). Under Division 1 (Equity) of the prospectus' contents, 17 chapters outline the guidelines for the equity offerings, whereby 14 chapters[16] are standardized for all types of companies (regardless of the industries). The other three are requirements specifically for infrastructure project companies, i.e, Special Purpose Acquisition Corporation (SPAC), and Mineral or Oil and Gas (MOG) companies. Out of all the chapters, Chapter 5 includes holistic information representing the company's information which companies

[16] The 14 chapters include introduction, prospectus summary, details of offering, information on the key shareholders and stakeholders, information on the company, risk factors, related party transactions, conflict of interest, financial information, accountant reports, expert reports, additional information, inspection documents, and application for shares.

need to disclose the overview of their businesses, including the nature of the operations and principal activities, products or/and services, research and development policies, or to disclose any practices that are related ESG matters.

2.3 ESG Guidelines in the Malaysian Share Market

In recent years, ESG elements have gained significant consideration globally as a framework for measuring the sustainability and societal impact of businesses and investments (Wang et al., 2024). Malaysia has also recognized the importance of ESG and its potential to drive economic growth. Earlier initiatives of ESG in Malaysia began with the SCM, which introduced guidelines encouraging listed companies to adopt best corporate governance practices. The code of corporate governance in 1993 emphasized the board of directors' responsibilities to ensure they act in the company's stakeholders' best interests. The code also promotes transparency in financial reporting, setting higher accountability standards. The introduction of the Code improves continuous disclosure obligations, investor protection measures, enforcement mechanisms, and the culture of transparency, accountability, and investor confidence in the Malaysian share market.

In 2006, Bursa Malaysia introduced a voluntary Corporate Responsibility (CR) Framework. The framework guides companies in integrating responsible practices into their operations. CR is defined as transparent business practices based on ethical values and due respect for the community, employees, environment, shareholders and all other stakeholders. In December 2006, although the framework was voluntary, a significant policy shift occurred when Bursa Malaysia revamped its listing requirements, making it mandatory for all companies and their subsidiaries to disclose their CSR activities in their annual reports starting in December 2007. This combined approach encouraged and held companies accountable for their social and environmental impact. While the framework offered guidance, the mandatory disclosure requirement pushed companies to address their CR efforts formally.

Later in 2007, the MCCG also offered essential guidelines for promoting good governance practices among Malaysia's listed companies on the Cadbury Report (1992) and Hampel Report (1998) recommendations. The MCCG (2007) aimed to improve listed companies' economic sustainability and governance. The guideline's key features are the emphasis on the independent and diverse board of directors (BOD), responsibilities and duties of the BOD, accountability and transparency of information

disclosure for investors' protection, and internal control of risk and management. The guidelines from MCCG will be periodically reviewed to align with global standards and ensure sustainable economic development. To note, the MCCG was reviewed in 2007, 2012, 2017, and 2021 (SCM, 2021b).

In 2014, Bursa Malaysia launched the Sustainability Reporting Guide (SRG) to encourage PLCs to report on their ESG efforts. The SRG, issued by Bursa Malaysia, aims to help issuing companies prepare the Sustainability Statement as mandated by the Listing Requirements of Bursa Malaysia. This requirement is outlined in paragraph 9.45(2) and paragraph (29), Part A of Appendix 9C of the Main Market Listing Requirements (supplemented by Practice Note 9), as well as paragraph 30 of Appendix 9C of the ACE Market Listing Requirements (supplemented by Guidance Note 11). The SRG aims to offer direction on integrating sustainability into companies and facilitating identifying, evaluating, and managing significant environmental, social, and economic risks and opportunities. This Statement emphasises the economic justification for sustainability, presenting real-life examples to show how ESG practices can enhance companies' worth and future sustainability (Bursa Malaysia, 2022). This Statement also offers standard disclosures to assist investors in identifying companies' ESG practices.

In 2020, Malaysia launched its Twelfth Malaysia Plan (2021-2025). The Twelfth Malaysia Plan (2021-2025) mainly serves as the nation's blueprint for socioeconomic development. It was introduced during the COVID-19 pandemic to address immediate challenges and propel Malaysia towards a more sustainable, inclusive, and prosperous future. The Plan is also key to Malaysia's commitment to ESG principles. This plan emphasizes that sustainable development requires considering ESG factors alongside economic growth. The plan is titled "Building a Prosperous, Inclusive and Sustainable Malaysia," highlighting sustainability as a core objective. It also encourages the integration of ESG elements into decision-making across various sectors. The Twelfth Malaysia Plan marks a significant shift towards a more holistic approach, recognizing that economic prosperity needs to be balanced with environmental responsibility and social progress.

Consecutively, Bank Negara Malaysia (BNM), also known as the Central Bank of Malaysia, promotes sustainable finance in Malaysia. One of BNM's initiatives is the launch of the Climate Change and Principle-based Taxonomy (CCPT) in 2021. The CCPT aims to equip financial institutions with a framework for assessing and classifying economic activities based on their impact on climate change. The Five

Guiding Principles of CCPT include contributing to climate change mitigation, adapting to climate change's impacts, offering no significant harm (preserving the environment), aligning with international best practices, and continuously improving environmental performance. This helps them identify opportunities for financing sustainable projects and managing climate-related risks. Another initiative is the Financial Sector Blueprint 2022-2026, launched by BNM to serve as a roadmap for Malaysia's financial sector to become more sustainable, inclusive, and innovative. This Blueprint outlines the key focus areas for the financial sector in Malaysia for the next five years. It aims to promote market dynamism and contribute to sustainable development goals while maintaining its primary responsibilities for monetary and financial stability. One of the five strategic thrusts for the Blueprint is for the financial system to facilitate an orderly transition to a greener economy, looking to implement the mandatory element of disclosing ESG practices for a sustainable economy.

2.3.1 Bursa Malaysia Indices and ESG Indices

The Financial Times Share Exchange (FTSE) is a British financial organization that provides index offerings for the global financial markets. Bursa Malaysia and FTSE Group joined forces to launch the market data of Malaysian companies on 26 June 2006. The market data analyzed and supplied by the FTSE to Bursa Malaysia provides the public with comprehensive information on the companies' performances, which relies on the index series in the share market. Particularly, under each market (Main and ACE Market), several series of indexes covering all share sizes are subject to the fulfilment of free float, liquidity, and investability international standards, offering investors the tools for their investment strategies. The index series under the Main Market are FTSE Bursa Malaysia KLCI, FTSE Bursa Malaysia EMAS Index, FTSE Bursa Malaysia EMAS Industry Index and FTSE Bursa Malaysia Small Cap Index. In contrast, the index series for the ACE Market is the FTSE Bursa Malaysia ACE Index. Figure 2.2 summarizes the total FTSE Bursa Malaysia Indices as of 2022.

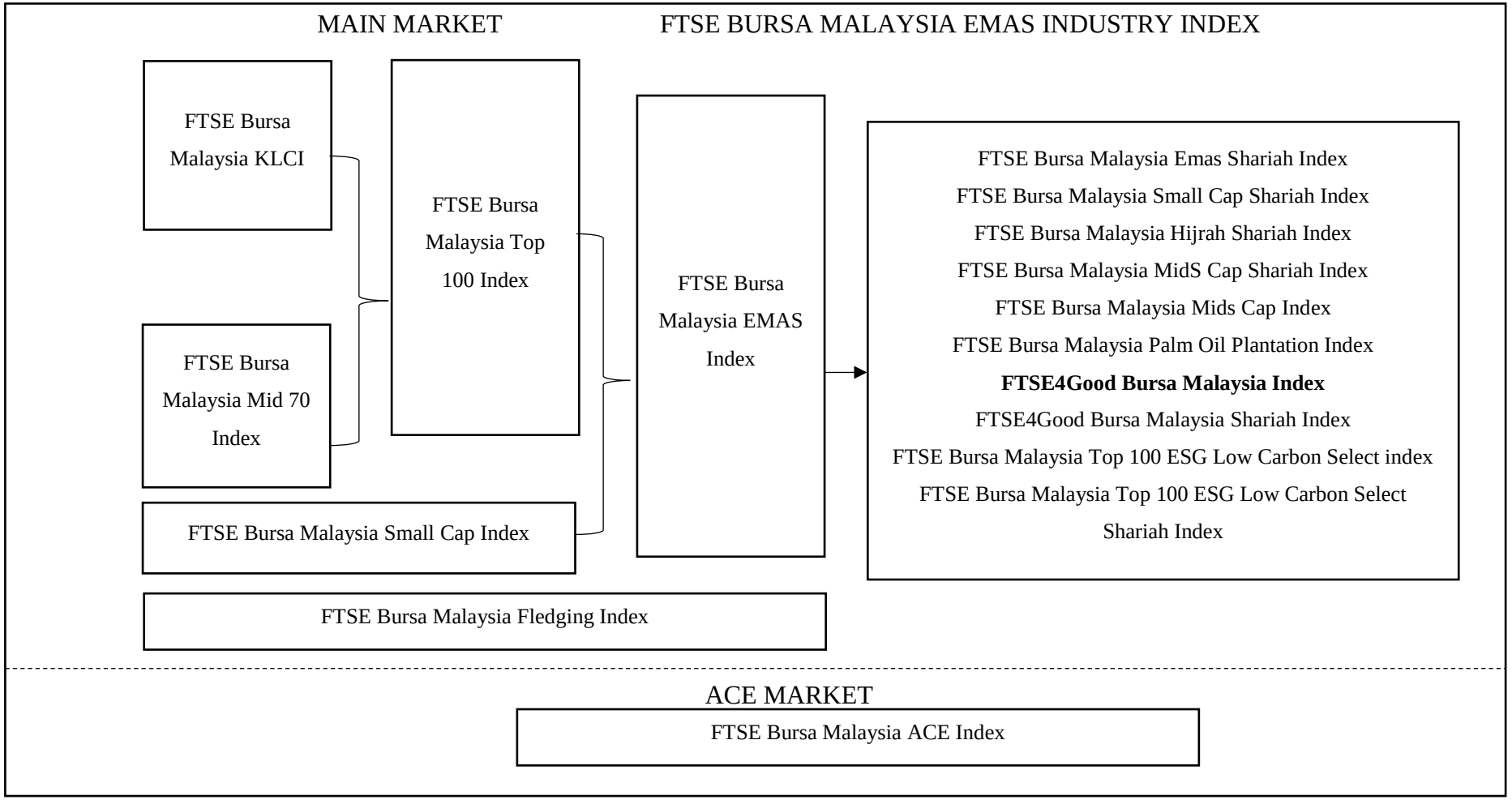


Figure 2.2 List of FTSE Bursa Malaysia Indices

The itemization of the FTSE Bursa Malaysia Emas Index is the FTSE Bursa Malaysia EMAS Industry index, comprising 10 industries[17]. The FTSE4Good Bursa Malaysia (F4GBM) Index is established to track ESG compliance companies, profiling companies with extensive ESG practices, promoting sustainable investment among investors and supporting the Twelfth Malaysia Plan in achieving carbon neutrality by 2050. Thus, this study's focus centralizes on the F4GBM Index.

Another initiative by Bursa Malaysia to steer companies' high performance is the Public Listed Companies Transformation Program (PLCTP), announced by the Minister of Finance in March 2022. The PLCTP aims to operate until 2025, targeting to facilitate the transformation and development of companies in Malaysia. Participated by 101 companies (as of July 2023), the PLCTP focuses on enhancing listed companies' competitiveness, governance, and sustainability. PLCTP aims to promote economic growth, improve corporate governance standards, and attract investments (Bursa Malaysia, 2023). Some of the key elements are corporate government enhancement, capacity building and training, regulatory reforms, market development, and investor relations. The PLCTP highlights the importance of becoming a more transparent organization, especially with ESG-related information disclosure. Perceiving ESG practices reporting as an important element to investors (Pulino et al., 2022), Bursa Malaysia's initiative in establishing PLCTP benefits companies participating in the program.

2.4 Overview of Initial Public Offerings

2.4.1 Initial Performance

As Fine et al. (2017) state, post-IPO performances relate to the share return trend after a company is listed for a certain duration in the share market. In this case, the initial performance of companies is known to be the investors' first trading day return (using closing or opening market price), which is either higher or lower than the offer price of the initial issuance (Yong, 2019). Empirical studies have established the initial performance anomalies, associating them with the underpricing puzzle contributing to

[17] FTSE Bursa Malaysia Emas Shariah, Small Cap Shariah, Hijrah Shariah, MidS Cap Shariah, Mids Cap, Palm Oil Plantation, FTSE4Good Bursa Malaysia, FTSE4Good Bursa Malaysia Shariah, Top 100 ESG Low Carbon Select, and Top 100 ESG Low Carbon Select Shariah Index.

an abnormal positive initial return (Ibbotson, 1975). Some studies describe initial performance differently, defining how long share return is measured (Hutagaol, 2005) or whether the higher initial return is due to a discounted offer price (Murugesu & Santhapparaj, 2009). Most studies agreed that initial performance anomalies are the percentage difference between the IPO's offer price and the first trading day share price (Mehmood et al., 2021).

Primarily revealed in the developed markets by Ibbotson (1975), the study was one of the first to find an average positive initial performance (11.4 percent) in the U.S. from 1960 to 1969. The study highlights that underpricing occurs due to setting the offering price below the expected market value. The study argues that setting the price arbitrarily high to secure profit is not suggested to promote subscriptions. Ibbotson et al. (1994) extended the examination of initial performance and reported an average of 15.3 percent in the U.S. from 1960 to 1992. Ritter (1998) reported an average of 15.8 percent in the U.S. from 1960 to 1996. Typically, the studies all relate to the pricing mechanism[18] that influences how underwriters and issuing companies decide to price the new issuance, affecting whether the issuance is underpriced. In the U.S., the book-building method is the well-known process in pricing an IPO (Ritter, 1998), in which underwriters often underprice IPOs to obtain favourable information from sophisticated investors to reveal their valuations on the issuance. Since underpricing can compensate sophisticated investors, partial adjustments to the offer price will later be made with a sound mind (Ritter, 1998).

Some studies in the U.S market, such as Dolvin and Jordan (2008), and Francis et al. (2010), reported within a similar range of positive initial performance from 2001 to 2004, at 10.99 percent, and from 1985 to 2000, at 10.05 percent. Although the studies employ different samples[19] and periods, both studies concluded that companies leave money on the table (through underpricing) for future advantages. The ongoing need for companies to raise funds is the reason why companies voluntarily underprice their

[18] Commonly, the two pricing mechanisms are the book-building mechanism and fixed price mechanism. The book building method is a process that allow issuers to discover demands during the offering period. Issuers proceeds with bidding collections from investors at various prices before concluding the final issuance price. The bid prices by investors must be within the price band specified by the issuers. Fixed price method is a more straightforward method that requires the offering price to be determined by the issuers pre-issuance (without knowing the demand rates) and investors will have to pay in advance to subscribe the IPOs. For further explanation, refer to Benveniste and Busaba (1997).

[19] Dolvin and Jordan (2008) employ the U.S. companies during the Internet Bubble period while Francis et al. (2010) employ foreign IPOs listed in the U.S. market.

initial offerings and secure investors' future interests. Thus, to subside the costs of letting go of higher initial capital, investors will pay higher at subsequent offerings, giving favourable prospects to the companies (Francis et al., 2010). Other studies in the U.S., reporting positive average initial performance, include Ozdemir and Upneja (2016) at 22.74 percent (1975 to 2011), Guo et al. (2017) at 12 percent (1997 to 2012), and Agoraki et al. (2022) at 13.24 percent (1998 to 2019). Overall, studies in the U.S. show that initial performance is integrated with companies' decisions to underprice shares to increase share subscriptions among investors.

Other than the U.S. market, the abnormal initial performance phenomenon also exists in other developed markets. For instance, in the U.K., positive average initial performance is reported by Burrowes and Jones (2004) at 16.85 percent (1995 to 1997), and Hoque (2014) at 20.1 percent (1999 to 2006); Australia by Dimovski (2011) at 3.5 percent (1996 to 2007), Nguyen et al. (2011) at 16.13 percent (1994 to 2004), and Haman et al. (2019) at 21 percent (2003 to 2008); Japan by Chiao et al. (2020) at 60.1 percent; and France by Chahine (2008) at 22.7 percent (1997 to 2000). The diversity of average initial performance in various markets is mainly due to different pricing mechanisms, company characteristics, and institutional dynamics. Nevertheless, information asymmetry is one of the significant causes of abnormal initial performance in any IPO market (Megaravalli, 2023).

The abnormal initial performance continues to be reported in the developing markets. Unlike the developed market, which has a positive average initial performance within the range of 5 percent to 20 percent, the developing markets report a higher range of average positive initial performance. The list of these countries is China with as high as 948.6 percent from 1987 to 1995 (Su & Fleisher, 1999), 153 percent from 2004 to 2018 (Wang & Wang, 2021), and 39.4 percent from 2007 to 2022 (Gu et al., 2025); India at 92.7 percent from 1990 to 2004 (Marisetty & Subrahmanyam, 2010); and Thailand at 18 percent from 2000 to 2012 (Vithessonthi, 2014) and 51.02 percent from 2003 to 2015 (Soongswang, 2017). Developing IPO markets have higher abnormal initial performance than developed markets because of political and bureaucratic interference (Jenkinson & Ljungqvist, 2001). A country like China has the most economic activities controlled and influenced by the government. Compared to private ownership, the state government, for example, has the largest stake in listed companies (Shari, 2018). This ownership disparity creates a different motivation for going public and influences the higher level of underpricing in the market, which promotes

abnormally high initial performance.

Accordingly, Mehmood et al. (2021) agree that institutional settings play a major role in determining the performance of an IPO during listings; for example, Malaysia is one of the share markets with a challenging structure reporting one of the highest initial performances in the developing markets. Some studies report a high positive initial performance, such as Jelic et al. (2001) at 99.24 percent from 1980 to 1995, Mohd-Rashid et al. (2014) at 29.44 percent from 2000 to 2012 and Albada et al. (2019) at 33.76 percent from 2000 to 2015. Rendering to Jenkinson & Ljungqvist (2001), the government intervention in practising redistributing the wealth among various ethnic groups by allocating a certain amount of the enlarged number of issued shares to Bumiputera investors needs to be compensated through the substantial allocation of underpriced shares to protect the interest of other ethnic group investors. Thus, abnormal initial performance is viewed as a challenging issue to remove in the Malaysian market. Given that the Malaysian market also practices a fixed price mechanism, lesser flexibility is given to issuing companies to reduce the underpricing level and abnormal initial performance (Tajuddin et al., 2015).

The abnormal initial performance continues to be ventured in the Malaysian market by Che-Yahya et al. (2023), reporting a negative initial performance rather than a positive initial performance at -1.5 percent from 2004 to 2020. The negative value indicates that investors are starting to lose money in their IPO investment instead of making a profit. This study highlights that the negative value of the initial performance may reduce prospective investors' interest in participating in the Malaysian IPO market, resulting in an illiquid share market. Could the level of investors' uncertainty in this market worsen due to a lack of information transparency? Is the heightened investors' uncertainty pushing the demand for IPOs to a minimum and affecting the initial performance of Malaysian IPOs? Thus, this study proposes that there are still areas for the initial performance to remain unknown and worth examining in Malaysian market.

Table 2.1

Summary of IPO Initial Performance in Various Countries

Countries	Study Period	Sample Size (companies)	Initial Returns (%)	Authors
Developed Markets				

U.S.	1960-1969	60	11.4	Ibbotson (1975)
U.S.	1960-1992	10,626	15.26	Ibbotson et al. (1994)
U.S.	1960-1996	13,308	15.8	Ritter (1998)
U.S.	2001-2004	390	10.99	Dolvin & Jordan (2008)
U.S.	1985-2000	413	10.1	Francis et al. (2010)
U.S.	1975-2011	1,822	22.74	Ozdemir & Upneja (2016)
U.S.	1997-2012	208	12	Guo et al. (2017)
U.S.	1998-2019	367	13.24	Agoraki et al. (2022)
U.K.	1995-1997	125	16.85	Burrowes & Jones (2004)
U.K.	1999-2006	2.664	20.1	Hoque (2014)
Australia	1994-2004	260	16.13	Nguyen et al. (2010)
Australia	1996-2007	30	3.5	Dimovski (2011)
Australia	2003-2008	572	21	Haman et al. (2019)
Japan	1997-2009	1,561	60.1	Chiao et al. (2020)
France	1997-2000	172	22.7	Chahine (2008)
Developing Markets				
China	1987-1995	308	948.6	Su & Fleisher (1999)
China	2004-2018	2,329	153	Wang & Wang (2021)
China	2007 2022	2,295	39.4	Gu et al. (2025)
India	1990-2004	2,713	92.7	(Marisetty & Subrahmanyam (2010)

Indonesia	1977-2000	265	39.9	Utamaningsih (2017)
Jordan	1999-2008	53	149	Marmar (2010)
Malaysia	1980-1995	182	99.24	Jelic et al. (2001)
Malaysia	2000-2012	384	29.44	Mohd-Rashid et al. (2014)
Malaysia	2000-2012	373	30.45	Tajuddin et al. (2015)
Malaysia	2000-2015	544	33.76	Albada et al. (2019)
Malaysia	2004-2020	271	-1.5	Che-Yahya et al. (2023)
Taiwan	1985-1995	196	7.46	Chen et al. (2002)
Thailand	2000-2012	187	18	Vithessonthi (2014)
Thailand	2003-2015	123	51.02	Soongswang (2017)

2.4.2 Long-term Performance

Long-term performance is the second IPO anomaly discussed vastly in past studies, but it is not as widespread as the initial performance (Perera & Kulendran, 2016). While the initial performance relates to how well an IPO performs in the immediate aftermarket (first-day post-IPO), the long-term performance determines the companies' performance after being publicly listed over the years. It is the performance of the companies measured from companies' share return over an extended period, which is usually examined within 1-year, 3-years, and 5-years post-IPO. Two types of long-term performance reported in past studies are the companies' underperformance and outperformance. Companies are underperformed (outperformed) if their subsequent share prices are lower (higher) than the first trading day prices, resulting in negative (positive) returns for investors (Perera & Kulendran, 2016).

Primarily introduced by Ritter in 1991, the long-term performance became of interest mainly to portray investment opportunities to investors even after 3-years of companies going public and the informational efficiency of an IPO market, considering the prospectus provides timely information for investors' guidance. Loughran and Ritter (1995) refer to the long-term performance anomaly as a new issue puzzle in an IPO and that there are significant differences between the performance of companies during

periods of high and low numbers of IPO listings. Companies' long-term performance is a contentious issue among past studies, as evidenced by the contradictory findings. Some studies reported that companies underperform marginally or have no abnormal performance in the long run, implying that the market is efficient because the results do not reject the market efficiency hypothesis (Gompers & Lerner, 2003; Ibbotson, 1975; Jenkinson & Ljungqvist, 2001). Others found that companies outperform or do not underperform in the long run (Bird & Yeung, 2012; Thomadakis et al., 2012). IPO companies' long-term performance reported in past studies varies depending on the measurements[20], markets (developed or developing markets), or even different countries within similar market categories.

For example, a study in the U.S. by Yip et al. (2009) examined the companies' 1-year performance from 1996 to 2000 and reported -17.37 percent of underperformance using the cumulative market-adjusted return (CAR) method. On the other hand, Gompers and Lerner (2003), which employs the buy-and-hold return (BHAR) method to examine companies' long-term performance from 1935 to 1972 (pre-Nasdaq market) report the underperformance 3-years of -16.7 percent and 5-years of -21.00 percent. The study also highlights that companies' underperformance starts to disappear using the CAAR method, reporting 2 percent and -0.5 percent, 3-year and 5-year post-IPO. Other studies in the U.S., such as Jog et al. (2019) and Fu et al. (2022), consistently report companies' long-term underperformance at -99 percent (3-years) from 2000 to 2012 and -27.55 (3-years) and -40.71 (5-years) from 1999 to 2021, post-IPO, respectively. This study discovers that although past literature reports companies' long-term outperformance in the U.S., most past studies proved that the long-term underperformance anomaly occurs in the U.S. since Ritter (1991). Does this anomaly also exist in other developed markets?

A similar pattern of companies' long-term underperformance post-IPO was revealed in the U.K. market at -16.4 percent (3-years) and -47.6 (5-years) from 1975 to 2004 by Gregory et al. (2010) and at -8.49 percent (3-years) from 1987 to 2007 by Ali (2017). While Gregory et al. (2010) highlight that their findings are generally associated with companies' sizes (i.e., smaller companies underperform greater than larger companies), Ali's (2017) finding is in line with Loughran and Ritter (1995) that

[20] Further discussions of the measurements is discussed in section 2.4.2.

companies listed during periods of higher listing of IPOs in the market underperform severely in the long-term. In contrast, Álvarez-Otero (2022) recently reported that most European countries'[21] companies outperform in the long-term post-IPO, with Hungary having the highest abnormal average return of 367.5 percent, 567.1 percent and 50.3 percent, 1-year, 3-years and 5-years post-IPO (1995 to 2013).

Past studies present a mixture of findings in the developing markets, regardless of countries. Cai et al. (2008) report that the companies listed from 1997 to 2001 highly underperform by -30 percent compared to the Shanghai Share Exchange A-Share index. Contradictory, Anderson et al. (2015) report that companies listed in a new China share market (ChiNext) from 2009 to 2011 outperform by 33.47 percent 3-years post-IPO. In India, Gupta et al. (2019) find long-term outperformance (positive performance) in the first-year post-IPO at 0.56 percent from 2009 to 2018. Similarly, Kamaludin and Zakaria (2018) also report companies' long-term outperformance at 9.5 percent from 2000 to 2017, 3-years post-IPO in the Saudi Arabia market. This study acknowledges that developing markets mainly reported the long-term performance as outperformance rather than underperformance.

In the Malaysia market, most studies also report companies' long-term outperformance. Nevertheless, the level of outperformance relies on the sample period. Paudyal et al. (1998) investigated the long-term performance of 95 privatisation companies listed on the Main Board between 1984 and 1995 and discovered outperformance in the market by 8.9 percent 3-years post-IPO. However, the 3-years companies' outperformance level reported by Paudyal et al. (1998) is lower than Jelic et al. (2001), at 21.9 percent between 1980 and 1995. Corhay (2002) and Ahmad-Zaluki et al. (2007) discovered that companies in the Malaysian market outperformed the KLCI index over 3-years post-IPO by combining the Main Board and Second Board IPOs, with cumulative abnormal returns of 41.7 percent and 32.6 percent, correspondingly.

A recent study using Malaysian IPOs showed companies' long-term underperformance post-IPO. Abdul Rahman and Che-Yahya (2019) reported -31.87 percent of underperformance 3-years post-IPO from 2000 to 2014. They forwarded a concern about companies facing failure while investors are unable to secure desirable returns in the long-term. The study also highlighted that although studies in Malaysia

[21] The list of countries are Denmark, Stonia, Finland, France, Germany, Hungary, Ireland, Italy, Latvia, Lithuania, Poland, Portugal, Romania, Slovakia, Spain, Sweden, and U.K.

previously reported long-term outperformance, the consistent drop in the companies' initial performance in the Malaysian market could be the reason behind lower recent underperformance post-IPO (i.e., -31.87 percent). This study aims to examine the association between companies' initial and long-term performance post-IPO. Relating to the recent finding of negative initial performance in the previous section (2.4.1), could there be an association between how companies perform in the early days of their listing and a few years after they are publicly listed?

Table 2.2

Summary of IPO Long-term Return in Various Countries

Countries	**Study Period**	**Sample Size**	**Long-Term Returns (%)**			**Authors**
			1-year	**3-years**	**5-years**	
Developed Markets						
U.S.	1975-1984	1,526	-10.23	-29.13	-	Ritter (1991)
U.S.	1970-1990	4,753	1.60	5.00	11.60	Loughran & Ritter (1995)
U.S.	1996-2000	1,77	-17.37	-	-	Yip et al. (2009)
U.S.	1935-1972	3,661	-	-16.7	-21.0	Gompers & Lerner (2003)
U.S.	2000-2012	276	-31.69	-72.92	-99.0	Jog et al. (2019)
U.S.	1980-2021	2,110	-	-27.55	-40.71	Fu et al. (2022)
U.K.	1975-2004	2,499	-3.4	-16.4	-47.6	Gregory et al. (2010)
U.K.	1987-2007	1,926	-8.49	-30.83	-	Ali (2017)
Australia	1994-1999	251	-	-4.6	-	Dimovski & Brooks (2004)
Australia	1995-2000	419	-	-25.3	-	Bayley et al. (2006)
Hungary	1995-2013	Country-level	367.5	567.1	50.3	Álvarez-Otero (2022)
Japan	1998-2001	433	-17.29	-18.29	-	Kirkulak (2008)
Developing Markets						
China	1997-2001	335	-1.13	-24.97	-	Cai et al. (2008)

China	2009-2011	281	-	33.47	-	Anderson et al. (2015)
India	2009-2018	232	0.56	-	-	Gupta et al. (2019)
Malaysia	1984-1995	95	-1.94	8.9	-	Paudyal et al. (1998)
Malaysia	1980-1995	182	8.97	24.8	-	Jelic et al. (2001)
Malaysia	1992-1996	258	-	41.7	-	Corhay (2002)
Malaysia	1990-2000	454	-	32.6	-	Ahmad-Zaluki et al. (2007)
Malaysia	2002-2005	93	5.44	0.43	-	Ahmad Zaluki & Kect (2012)
Malaysia	2000-2014	403	-	-31.87	-	Abdul Rahman & Che-Yahya (2019)
Saudi Arabia	2000-2017	42	12.84	9.5	-	Kamaludin & Zakaria (2018)

2.4.3 Survival of Companies

The survival of companies in long-term is the third IPO anomaly that has been observed in past studies. Some past studies indicate the similarity between long-term performance and survival examination (Certo et al., 2009; Megaravalli, 2023); however, as mentioned in Chapter 1: Introduction, the major difference between long-term performance and survival is the performance examination that is unambiguous for companies' survival, taking time-to-survive[22] into consideration. Several definitions are expressed in each study, relying on how studies segregate surviving companies and non-surviving companies. For instance, in the U.S., surviving companies are those performing significantly with the ability to satisfy the listing requirements consistently (Schultz, 1993; Suárez & Utterback, 1995). In other words, simply indicating a company as "continuously trading" or "active" as a guarantee to investors on the company's future survival likelihood is insufficient. The current share price of continuously traded companies should also be equal to or higher than their IPO offer

[22] Time-to-survive is the period between the companies' initial listing date and the last date of survival.

price or first-day market price for the companies to be classified as surviving (Hensler et al., 1997). A more direct definition by Ahmad et al. (2021) segregates surviving companies from those delisted (non-surviving companies).

Some past studies have a more specific definition. Alyasa-Gan and Che-Yahya (2022) define surviving companies as those that are ultimately performing. Specifically, companies that can fulfil the continuous listing requirements required by Bursa Malaysia, merged or acquired, can be stated as surviving companies and vice versa. Another study by Shari (2022) segregates surviving and non-surviving companies by identifying the five causes, adding two other specifications from the definition of Alyasa-Gan and Che-Yahya (2022) surviving companies. The other two are market transference (e.g., ACE market to Main Market) and specific delisting reasons for non-surviving companies, such as selective capital repayment or cancellation of trading. No doubt, the variety of survival definitions is specified and justified, tailoring to each study's designated market. Nonetheless, in general, companies' survival in the context of the IPO market is measured from the companies' time-to-survive (survival time), i.e., from the day of companies' listing until the occurrence of an event, expressed in months, years, or even days.

Although the examination of companies' survival time is evolving within the context of IPO, this study found limited studies descriptively reporting the average survival time of companies. Starting from the developed market, Hensler et al. (1997) report an average of 88.54 months survival time for companies listed in the U.S. market from 1976 to 1984. The study found a gap of 63.04 months between surviving companies, and 50 percent of companies are delisted due to negative reasons. Some studies in the U.K. market report the companies' survival time median instead of the mean, such as Espenlaub et al. (2012) and Ahmad and Jelic (2014). The studies report that it took 80 and 92 months for half of the companies from 1995 to 2004 and 1990 to 2006 to remain listed. Both studies have a somewhat similar sample (a more recent sample is in the later); thus, the 12 months difference reported between the two indicates an increment in companies' survival time in the U.K. Other studies in the developed markets include Bessler and Seim (2012) reporting companies' survival time with an average of 80.55 months (1996 to 2010) in Europe and Gémar et al. (2016) reporting an average companies' survival time of 3,099.44 days (1997 to 2009) in Spain market.

As far as the limited literature of this study is concerned, the evolution of companies' survival time examination is still scarce in developing markets.

Accordingly, this study found few studies recporting companies' survival time in developing markets. For example, a study by Neneh and Smit (2014) reports an average of 130.87 months survival time for companies aged below 5 years and 159.93 months above 5 years. The study suggests that, descriptively, older companies have a longer survival time than younger ones. A study by Baluja and Singh (2019) examining companies based on market conditions (hot or cold) reported an average of 108 months of companies' survival time from 1992 to 1996 in the Bombay market. Agreeing with Neneh and Smit (2014), Ahmad et al. (2021) examine an extended period of companies in the Malaysian market and report an average of 17.05 years (1990 to 2017), highlighting that Main market companies (bigger and matured companies) are prone to survive longer than ACE market companies do.

Regardless of past studies' pieces of evidence on companies' survival time, it is worth highlighting that the variability of companies' average survival time relies on how each study defines companies' survival to segregate the surviving and non-surviving companies. Hence, unless the definition is similar, comparisons between companies' average survival time are arguable across studies. This could be the main reason for limited studies reporting companies' survival time descriptively.

Table 2.3

Summary of Survival Time in Various Countries

Countries	Study Period	Sample Size (companies)	Survival Time	Authors
Developed Markets				
U.S.	1976-1984	741	88.54 months	Hensler et al. (1997)
U.K.	1995-2004	896	80 months	Espenlaub et al. (2012)
U.K.	1990-2006	580	92 months	Ahmad & Jelic (2014)
Europe	1996-2010	1,989	80.55 months	Bessler & Seim (2010)
Spain	1997-2009	1,033	3,099.44 days	Gémar et al. (2016)
Developing Markets				
India	1992-1996	3,125	108 months	Baluja & Singh (2019)
Johannesburg	1996-2007	310	159.93 months (old)	Neneh & Smit

			130.87 months (young)	(2014)
Malaysia	1990-2017	943	17.05 years	Ahmad et al. (2021)

2.5 Initial Performance: Theories and Empirical Evidence

2.5.1 Initial Performance in Developed and Developing Markets

The initial performance anomaly of an IPO is commonly described as the profits investors gain that are usually high on the first trading day of an IPO. A wide range of theoretical and empirical studies on various international markets has widely examined this IPO anomaly. This literature can be traced back to a study conducted by Reilly and Hatfield (1969), who found that investors in new issue shares in the U.S. experienced superior short-term returns compared to the seasoned equity market. Instead of recognizing the positive return as an event, the study uses the word "success new issues" because most IPOs provide investors with at least 10 percent positive returns. Later, Ibbotson (1975) revealed the issue of underpricing from substantial positive returns in the U.S. and discussed the three main groups involved in underpricing: the issuers, underwriters and investors. Since then, diverse sets of determinants connected to the three groups have been introduced as potential factors to the IPO initial performance anomaly.

In early 2000, Johnston and Madura (2002) studied the internet sector IPOs in the U.S., raising the substantial decrease in IPO issues from the internet sector. Examining the sample of 366 internet IPOs from 1996 to 2000, the study compared initial performance determinants between pre-demise and post-demise internet sectors. The study revealed that the underwriter reputation and market condition are insufficient to attract investors' subscription post-demise of the internet sector because of the higher risks that the investors will face in the future from subscribing to high-risk sector IPOs. Alternatively, variables such as the percentage difference between mid-file price[23] and offer price, total assets and how much IPO proceeds companies raise play major roles to subside the risks investors face in the future. The study highlights that companies designing credible business models from their future utilization of IPO proceeds should

[23] Price of an IPO during the bidding process. This is only applicable for share markets practicing book-building pricing mechanism like the U.S., whereby the offer price is only finalised after several phases of alteration.

help boost investors' confidence to subscribe the IPO. Thus, it results in higher initial performance even after the demise of the internet sector (Johnston & Madura, 2002).

Zheng et al. (2005) tested the ownership and control theory, suggesting that share retention by pre-IPO owners during the lockup period[24] reduces the 5,183 IPOs liquidity from 1976 to 1998. To maximize the pre-IPO owners' wealth for their exit strategy upon lockup expiration, the act of underpricing to provide investors with substantial positive initial performance can create information momentum and successively increase share demands higher over time. Consequently, pre-IPO owners can sell their shares at a higher price during lockup expiration (Zheng et al., 2005). The study highlights that underpricing enhances liquidity quite efficiently for IPOs with lockup; thus, pre-IPO owners use underpricing more frequently.

Focusing on companies' pre-IPO operating performance, Willenborg et al. (2015) examined 953 U.S. IPOs from 2001 to 2013. The study suggested that underwriters often underweight the importance of companies' pre-IPO operating performance to either set a higher or lower initial offer price. Strong-performing companies often set their IPOs with a low initial price range, while IPOs of poor-performing companies are set with a higher initial price range. In line with Zheng et al. (2005), the former is to generate momentum for strong-performing companies through underpricing. In contrast, the latter is to induce the interest of poor-performing companies to be publicly listed. The substantial positive initial performance results from their incentives from bargaining with underwriters for their initial valuation. Other studies in the U.S. examining the determinants of initial performance include the importance of companies' internationalisation to control underpricing levels for a more realistic return expectation (Ozdemir & Upneja, 2016) and the inverse relationship between voluntary disclosure of going concern[25] information and companies' initial performance as it withholds bad news for investors (Bochkay et al., 2018).

There are also studies in the developed markets focusing on companies' characteristics and certification power of venture capitalists as the factors to companies'

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[24] Lockup period is the duration that pre-IPO owners are forbidden to sell or disposing their existing shares following a listing. The duration relies on regulation stipulated in each designated market. For an example, Malaysian IPOs' owners are not allowed to sell their shares 12 months upon listing, and at least 45 percent must be retained for an additional of 36 months, post-IPO.

[25] The going concern (GC) uncertainties information can be disclosed by the board of directors or auditors (Bochkay et al., 2018). The voluntary disclosure of the GC information is to battle against information asymmetry.

initial performance in New Zealand and Canada, respectively (Bessler & Kurth, 2007; Guan-Yu & Si-Lu, 2011). As many determinants revolve around companies' characteristics and corporate governance, a study in Japan by Tsukioka et al. (2018) tests the financial behaviour theory on 654 Japan IPOs from 2001 to 2010 by examining investors' sentiment as the main companies' initial performance determinant. Considering the Japan market has internet share message boards for new listings, the study employs the number of messages posted on the message boards as a proxy for investor sentiment and reported that high investor sentiment leads to high initial performance. The optimistic investor sentiment preceding the IPO contributes to the high initial performance. These findings suggest that investors' excessive attention and bullishness lead to determining the offer price at the filing range's peak level and boosting the first-day trading price (Tsukioka et al., 2018).

In the developing markets, Vithessonthi (2014) examined 187 Thai IPOs from 2000 to 2012 by raising the issue of market conditions post-Asian Financial Crisis in 1997. The study argues that diminishing information asymmetry is crucial to instil confidence among foreign investors to participate in the share market. Specifically, the development of the share market post-crisis should be a major factor ensuring that companies gain favourable post-IPO initial performance. Because foreign investors are more likely to be judgmental about choosing a stable country for investment purposes, the level of financial development post-reformation may signal whether equity and bond markets are large enough to attract foreign investors. All else being equal, as asymmetric information level reduces after the share market reformation, foreign investors increase their participation in the IPO market, leading to an expectation of better companies' initial performance from a favourable shift in the demand curve for IPOs.

Examining the Pakistanist IPO market, Mehmood et al. (2021) also propose the relationship between country-level determinants and companies' initial performance. The study discovered that the trend of newly listed IPOs started to decline in 1999 due to political instability, social security issues and low industrial production, indicating a high degree of uncertainty in Pakistan's share market. Employing 84 Pakistan IPOs from 2000 to 2017, the study highlights the importance of improving country-level institutional quality in the share market, implying that high uncertainty will increase share returns to compensate investors for the higher risk. Institutional quality information can strongly affect investor sentiment in the IPO market. Considering that

investors are attracted to the highly effective and transparent share market with lower information asymmetry, the study found that effective institutional quality information increases companies' initial performance. Other studies in the developing markets also use information asymmetry theory to examine the relevant determinants in their share market. For instance, Boulton (2023) reveals the positive impact property rights have on companies' initial performance through the elimination of uncertainties in the share market in China by using a sample of 1,740 IPOs from 2008 to 2018. Meanwhile, Neupane and Poshakwale (2012) established that retail investors' participation positively influenced companies' initial performance in 306 India IPOs from 2001 to 2010 if they limited their participation in an IPO with the most well-informed institutional investors.

2.5.2 Initial Performance in the Malaysian Market

The IPO initial performance anomaly in Malaysia was introduced by Dawson (1987), reporting over 100 percent abnormal initial performance phenomenon among Malaysian IPOs during 1980s. While proceeding studies observed the abnormal initial performance in Malaysia without examining relevant factors resulting in the phenomenon (Yong, 1991; Yong & Zaidi, 2003), Abdul Rahim and Yong (2010) conducted a comparative analysis between 407 Shari'a and Non-Shari'a compliant companies from 1999 to 2007. The study raises a concern about Shari'a investment that grew around Islamic countries like Malaysia, urging the importance of examining whether Shari'a-compliant status would alter the IPO initial performance patterns. The results show that similar factors explain the initial performance of Shari'a and non-Shari'a-compliant companies' IPOs, but they have one factor in common. In particular, regardless of Shari'a classification, the initial performance of Malaysian IPOs is heavily influenced by the demand factor. Aside from demand, the study reveals that Shari'a IPO initial performance is more dependent on the size and type of offer, whereas non-Shari'a IPO initial performance is more dependent on risks.

Among others, one of the widely employed theoretical propositions used in the IPO context is the adverse selection and signalling theories rooted in information asymmetry (Mohd-Rashid et al., 2014). Using 384 Malaysian IPOs from 2000 to 2012, Mohd-Rashid et al. (2014) suggest examining companies' disclosures from their prospectuses. It is plausible to assume that the volume of information disclosed in the

prospectus can easily cloud investors' cognitive ability. In short, the study argues that investors should be selective in determining which information is relevant in influencing the IPO's value, which is the lock-up information disclosed in the prospectus. Consistent with the study's proposition, lock-up period can reduce uncertainty among investors, leading the issuing companies to have higher initial performance post-IPO. The study's findings are also consistent with Brav and Gompers (2003), who assert that insiders with higher moral hazard issues tend to lock in their shares for a more extended period. The uncertainty and moral hazard issues must be subsided with underpricing for the possibility of the existing shareholders leaving poor-quality companies so that new investors can bear the negative consequences of negative earnings post-IPO.

In parallel with the previous studies, several recent studies, Abdul Rahman and Che-Yahya (2019) (403 IPOs from 2000 to 2014), Ahmad-Zaluki and Badru (2021) (208 IPOs from 2005 to 2015) forward the need for information disclosure in companies' prospectuses, which should not be treated relevant only during pre-IPO. Instead, the studies suggest that the information on companies' IPO proceeds' utilization (i.e., growth opportunities and working capital) are important indicators that can signal investors on companies' post-IPO initial performance. Relating investors' abilities to make better investment decisions based on their personal goals, information disclosure on IPO proceeds for growth opportunities signals shareholders' maximization that can reduce conflict of interest between new shareholders and companies' management. Accordingly, it results in a positive companies' initial performance. Additionally, the information on IPO proceeds' utilization could be useful in communicating companies' quality by allocating the necessary allocation amount to each category of IPO proceeds' utilization (growth opportunities or working capital). Nevertheless, whether or not the companies utilize the raised IPO proceeds following the disclosure is a valid question that awaits to be addressed by future studies.

Similar to Tsukioka et al. (2018), a recent study in the Malaysian market by Che-Yahya et al. (2023) examined 430 IPOs from 2004 to 2020, tested the behavioural finance theory, i.e., the planned behaviour theory to explain their findings. Employing retail investors' sentiment pre-IPO using Google Search Volume Score (GSVS) as the focal point of the study, the study raised the issue of information asymmetry, which is usually more severe among retail investors than institutional investors. The severity in the issue leads retail investors to search for the most convenient indicators to refer as

signals to companies' valuation and investment strategies. The study found that companies that grasp the greatest attention among investors due to limited information available would cause higher information searches in online search engines such as Google and encourage investors participation (assuming investors have positive sentiment). Reflecting investors' intention to buy, higher GSVS shows the intensity of investors' possible participation in the searched share, leading to companies' positive post-IPO performance, at least on the first-trading day.

Table 2.4

Determinants of Initial Performance of Companies in Developed, Developing and Malaysian Markets

Countries	Study Period	Sample Size	Determinants	Authors
Developed Markets				
U.S.	1976-1998	5,183	**(+)** shareholders retention, underpricing, percentage change from the mid-file price to the offer price, reciprocal offer price, proportion of secondary shares among all shares offered, NASDAQ issued IPO, lockup period **(-)** offer size, venture capitalist	Zheng et al. (2005)
U.S.	1996-2000	366	**(+)** percentage change from the mid-file price to the offer price, total assets **(-)** IPO proceeds	Johnston & Madura (2002)
U.S.	1980-2009	1,822	**(+)** venture capitalist, IPO proceeds **(-)** internationalisation, auditor quality, company age	Ozdemir & Upneja (2016)
U.S.	2001-2013	953	**(+)** pre-IPO operating performance, shareholders retention, venture capitalist, price revision **(-)** technology sector	Willenborg et al. (2015)
U.S.	2001-2013	953	**(+)** uncertain and negative word in the prospectus, operating cash flow, industry return, shareholder retention, price revision **(-)** Going concern disclosure opinion by auditor, startup company	Bochkay et al. (2018)
Canada	2010-2017	73	**(+)** technology sector, restricted voting share **(-)** company age, earnings during	Killins (2019)

			fiscal year, partial secondary offering	
Germany	1997-2003	307	**(+)** company size, market to book value, venture capitalists, bank-financed company, venture capitalists as underwriter, venture capitalists as lead underwriter	Bessler & Kurth (2007)
Japan	2001-2010	654	**(+)** investor sentiment, bullishness index, market condition, venture capitalists **(-)** IPO proceeds	Tsukioka et al. (2018)
New Zealand	2000-2009	37	**(-)** company size	Guan-Yu & Si-Lu (2011)
Other Developing Markets				
China	2009-2010	135	**(+)** maximum bids, investor sentiment, market composite index, total sales **(-)** IPO proceeds	Funaoka & Nishimura (2018)
China	1998-2018	1,740	**(+)** time trend, litigation risks **(-)** intellectual property rights, gross regional product, offer size, venture capitalists, lockup period, book-built pricing method	Boulton (2023)
India	2001-2010	306	**(+)** market volatility, qualified institutional buyers demand **(-)** IPO proceeds	Neupane & Poshakwale (2012)
Pakistan	2000-2017	84	**(+)** political stability, government effectiveness, regulatory quality, oversubscription, pricing mechanism **(-)** rule of law, control of corruption, reciprocal offer price, final offer price, premium, crisis period	Mehmood et al. (2021)
Thailand	2000-2012	187	**(+)** share market development, market to book value **(-)** issuance size	Vithessonthi (2014)
Thailand	2005-2019	73	**(+)** underwriter reputation **(-)** income guarantee, share market volatility	Saengchote, & Charoenpanich (2020)
Malaysian Market				
Malaysia	1999-2007	407	**(+)** IPO demand **(-)** offer type	Abdul Rahim & Yong (2010)
Malaysia	2000-2012	384	**(+)** lockup period, market capitalisation, oversubscription,	Mohd-Rashid et al. (2014)

			reciprocal offer price, market condition **(-)** private placement, offer size	
Malaysia	2005-2015	220	**(+)** reciprocal offer price, company size **(-)** pre-IPO performance	Badru & Ahmad-Zaluki (2018)
Malaysia	2000-2015	420	**(+)** shareholders retention, oversubscription, market condition **(-)** big 5 auditors, board reputation, IPO supply	Albada et al. (2018)
Malaysia	2000-2014	403	**(+)** growth opportunities, demand, underwriter reputation, company size, market return **(-)** offer size	Abdul Rahman & Che-Yahya (2019)
Malaysia	2005-2015	208	**(+)** reciprocal offer price, pre-IPO total assets, working capital, growth opportunities. **(-)** z-score	Ahmad-Zaluki & Badru (2021)
Malaysia	2004-2020	430	**(+)** Pre-sentiment, offer size, market return, reciprocal offer price	Che-Yahya et al. (2023)

2.5.3 Measurement of Initial Performance

IPO Companies' initial performance is indicated as investors' initial return, which is the companies' first day of trading performance. The initial performance is measured using share returns. The idea of measuring initial performance is to identify the percentage change in prices between the share's offer price and the first trading/market day price. When calculating initial performance, the common question is whether studies should employ the opening or closing of first-day share price to represent the share's first trading day price accurately. Studies employ the opening price (offer-to-open) because the studies believe that the opening price will capture the "organic and raw" share price without any interference from aftermarket elements such as trading activities (Abdul Rahim & Yong, 2010; Albada et al., 2018; Johnston & Madura, 2002). Yong (2019) also highlighted that using the opening price instead of the closing price of the first trading day will allow studies to capture the actual initial performance of the companies before the buying and selling activities of the initial public offerings.

Other studies using share closing price (offer-to-close) find that it is a better

alternative to represent the first trading day price in the initial performance equation as it concludes the share's first day of trading. Regardless of the trading noises inclusion from investors' activities in employing closing price (Mohd-Rashid et al., 2014), the first trading day activities allow studies to capture companies' performance with the consideration of market reaction post-IPO (Ahmad-Zaluki & Badru, 2021; Tsukioka et al., 2018; Willenborg et al., 2015; Zheng et al., 2005). As an extension to the measurement, several studies also consider the importance of including market conditions or share exchange changes that may relate to companies' initial performance (Neupane & Poshakwale, 2012; Vithessonthi, 2014). The percentage change in price between the general market index (e.g., KLCI in Malaysia) on companies' offerings and the first trading day is calculated similarly to the companies' initial performance. Accordingly, the percentage difference between an IPO initial return and the market changes is computed to transform the companies' initial performance into a market-adjusted initial performance.

2.6 Long-term Performance: Theories and Empirical Evidence

2.6.1 Long-term Performance in Developed and Developing Markets

The IPO long-term performance anomaly is described as the price differences of shares bought from an IPO to an extended period after the date of issuance, which is normally for 1, 3, or 5-years post-IPO. In contrast to the initial performance anomaly, which is related to an abnormal positive return on the companies' first day of listing, the long-term performance of companies has been reported otherwise; that is, companies are found to be underperforming in the long-term post-IPO (Ritter, 1991). Initially observed in IPOs in the U.S. market, long-term underperformance is the second anomaly and another puzzling issue in IPO markets (Loughran and Ritter, 1995). However, the mixed findings of companies' long-term performance that either underperform or outperform is reported in the literature, suiting the uniqueness of each study's model to identify the factors influencing companies' long-term performance.

One of the first few studies in the developed market was conducted by Bhabra and Pettway (2003), who used 979 U.S. IPOs from 1987 to 1991. The study highlights the importance of information in companies' prospectuses. Despite the extensively accepted outlook that the information in the prospectus is useful in assessing the risk of

an offer, the study claims that little attention has been paid to the financial literature to understand the usefulness of the information on issuing companies' performance. Information that can act as ex-ante uncertainty is prioritized, namely, share prices, companies and issuing characteristics, deemed to give signalling information to investors of companies' long-term performances (Bhabra & Pettway, 2003). The study found underpricing, company size, issuance size and pre-IPO profitability to be significant factors in companies' long-term performance. Contrary to the ex-ante uncertainty hypothesis, the study concluded that underpriced shares offering positive initial return provides positive signals on companies' long-term performances.

Agreeing that companies' prospectus holds valuable information which can be a signal to companies' post-IPO performances, Aktas et al. (2014) emphasize that IPO proceeds allocated majorly to working capital indicates poor management of liquidity, which requires the companies to raise an enormous amount of funds to support companies' day-to-day activities, leading to companies' long-term underperformance (1-year period). Employing a sample of 15,541 U.S. IPOs from 1982 to 2011, Aktas et al. (2015) found that underutilized working capital results in poor 1-year performance due to inefficient cash flow management in the future. However, redeploying underutilized resources to higher-valued usages, such as for investment purposes, can overcome companies' long-term underperformances. Similarly, Ek and Guerin (2011) stated that companies have tremendous latitude in managing their working capital for better usage in the future.

Another study in the developed market is Abraham et al. (2016), who discussed how informed and uninformed trades generate lucrative returns through information distributed by issuing companies. The study explained that a positive long-term performance could be acquired by companies from the adoption of growth strategies in growing fields with intellectual property rights and contractual alliances. Examining 508 U.S. IPOs from 2009 to 2014, the study found that companies must prioritize their businesses in the growing fields with high risk. This risk results from the unpredictability surrounding the launch of new products. However, it does give the company the opportunity for an infinitely positive movement in share prices. The product acceptance and organizational alliance-building skills of top management, combined with patent protection, may help to mitigate some of this risk, which will offer higher returns in the future (Abraham et al., 2016). In other words, maximizing shareholder wealth may be achieved by relying solely on the subjective perception that

companies have increased cash flows in expanding industries with greater uncertainty, resulting in companies' positive long-term performance.

Although companies' long-term performance has received considerable attention in the developed market, this study contends that the anomaly also occurs in developing markets. Cai et al. (2008) study the long-term performance of China IPOs using 335 IPOs from 1997 to 2001, suggesting that overconfidence among investors is the main motive of companies manipulating their earnings. Since a high initial return is a gauge of overconfidence, it should be negatively correlated with long-term success. In China, the underpricing has been very high, perhaps to promote ownership reform (Cai et al., 2008). High earnings per share before listing may be an indication of pre-IPO earnings manipulation, either directly through the reporting of discretionary accounting accruals or indirectly through government support. The study states that it is not surprising that earnings before listing have a negative relationship with companies' long-term performance, considering the use of earnings multiple to price IPOs.

Besides imitating the study in the U.S. (Ritter 1991) to comprehend the underpricing phenomenon in China, Wang and Wang (2021) explore the price limit policy implemented in 2014, which is deemed to affect the pricing strategy of IPOs. Theoretically, the study claims that the price limit system permits a cool down for investors' optimism and analyzes relevant information, suppressing new share speculation. However, Wang and Wang (2021) found up to 44% increment in most share prices in China IPOs on the first trading day after the policy is implemented. The study questions, "How about the companies' long-term performance after implementing this policy?" Using a sample of 2,329 China IPOs from 2004 to 2018, the study found that companies' long-term performance is better post-price limit policy implementation. Different performances were reported for different markets, with smaller companies (small and medium enterprises) benefitting the most from the policy. Policymakers were also urged to carefully evaluate the implementation's effects as it may affect the market. In contrast, Rodoni et al. (2018) studied 59 Indonesian IPOs from 2010 to 2014 to relate the underpricing phenomenon with the impresario hypothesis, which discussed that underwriters underprice shares to leave an impression of shares' oversubscription. Thus, investors that did not succeed in securing IPO share allocation will be willing to buy the shares at a higher price in the next issuance, leading to companies' better performance in the first-year post-IPO.

2.6.2 Long-term Performance in the Malaysian Market

One of the first few studies in the Malaysian market is by Corhay et al. (2002), extending Wong and Uddin (2000) by contributing to examine companies' long-term performance determinants. Specifically, the study is conducted to understand the abnormal positive return (44 percent) 3-years post-IPO. Employing 258 Malaysian IPOs from 1992 to 1996, the study only found issuance size to be significant and negatively related to companies' long-term performance. The study agreed with Leong et al. (1999) that smaller companies issuing quantitatively lower shares would have better long-term performance post-IPO. A study by Tong and Ahmad (2015) suggests that investors rely more on quantifiable information, such as investment banks' reputations. To increase an investor's chance of choosing a successful IPO, the study suggests explicitly using Investment Banks' (IBs) reputations as signals to predict companies' future success. Signals are hidden messages that issuers send through their actions during the offering process and are anticipated to impact the future values of the IPOs. Examining 350 Malaysian IPOs from 2002 to 2008, the study's findings match the theoretical predictions with empirical data that investment banks' reputations can inform investors about companies' quality and 1-year, 3-years and 5-years performances post-IPO.

Zarafat and Vejzaqic (2014), using 166 IPOs from 2004 to 2007, found several pre-IPO information valuable indicators of companies' performance 3-years, post-IPO. The information included were companies' pricing, total assets, book-to-market value and the market condition during the companies' listing. Recently, Abdul Rahman and Che-Yahya (2019) forwarded the importance of companies having favourable growth prospects to improve investors' participation and long-term performance post-IPO. Using the signalling hypothesis and a sample of 403 IPOs employed from 2000 to 2014, the study revealed that information on the companies' use of proceeds for growth and investment activities transmits an excellent signal to prospective investors, offering favourable long-term performance post-IPO.

Table 2.5

Determinants of Long-Term Performance of Companies in Developed, Developing and Malaysian Markets

Countries	Study Period	Sample Size	Determinants	Authors
Developed Markets				
Hong Kong	1993-1997	256	(-) initial returns, IPO demands	Agarwal et al. (2008)
U.K.	1987-2007	2,925	(-) hot issue	Ali (2017)
U.S.	1987-1991	979	(+) underpricing (-) company size, offer size, profitability	Bhabra & Pettway (2003)
U.S.	1993-2000	3,087	(+) block selling, venture capital (-) IPO proceeds	Pukthuanthong-Le & Varaiya (2007)
U.S.	1982-2011	15,541	(+) R&D, risk, cash flow (-) net working capital, company size, leverage, age, financial distress	Aktas et al. (2015)
U.S.	2009-2014	508	(+) growth or risk aversion, return on equity, changes in cash flow to total assets turnover (-) offer volume (volatility), profit margin, cash flow	Abraham et al. (2016)
Other Developing Markets				
China	1997-2001	335	(+) state government ownership, odds of success in lottery, earnings growth, dummy issuance of B-share, dummy years (-) offer size, initial return, earnings per share, underwriter, and referee	Cai et al. (2008)
China	2004-2018	2,329	(+) market return, price limit (-) market value, underpricing	Wang & Wang (2021)
India	2009-2018	232	(+) anchor investor (-) issuance size	Gupta et al. (2019)
Indonesia	2010-2014	59	(+) age, auditor reputation, company size, industry type, market condition (hot/cold), return on asset, underpricing, underwriter reputation,	Rodoni et al. (2018)
Malaysian Market				

Malaysia	1992-1996	258	(-) issuance size	Corhay et al. (2002)
Malaysia	2004-2007	166	(+) book to market value, company size, initial return (-) market volatility	Zarafat & Vejzagic (2014)
Malaysia	2002-2008	350	(+) investment bank reputation	Tong & Ahmad (2015)
Malaysia	2000-2014	403	(+) growth opportunity, market return	Abdul Rahman & Che-Yahya (2019)

2.6.3 Measurement of Long-term Performance

The measurement of companies' long-term performance is consistent with the initial performance, including calculating share returns for a specified period. As mentioned in Section 2.3.2, companies' long-term return is calculated within 1-year, 3-years, 5-years post-IPO. The traditional way of calculating companies' long-term performance is somewhat similar to initial performance, replacing the offer price with the first trading share price and replacing the first trading day price with the share price during a specified period; 1-year, 3-years, or 5-years post-IPO. In specific, a straightforward way to measure the long-term return is using the raw return of shares by calculating the percentage change in price from the closing price of the first trading day to the closing price of the extended specified period, measured in days (Yong et al., 2011), months (Abdullah et al., 2019; Ali, 2017) or years (Bhabra & Pettway, 2003).

Besides using the raw return, two standard methodologies known as the calendar-time (CT) approach and event-time (ET) approach have also been introduced to measure companies' long-term share returns. CT approach is referred to the mean abnormal time series returns to monthly portfolios of companies (Dutta, 2015). This method is utilized for studies conducting risk-adjusted companies' performance analysis and best suit for studies with the capital asset pricing model or the Fama-French three-factor model[26]. The unique side of CT approach is its function to observe long-term share returns for cross-sectional dependent models robustly. The issue of cross-

[26] Fama-French three factor model is a model with three factors which are the size of companies, book-to-market values and market excess return.

sectional dependence among the share returns can be resolved by combining the returns of entire companies into a single portfolio (based on periodic frequency, regardless of differences in sample characteristics) (Hoechle et al., 2011). Nevertheless, several criticisms are pointed out by past studies regarding the CT approach, which include the limitation of a single analysis, that is, binary sample characteristic, and it is not direct to assess the statistical results of a portfolio sort analysis, comprehensively (Abraham et al., 2016). As a result, statistical inference is frequently based on comparing the top and bottom sub-groups for simplicity.

On the other hand, the ET approach is an event study examining share return behaviour for companies experiencing similar cycles of events (e.g., share splits) (Ahmad-Zaluki et al., 2007). The event may occur at various periods throughout the calendar date or in clusters on a specific date (such as policy implementation affecting a subset of the sample). Two methods used to measure long-term share returns under the ET approach are the cumulative abnormal return (CAAR) and the buy-and-hold return (BHAR). As the name goes, the CAAR method is the accumulation of share returns since the first trading day of companies. This method treats the first trading day return index as a purchase price. It also involves rebalancing monthly cumulative mean share returns to produce equally weighted share returns each month (Ritter, 1991). On the other hand, the BHAR method measures the companies' long-term returns using monthly raw returns, relying on an event analysis. Instead of producing an arithmetic mean, this method is a geometric compounded share return, beginning with the listing month to the end of 1-year, 3-years, or 5-years window, or if an event occurs (companies delist) (Loughran & Ritter, 1995). While both methods suit best according to the appropriate model specified in studies, the BHAR method is highly preferred over the CAAR method due to the method's ability to capture the compounding effect of long-term share returns to better reflect actual investors' experience (Moshirian et al., 2010).

Several other methods to measure long-term share return but have scarcely been used are the value-weighted abnormal return (VW) (Dong, Michel, & Pandes, 2011; Suherman & Buchdadi, 2011) and the wealth relative abnormal return (WR) (Babu & Dsouza, 2021; Kumar & Sahoo, 2021). The VW measurement involves evaluating the performance of a portfolio of shares by giving more weight to larger market capitalisation (value) shares when calculating metrics like abnormal returns with period rebalancing. However, it is argued to be relatively biased as larger companies may have a greater influence on the overall performance in a VW approach with less precision in

measuring investor experience (Lyon et al., 1999). On the other hand, the WR abnormal return involves comparing an investment's cumulative returns to an expected or benchmark return while considering changes in the overall wealth or value of the investment. The calculation of WR involves determining the ratio of holding period returns achieved on a portfolio consisting of companies with identical weights to the holding period returns obtained from the share market index. A WR value beyond 1 implies superior performance compared to the benchmark, whereas a value below 1 signifies a lower level of performance.

2.7 Survival: Theories and Empirical Evidence

2.7.1 Survival in Developed and Developing Markets

While long-term performance is an examination of companies' share returns post-IPO, companies' survival is the observation of companies' listing status (to survive or otherwise) in the long-term post-IPO. One of the earliest studies examining companies' survival is in the U.S. by Schultz (1993). The study examines and compares the survival of companies issuing share and unit IPOs. Employing 797 unit and share IPOs from 1986 to 1988, Schultz (1993) found that companies issuing unit IPOs with warrants that are under-exercised (expired) by investors negatively affect companies' cash flow post-IPO. While cash flow is essential for companies to retain positive momentum in the long-term, the under-exercised warrants shrunk companies' ability to acquire enough funds to survive in the long-run. Similarly, companies with a positive initial return will also signal lower cash flow volatility for sustainable survival in the future. Hensler et al. (1997) contribute to the survival literature by being one of the first studies to employ a survival analysis model[27] to predict companies' survival post-IPO. Using 838 issuance and companies' characteristics listed from 1975 to 1984, the study reports age, initial return, IPO activity level, size and shareholder retention to be significant determinants that extend companies' survival post-IPO. In line with Schultz (1993) arguments, larger and more established companies are best for investors to invest in because of the high-quality issuance related to the companies' salient traits.

While several other studies in early 2000 dominated the U.S. market and

[27] The study employed the Accelerated Failure Time (AFT) model.

examined the ability of company and issuance characteristics to predict companies' survival, such as pre-IPO performance, reputations of venture capitalists and underwriters, insider ownership, and risk factors (e.g., leverage) (Jain & Kini, 2000; Kooli & Meknassi, 2007; Peristiani & Hong, 2004), studies in the U.S. recently shifted their focus to information that is beyond companies' internal management. For instance, Amini et al. (2022) highlight the importance of non-financial information, such as employee welfare and social capital, to reflect companies' sustainable survival. Employing 1,144 U.S. IPOs from 2000 to 2016, the study found employee welfare and social capital to increase the probability of survival by 38 percent and 78 percent, respectively. Rather than tangible and non-tangible assets that companies can liquidate once futile, the study contends that employees are a company's key assets and should be well taken care of to increase employee efficiency (or lower agency cost) for long-term company success. Similar to Huang and Shang (2019), the study also highlights that social capital plays a major role in ensuring the success and survival of companies post-IPO because managers who are society-centred are less likely to make self-interest decisions, ensuring that critical corporate activities will enhance the companies' value and survival in the long-term. Collectively testing environmental, social and governance elements in a study, Fu et al. (2022) agree that non-financial information disclosure is value-relevant information that investors should find valuable to predict companies' long-term sustainability post-IPO. Using samples of 1,102 U.S. IPOs from 1999 to 2016, the study also found that the social and governance elements are the primary drivers of companies' survival post-IPO.

In the U.K, Ahmad and Jelic (2014) examined the relationship between voluntary lockup[28] agreements made by owners and companies' long-term survival post-IPO. Employing 580 U.K. IPOs from 1990 to 2006, the study revealed that the voluntary lockup by the companies' initial owners sends a positive signal to investors on the owners' commitments after the companies' listing, reducing agency costs among them. The longer lockup period committed by owners implies confidence in the companies' prospects, resulting in longer companies' survival post-IPO. A European study by Derouiche et al. (2018) revisit companies' survival by studying factors related to corporate governance characteristics in companies with concentrated control.

[28] Lockup is a regulation enforced on initial company owners to prohibit them from selling their shares for a specified period and portion, instantly post-IPO (Securities Commission Malaysia, 2021).

Specifically, the study examined the effect of the separation between control rights and cash flow of highly controlling owners for French IPOs' survival. Investigating 434 IPOs from 1997 to 2006, the study found a significant and positive influence of shareholders' excessive controls on companies' probability of survival. The study clarified that controlling shareholders who seek to preserve their personal benefits will try hard to invest in low-risk and conservative projects that can enhance the companies' value and survival.

The issue of companies' survival is also discussed in developing markets. A study by Neneh and Smit (2014) examined the determinants of companies' survival in the Johannesburg market to help guide investors for better risk assessment in their investment strategies. Using 310 African IPOs from 1996 to 2007, the study found that companies' characteristics (i.e., age, size, post-IPO financial performance) and market period could positively predict companies' probability of survival. In agreement with several other studies, older and larger companies can reduce the risk of companies being delisted from the market due to higher capital funds (Baluja, 2018; Espenlaub et al., 2012; Liu & Li, 2014).

Zhang et al. (2018) studied the China market, which is heavily centralised with innovation and hi-tech companies. Based on the study, high-tech companies in China can survive by introducing new products and having those products accepted widely by consumers. Resorting to 14,065 Chinese IPOs from 2007 to 2013, the study argues that high sunk costs and innovation outputs that may increase investor uncertainty are two probable signals that high-tech companies send out when introducing new products. However, the study found that if the market accepts the introduction of the innovation output, this may help increase the companies' likelihood of survival.

2.7.2 Survival in the Malaysian Market

The issue of companies' survival post-IPO has been recently examined in the Malaysian market. A study by Shari (2019) is the first to observe Malaysian IPOs' survival, reporting that Malaysian companies have better survivability than those in developed markets. However, the study did not test any factors or causes of companies' higher or lower survival than other markets. Proceeding with the issue of companies' survival post-IPO, Ahmad et al. (2021) put Malaysian IPOs to the empirical test with the argument that ex-ante strategic information from companies' prospectuses can serve

as signals of companies' sustainable survival. The study posits that over-optimism among investors allows companies to set higher price premiums and acquire higher listed capital during their listing to guarantee their future success. Investigating 943 Malaysian IPOs from 1990 to 2017, the study found high price premiums and high listed capital indicate that the companies' sustainable growth and extended survival are the primary goals for proceeds' utilization. Meanwhile, larger businesses also have a higher failure risk because managing their significant resources and operational activities is more difficult. The risk of having too many subsidiaries with a lower capability to sustain compared to the parent company also increases the likelihood of failure among the IPO companies.

In contrast to Shari (2019), a study by Alyasa-Gan and Che-Yahya (2022) reported that companies' survival in Malaysia is concerning, with companies in the Main market delisted consistently over the years. The study reported that 90 percent of the companies from 2000 to 2014 failed to comply with the listing requirements and/or have poor financial and operating performance. The study urged the importance of examining the causes that might be the source of such issue, because publicly listed companies that are unable to survive will discourage investors from participating in the market. Examining 423 Malaysian IPOs from 2000 to 2014, the study proposed that the information disclosure pertaining to companies' allocation of the raised IPO proceeds can be signalling information to investors on companies' survival post-IPO. The study found that IPO proceeds primarily for growth opportunities and debt repayment can shorten companies' survival. However, a longer time frame to repay the debts can elongate companies' survival from the optimal level of cash holdings, reducing the companies' financial risk over the long-term to promote longer survival post-IPO (Alyasa-Gan & Che-Yahya, 2022).

A recent study by Shari (2022) emphasizes policymakers' considerable attention to companies' survival, which developed specific frameworks (e.g., Practice Note 17) to help sustain companies in the market. Given that the frameworks are to restructure companies' poor financial condition and operating performance, the study finds the urgency to understand the factors affecting companies' inability to survive in the aftermarket. Employing 385 Malaysian IPOs from 2002 to 2013, Shari (2022) found companies' characteristics such as companies with a larger size, higher insider ownership and ACE market participants (smaller market capitalisation companies) to have shorter survival post-IPO. The results of the companies' size and ACE market

participants seem interesting. While smaller-sized companies are found to have longer survival, companies in the ACE market (small market capitalisation companies) are found to have shorter survival. Feasibly, the listing markets also attract investors' subscriptions for companies listed in the Malaysian market to guarantee their long-term survival post-IPO.

Another study by Alyasa-Gan et al. (2023) extended the investigation on information on IPO proceeds, particularly the time frame of utilizing the IPO proceeds to growth opportunities, debt repayment and working capital as potential factors to companies' survival. The study found that companies with an extended period of repaying their debts would survive longer as they reap advantages by effectively utilising surplus funds. This increases the companies' ability to generate value and ensure long-term survivability after the IPO (Alyasa-Gan et al., 2023). The study suggests that the time frame of IPO proceeds utilization is a signalling tool that can reduce agency costs by aligning shareholders' and managers' interests.

Table 2.6

Determinants of Survival of Companies in Developed, Developing and Malaysian Markets

Countries	Study Period	Sample Size	Determinants	Authors
Developed Markets				
U.S.	1975-1984	741	**(+):** company age, company size, initial return, IPO activity, insider ownership, market level, sector (optical, drugs) (-): risk factors, sector (data and computer), wholesalers, restaurant, airlines)	Hensler et al. (1997)
U.S.	1986-1988	797	**(+)** initial return	Schultz (1993)
U.S.	1977-1990	877	**(+):** venture capitalist (R&D, research coverage, underwriter reputation, roadshow)	Jain & Kini (2000)
U.S.	1980-2000	8,918	**(+):** pre-IPO financial performance, company age, insider ownership	Perisitani & Hong (2004)
U.S.	1985-2005	6,235	**(+):** company size, pre-IPO demand, underwriter reputation, venture capitalists **(-):** underpricing, IPO activity	Kooli & Meknassi (2007)

U.S.	2000-2016	1,144	**(+)** employee welfare, social capital, market value, profitability, capital expenditure, shareholders retention (-) market to book value, market liquidity	Amini et al. (2022)
U.S.	1980-2021	1,102	**(+)** ESG performance, early ESG disclosure, initial return, R&D, offer price **(-)** venture capitalists	Fu et al. (2022)
French	1997-2006	434	**(+)** shareholders excess control, company age **(-)** risk factors, underpricing	Derouiche et al. (2018)
U.K.	1995-2004	896	(+): NOMAD reputation, company age, company size, sales, insider ownership (-): Hot issues return	Espenlaub et al. (2012)
U.K.	1990-2006	580	**(+):** lockup period, company age, company size, insider ownership, sector (resources) (-): Hot issues return, venture capitalists	Ahmad & Jelic (2014)
Other Developing Markets				
China	1998-2008	1,499	(+): Pre-IPO performance (operating and return on asset, profitability, liquidity, market to book ratio), company age, state ownership, sector (high-tech and utilities) (-): initial return	Liu & Li (2014)
China	2007-2013	14,065	(+): import and export innovation (patent, innovation efficacy)	Zhang et al. (2018)
India	1992-2011	3,374	(+): company age, company size, underwriter reputation, IPO demand (-): risk, list delay, initial return, market level, IPO activity level	Baluja (2018)
Malaysian Market				
Malaysia	2000-2013	385	(-) size of company, shareholders retention, ACE market participants	Shari (2022)
Malaysia	2000-2014	423	**(+)** initial return **(-)** growth opportunities, debt repayment, quality, shareholders retention, market sentiment	Alyasa-Gan & Che-Yahya (2022)
Malaysia	1990-2017	943	(+): share premium (Main), company age, listed capital	Ahmad et al. (2021)

	(-): share premium (ACE), company size, leverage, risk factors

2.7.3 Measurement of Survival

In order to estimate companies' survival, the beginning and ending points of survival time must be determined (Bradburn et al., 2003; Goel et al., 2010). Studies need to determine a gap called the "observation period" from companies' listing date to a certain period, usually for five to seven years post-IPO. Before Hensler et al. (1997), companies' survival had been observed vastly using the traditional logit method. The method measures companies' survival using binary variables (1 or 0). The number "1" is for companies that survive and "0" otherwise (Wyatt, 2014). This method indicates whether companies survive or not survive without providing information on the companies' length of survival. Accordingly, past studies proposed an alternative to examining companies' survival that can bring more meaningful insights (In & Lee, 2018), including the length of companies' survival, known as the survival analysis method (Cleves et al., 2016).

The survival analysis method simultaneously measures companies' survival using the binary variable and the time-to-survive. Unlike the logit method, which only includes dummy variables, survival analysis methods consider the period (e.g., months or years) that companies survive from the beginning to the end of the observation period in the survival model. The time-to-survive analysis is an examination of both censored (survive) and uncensored (failure) data over a specified observation period (Kaplan & Meier, 1958), censored being companies that survive until the end of the observation period and uncensored being the truncated time-to-survive due to an occurrence of an event (e.g., delisted companies).

Two methods in survival analysis that are commonly employed, the Cox Proportional Hazard (COX) and Accelerated Failure Time (AFT) analysis (Cleves et al., 2016). The COX analysis is the semi-parametric model that offers the predictive power of independent variables on the probability of company failure by measuring the hazard rate (assumed to be constant over time) without inferring any assumptions about the survival underlying distribution and explicitly estimating companies' survival time (Serio et al., 2020). Unlike the COX analysis, the AFT analysis is the parametric model that exhibits the relationship between independent variables and companies' survival

period (Espenlaub et al., 2012). The independent variables' exponential coefficient is expressed as accelerating or decelerating companies' survival time in which the value of "1" or more indicates the independent variable to elongate companies' survival time. Overall, the AFT analysis best suits a study focusing on factors affecting companies' survival time rather than the probability of survival (such as the COX analysis).

2.8 Overview of ESG

ESG stands for environmental, social, and governance, and it represents a framework used to evaluate companies' performance and impact in the three key areas (Gillan et al., 2021). ESG elements increasingly influence investors and other stakeholders to evaluate a company's impact on society, the environment, and its governance practices. Companies that actively address ESG issues are likely to be more sustainable, attractive to investors, and better positioned for success in the evolving business landscape. The environmental element focuses on companies' involvement in the natural environment activities, including carbon emissions, energy efficiency, waste management, water usage, eco-tourism and ecological conservation initiatives. Companies are expected to measure, disclose the environmental footprint, and take steps to minimize their business activities' negative impacts on the environment (Gillan et al., 2021). The social element emphasises companies' relationships with employees, customers, suppliers, and the communities they serve. The key social elements include labour practices, diversity and inclusion, human rights, product safety, and community engagement. The governance element focuses on the internal structures and processes guiding companies' decision-making, including board composition, executive compensation, shareholders' rights, and transparency. Strong corporate governance is essential for attracting investment, fostering a company's long-term success and sustainability and aligning with the interests of various stakeholders such as the investors, employees and board of directors (Wong et al., 2022).

According to Deloitte (2023), investors increasingly use a company's ESG practices to make investment decisions. Companies' capital funds that incorporate ESG elements are often known as socially responsible or sustainable funds, recognizing the interconnectedness between companies' long-term sustainability, environmental impact, social responsibility, and governance. Since ESG practices are gaining high prominence in the capital market, companies are encouraged to incorporate ESG in their

business activities and report their involvement for high information transparency, especially to investors. Companies' initiatives in reporting ESG practices may reduce companies' cost of capital and offer higher value creation in the long-term (Mohammad & Wasiuzzaman, 2021). Meanwhile, companies that adhere to ESG practice requirements exhibit stronger governance and demonstrate a greater commitment to environmentally sustainable developments, lower earnings volatility, and access to more cost-effective funds (Kumar, 2020).

2.9 ESG, Post-IPO Performances and Survival of Companies

Recently, there is an increasing number of shareholders expressed their interests in the ESG practices. The interest goes consistent with the United Nation's initiatives to highlight the needs of rating companies based on non-financial information. Specifically, disclosing non-financial information, particularly those associated with companies' ESG practices, provides transparency to prospective investors (Ferri et al., 2023). Indeed, any information disclosed by companies can be utilized to convince prospective investors of the companies' initiatives to follow social and community norms. Raising capital will always be the core priority for companies that want to be listed on a share market. Since ESG practices may offer sustainable business models, past studies agree that reporting ESG practices as early as in companies' prospectuses can positively affect their performance post-IPO (Baker et al., 2021; Gavrilakis & Floros, 2023; Li et al., 2022). Paradoxically, a limited number of companies are observed to practise ESG activities despite the policymakers' emphasis on the benefits of practising ESG elements (Sadiq et al., 2020).

Centralising the discussion around information asymmetry and alleviating uncertainty to provide valuable investment returns to prospective investors, Baker et al. (2021) employed 7,446 companies listed in 36 countries[29] from 2008 to 2018 and postulate that ESG practices contain value-relevant information for companies when going public. In line with El Ghoul et al. (2011) and Lopez-de-Silanes et al. (2019), high-quality companies with high-quality ESG practices reporting offer lower information asymmetry that can reflect the companies' accurate valuation and reduce underpricing. This attracts prospective investors to include the companies in their

[29] Malaysia being one of the countries.

portfolio (Baker et al., 2021), promoting positive companies' initial performance post-IPO. Nevertheless, the ESG practices information disclosed by companies conforms to the ESG norms of each listing country.

Similarly, Harasheh (2022), focusing on 125 Small and Medium Enterprises (SMEs) sample in the Italian market from 2009 to 2017, agreed that the information asymmetry theory applies necessarily in the IPO market, which higher information transparency should enhance investment decisions and reduces underpricing. Uniquely, the study examined the companies' performances for as long as 3-years pre-IPO to determine the improvements the companies can achieve as a quality signal that can minimize underpricing. The study found that underpricing is negatively related to ESG practices, indicating an improved informational environment that can help investors value the shares more accurately (Harasheh, 2022). This indicates that companies with higher information about ESG practices signal imaging-improving activities that can attract investors, leading to positive initial performance post-IPO. However, the study did not find significant relationship between ESG practices reporting and companies' long-term performance, further justifying that in the long-term, the markets can already incorporate sustainable information available in the market without relying on companies' disclosure pre-IPO (Harasheh, 2022).

This study adds that although ESG practices are often related to offering sustainable business models if it is disclosed, extensive literature majorly relates the values ESG practices reporting can create for companies in the secondary market (Clark & Viehs, 2014; Margolis, Elfenbein, & Walsh, 2009; Sadiq et al., 2020; Yip & Lee, 2018). This study argues that studying the relationship between ESG practices reporting, and companies' long-term performance and survival is equally important, considering information disclosures play crucial roles in the IPO market. Fu et al. (2022) is the only study that examines how information disclosures on ESG practices can influence companies' long-term performance and survival. With 1,102 U.S. IPOs from 1999 to 2016, Fu et al. (2022) revealed that ESG practices reporting mitigates information asymmetry, strengthening companies' social legitimacy, enhance their share returns (3-years and 5-years post-IPO), and reduce companies' chances of failure. Companies that disclose ESG practices earlier also have a lower chance of failure than those reporting later due to trust and confidence gained by prospective investors for transparency. Overall, this study postulates that companies reporting information about their ESG practices as early as in the prospectuses should have the advantage of

achieving better performance post-IPO and survival.

2.10 Legitimacy Hypotheses on the Effect of ESG Practices Reporting

Originating from the political economy theory by Benson (1975), the legitimacy theory is a system-oriented theory that assumes companies are influenced by the society in which they operate (Dowling & Pfeffer, 1975). Companies strive to achieve congruence between the social values associated with or implied by their activities and the norms of acceptable behaviour in the larger social system to which they belong. Social norms and values do not remain constant. Changing social norms and values is one main motivation for companies' change and pressure for legitimacy. Consistent with the notion that companies are part of a larger social system, legitimacy theory viewpoints indicate that companies do not appear to have any intrinsic right to resources or exist. Organizations exist to the extent that a particular society considers them legitimate, and if this is the case, the society will confer legitimacy on the companies. In this case, corporate disclosure practices are recognized as an essential means for management to influence external perceptions of the companies to be considered legitimate (Deegan, 2002).

Sadiq et al. (2020) asserted that many companies, especially larger and well-known ones, intend to report their ESG practices to prove their legitimacy and enhance their reputation. For instance, the study found that the reporting circulating social norms and responsibility grew from 300 companies reporting in 1996 to 7,000 companies at the end of 2014. This is because sustainability reporting provides opportunities for companies to legitimize their behaviour by explaining their appropriate ESG practices that can benefit society (especially the investors). Information related to ESG practices is also said to help investors and stakeholders make strategic investment decisions, including those with complex business environments and uncertainties (Butar-Butar & Indarto, 2018). While investors are attracted to and convinced by the companies' business models that include a holistic ecosystem, the trust gained can also be converted into higher potential capital funds that companies can acquire. Subsequently, companies will perform better and survive longer in the long-term.

Slager and Chapple (2016) listed three plausible mechanisms that guarantee that companies with ESG practices will continuously improve in long-term. Firstly, there is the possibility of being excluded from the ESG rating platform due to failure to meet

the listing requirements. Secondly, there is engagement among companies and ESG rating providers to continuously inform rated companies about the ESG score requirements. Thirdly, legitimacy and reputational conferment are due to the existence of ESG practices in companies' business models. The plausible mechanisms imply that the management has adequate reasons to prove the company's developments and performance once it has disclosed ESG practices. Empirically, Wong and Zhang (2022) proved that undesirable ESG information disclosure could cause companies' value to decrease, showing that investors care about companies' disclosure of ESG practices. Additionally, when faced with common pressures on companies' legitimacy from stakeholders, documenting and reporting ESG practices helps to increase companies' competitive advantage and performances through sustainability-based differentiation (Ioannou & Serafeim, 2019). Thus, studies must first evaluate whether sustainability disclosure, i.e., the disclosure of ESG practices, can be relevant to companies' performances and survival.

Referring to the legitimacy theory, whether a company's value system is congruent with the larger social system's value frameworks determines companies' performance and survival post-IPO. Companies are subject to pressure from stakeholders such as investors, customers, suppliers, and employees (Carroll, 1979). As a result, when companies enter the financial market through an IPO exercise, they naturally face increasing pressure from various stakeholders concerned about the companies' legitimacy. If stakeholders believe the companies' ESG practices information disclosure is scarce, the companies' legitimacy will be jeopardised. Such legitimacy threats, among other things, may result in a poor image, customer dissatisfaction, hiring issues, litigation, and stricter regulation (Ameer and Othman, 2012), increasing companies' post-IPO performances and survival risk. ESG practices information is one of the most critical factors in maintaining companies' legitimacy in society and building a good reputation against sustainability risk shocks (Baker et al., 2021). This applies especially in markets with strong encouragement from policymakers on ESG practices for companies going public, such as the Malaysian market. In other words, companies going public use ESG engagement to subside potential ESG risks in the future and enhance their sustainability and survival post-IPO. In line with these arguments, this study proposes that companies with higher disclosure of ESG practices during their listings will gain better post-IPO performances and survival.

2.11 Signalling Hypotheses on the Effect of ESG Practices Reporting

Akerlof (1970) initially introduced signalling propositions and theory in the context of market competition, arguing that information asymmetry offers uncertainty among uninformed parties. The situation in which one party has superiority in information possession over another party induces uncertainty (Ross, 1977). Information distribution is vital in ensuring investors are sufficiently convinced of capital funding, especially in an IPO market. Since companies that intend to go public often have selective ways to disclose information during their private lives, prospective investors need the information to assist them with their investment decisions (Agustina & Clara, 2021). A common approach for companies to communicate and send signals to prospective investors in an IPO market is through crucial information disclosed in their prospectuses, which is information about companies' involvement with ESG practices (Whelan et al., 2020).

A study by Agustina and Clara (2021) employed the signalling theory by segregating between high and low-quality companies based on their involvement in sustainability activities (i.e, ESG practices). The study suggested that companies signalized their quality through their involvement in ESG practices, which the existence of ESG practices can be an indicator that the companies are high quality and have better prospects. In other words, companies engaged with ESG practices should have lower levels of underpricing and lower ESG risks in the long-term. Similarly, Harasheh (2022) posit that prior to the IPO exercise, the improved flow of sustainability-related information to external stakeholders reduces information asymmetries. It will improve investors' investment decisions, reducing underpricing and the companies' cost of going public. Positive quality signalling occurs when companies offer adequate ESG practices reporting prior to the IPO to minimise the underpricing, resulting in better initial performance post-IPO. Companies practising ESG signal lower underpricing that should induce investors' confidence in the issuance, and higher-priced shares, including ESG practices reporting, are positively related to higher returns (Cao et al., 2022). Overall, having higher capital acquisition in an IPO, companies will have higher cash flows to be utilized for long-term usages, promoting positive long-term performance and survival.

Reporting ESG practices may also signal companies' commitment to the ESG agenda that is being promoted by global policymakers (Wong et al., 2022). Companies

around the world have started to incorporate ESG elements into their day-to-day investment practices because investors regard reporting ESG practices as a form of institutional communication for conveying good governance practices that should benefit collective parties, such as the issuing companies, investors and society at large (Garcia et al., 2017). The available information on companies' ESG practices prior to the IPO could act as a signal of managers' motives that they do not serve self-interest motive, but to serve and create value for the companies and society (Economidou et al., 2022). This means that the companies reporting information about ESG practices should provide a positive signal of the companies' performances (initial and long-term) and survival post-IPO. This study agrees with past studies' arguments that companies giving a positive signal to investors through higher information transparency offering a good impact on the environment, social norms, and governance should secure higher equity financing, positive long-term performance and longer survival post-IPO.

2.12 Hypotheses on the Effect of ESG Practices Reporting on Companies' Initial Performance

The demand for information to discriminate potential high- or low-quality companies is necessary for an IPO market because prospective investors (especially uninformed ones) have limited information about the companies that are issuing shares publicly for the first time. Reporting of ESG practices, although voluntary (in the Malaysian share market), is becoming a "going public norm" since the introduction of sustainable development goals (SDGs) (e.g., SDG 17, sustainable finance[30]) by the U.N. According to Capital Markets Malaysia (2023), companies reporting ESG practices in their non-financial reporting are engaged in a financial process that emphasises on economic growth and should achieve long-term positive outcomes. While companies are transparent about their business activities that can affect the environment, social and governance matters, investors concerned with companies' legitimacy can align their investment objectives with their business models. That is, higher transparency about

[30] According to the UN, sustainable investment falls under SDG 17. SDG 17 emphasizes the importance of global partnerships and cooperation to achieve the other 16 goals. It includes targets related to foreign aid, technology transfer, capacity-building, and, importantly, financing. Specifically, Target 17.3 under SDG 17 calls for mobilizing additional financial resources for developing countries from multiple sources.

companies' activities related to ESG elements can lower the information asymmetry level and uncertainty between companies and investors, thus reflecting companies' true valuation. In the absence of information asymmetry, investors are willing to pay a premium for companies with higher involvement in ESG practices as they demonstrate greater systematic transformations with sustainable business models that can create favourable future value for investors. This will influence the investors' interest to subscribe to the shares and push the companies' share price higher, resulting in a positive initial performance post-IPO (Baker et al., 2021). Thus, in events where companies consider ESG-related matters utterly (without overselling), the companies simultaneously signal higher-quality disclosures and lower information asymmetry. This gives companies legitimacy and a good reputation, resulting in positive capital accumulation.

While ESG practices collectively may signal the quality of an issuance, each ESG element may influence companies' initial performance differently. Environmental disclosure may signal companies managing regulatory and sustainability risks. Since disclosures about climate change or pollution allow investors to hold companies accountable for future environmental risks, disclosing higher environmental practices signals resource efficiency and pollution control that can benefit society at large (Kang & Lam, 2022). This may reduce uncertainty around the IPO valuation, strengthen investor confidence during the subscription and enhance legitimacy by demonstrating alignment with growing environmental expectations. Ultimately, environmental reporting should positively impact companies' initial performance.

Social disclosure may signal responsible treatment of stakeholders and strengthen legitimacy by responding to broader social expectations. Social disclosure reduces IPO uncertainty by companies' ability to manage stakeholder relationships and operational risks, particularly those related to customer relationships and labour standards (Buchanan et al., 2018). This denotes a company's commitment to operating beyond minimum legal compliance by adhering to higher standards of social ethics and business ethics. It emphasises the company's responsibility to manage its relationships with internal and external stakeholders, including protecting the interests of related parties, respecting human rights, and contributing to the improvement of the social ecosystem (Albuquerque et al., 2019). As a result, companies that disclose social practices improve corporate reputation and access to capital through investors' interests (Au et al., 2023), leading to positive initial performance.

Governance disclosure may signal stronger transparency and higher-quality monitoring, while legitimising companies' internal control structures and accountability. Disclosures on governance practices, such as board structure, internal controls, audit quality, and shareholder protection, may reduce valuation uncertainty by reassuring investors that the company is managed under strong governance mechanisms (Haman et al., 2019). Stronger governance sends a positive signal that companies are committed to ethical conduct and the protection of investor interests (Chatterjee et al., 2024). Higher governance disclosure should increase investor confidence during the IPO, improve companies' reputations, and strengthen demand for IPO shares. Accordingly, higher governance disclosure is expected to enhance companies' initial performance. Thus, based on the arguments, this study hypothesises that disclosure of ESG practices is positively impacting companies' initial performance.

H1a: There is a positive relationship between environmental, social and governance practice disclosure and companies' initial performance.

H1b: There is a positive relationship between environmental practice disclosure and companies' initial performance.

H1c: There is a positive relationship between social practice disclosure and companies' initial performance.

H1d: There is a positive relationship between governance practice disclosure and companies' initial performance.

2.13 Hypotheses on the Effect of ESG Practices Reporting on Companies' Long-term Performance

While reporting ESG-related activities is not only to signify companies' legitimacy, it can also signal their long-term growth and sustainability, aligning their business activities with the direction of the global financial market. Although the information in the prospectuses is often regarded as investors' pre-IPO reference, factors such as companies' ESG practices have a timely effect on how they operate and perform in the long term (Pulino et al., 2022). That is, companies can reduce information asymmetry by voluntarily reporting information to attract investor participation and signal their long-term commitments to stakeholders, society, and the environment (Mohammad & Wasiuzzaman, 2021). While not all investors are keen to

sell their shares in the short run (as early as the first day of a company's listing) for quick returns, some investors are in it for the long term and are more interested in information that signals companies' commitment to long-term sustainability. Thus, information such as ESG practices appropriately signals investors how companies can maximise shareholder wealth and manage ESG risks at the organisational level to guarantee long-term returns post-IPO.

For instance, environmental disclosure may signal a long-term commitment to combat climate change and pollution. Over time, consistent environmental practices also reinforce legitimacy by maintaining alignment with evolving environmental regulatory expectations, thereby reducing legal intervention and safeguarding value (Ahmad et al., 2021). Evidence suggests that environmental information can positively influence companies' operating and market performance beyond the IPO horizon (Pulino et al., 2022). Therefore, environmental disclosure can improve IPO-stage confidence, especially if companies can convert it into credible operational and financial outcomes after listing.

Similar to the environmental disclosure, social disclosure may signal sustained corporate responsibility and strengthen legitimacy by aligning companies with stakeholder expectations valued post-IPO (Buchanan et al., 2018). If social disclosures (e.g., employee welfare, workplace safety, and customer responsibility) are consistent with companies' long-term business practices, this can enhance stakeholder trust and reduce reputational risk. Over time, these practices can contribute to stronger customer loyalty, employee retention, and social legitimacy (Aman-Ullah et al., 2024). Thus, this suggests that higher social disclosure can improve companies' long-term performance.

Holistic governance disclosure reduces uncertainty about companies' future cash flows, potentially lowering their cost of capital in the long-run (Bagh et al., 2025). Investors consider companies with strong governance structures to be less risky because these structures mitigate agency conflicts and improve monitoring quality, leading to more disciplined investment decisions and reduced value-destroying activities for investors (Bagh et al., 2025). According to the MCCG, companies that formalise their enterprise risk management and internal audit functions can reduce the probability of financial distress, earnings manipulation, and unexpected losses in the long run (SCM, 2021a). Accordingly, this study hypothesises that reporting ESG practices pre-IPO is positively related to companies' long-term performance.

H2a: There is a positive relationship between environmental, social and governance practice disclosure and companies' long-term performance.

H2b: There is a positive relationship between environmental practice disclosure and companies' long-term performance.

H2c: There is a positive relationship between social practice disclosure and companies' long-term performance.

H2d: There is a positive relationship between governance practice disclosure and companies' long-term performance.

2.14 Hypotheses on the Effect of ESG Practices Reporting on Companies' Survival

The impact of ESG practices reporting may extend to whether companies will survive or otherwise. Companies' voluntary reporting of ESG practices adds new information to the market, reducing information asymmetry and attracting investor participation. Since ESG-related aspects are frequently overlooked in traditional investment analysis and reporting, companies emphasizing non-financial disclosure should experience higher trading volumes (Bazrafshan, 2023). Furthermore, ESG investments have been shown to reduce unpredictable volatility and downside risk (Reber et al., 2021). The increased investors' interest, higher trading volume, and lower volatility may prolong companies' survival. In other words, ESG reporting reflects companies' efforts to address sustainability issues, assist companies in meeting the needs of stakeholders, and maintain a social licence to operate. It contributes to the companies' objective of maintaining social legitimacy, demonstrates its financial market adaptation, and reduces companies' chances of failing in the share market.

Specifically, early environmental disclosure enhances early access to capital and investor retention, both of which are essential for post-IPO survival. In Malaysia, environmental practices are governed by frameworks such as the Environmental Quality Act 1974 and reinforced through the sustainability reporting framework by Bursa Malaysia. Companies that systematically disclose their environmental practices (e.g., emissions management, waste control, resource use) are better positioned to anticipate tightening regulations, thereby reducing the likelihood of being unable to meet listing requirements. The consistent commitment to materialising their pre-IPO disclosure on environmental practices not only promotes a positive long-term

performance but also extends to companies' survival.

Social reporting may signal companies' commitment to maintaining social acceptance and legitimacy, thereby strengthening their ability to sustain stakeholder support over time. Social disclosure signals workforce stability and productivity, which are fundamental to survival (Chang et al., 2019). Transparent disclosure on employee welfare, occupational safety, and diversity signals companies are actively managing human capital risks (Benlemih et al., 2016). Long-term investors, particularly, will assess companies' legitimacy through their commitment to ethical behaviour, which can maintain investors' trust and enhance competitive advantage (Chang et al., 2019), influencing companies' survival.

Governance reporting may signal strong internal controls and risk oversight while legitimising organisational accountability. Howton (2006) states that governance-related characteristics can predict companies' survival post-IPO. By constraining managerial and controlling shareholder discretion, governance disclosure signals a lower probability of financial distress arising from poor decision-making, thereby supporting long-term survival (Chancharat et al., 2012). Moreover, sustained adherence to disclosed governance practices strengthens regulatory alignment, positioning companies to withstand scrutiny better and reducing the risk of enforcement actions, operational disruptions, or delisting (Noor & Iskandar, 2012). Therefore, this study hypothesises that ESG practice reporting positively affects companies' survival.

H3a: There is a positive relationship between environmental, social and governance practice disclosure and companies' survival.

H3b: There is a positive relationship between environmental practice disclosure and companies' survival.

H3c: There is a positive relationship between social practice disclosure and companies' survival.

H3d: There is a positive relationship between governance practice disclosure and companies' survival.

2.15 Other Determinants of Companies' Post-IPO Performances and Survival

This study includes several other determinants to explain companies' initial, long-term performance and survival in the Malaysian IPO market. The determinants

consist of four characteristics ranging from the offering (IPO proceeds, underwriter reputation, and insider ownership), companies (market capitalisation, age, and sector), financial (total assets and leverage), and market (market condition) characteristics. These determinants are selected based on their significance in past studies on companies' post-IPO performances (initial and long-term) and survival.

2.15.1 Company Size

Companies' market capitalisation is often linked to how well-established the companies are to position themselves in the market and how large the size of the companies since the first day of market entrance. Larger market capitalisation companies (usually indicated as larger-sized companies) are suggested to have an advantage over smaller ones in instilling confidence among investors and securing subscriptions. This is because larger companies are more prone to have better success rates from an existing large pool of funds to support their growth and do not solely rely on acquiring additional funds during the market entrance. Baluja (2018) stated that larger companies are designated as established, stable, mature and less risky companies that can influence investors to be more receptive towards them. Since larger companies are well-established, it is easier for investors to retrieve information about the companies to be informed of their past performances and strategically use that information to estimate the companies' future (Jain & Martin, 2005). That is, the level of information asymmetry among larger companies is lower than among smaller companies, promoting better quality and performance as well as longer survival post-IPO.

Larger companies normally have larger amounts of equity offerings. This promotes the companies as less risky and are expected to succeed in the immediate aftermarket (Yang et al., 2022). Unlike smaller companies that are entailed with higher risk and are prone to underprice their shares to compensate investors for higher initial returns, underpricing can be pushed down among larger companies to reduce the impact of indirect costs that companies need to bear and promote healthier long-term performance (Pulino et al., 2022). Relatively, with the capital funds that companies can secure during the IPOs on top of the existing large pool of funds, larger companies also have better access to resources, allowing them to easily recover from long-term difficulties (Ahmad & Jelic, 2014; Chancharat et al., 2012). Larger companies are also

prone to perform better than smaller companies in the long-run because of their positive financial position. The excess funds they acquired can be utilized for investments, generating higher revenues and better supporting the companies' future growth (Wang & Wang, 2021), resulting in positive long-term performance post-IPO. Accordingly, supporting higher capital funds and revenues allows companies to face challenges post-IPO, such as becoming more transparent and scrutiny from the public can be well-managed in the long-term, promoting better survival post-IPO (Ugur & Vivarelli, 2020). However, some past studies also highlight the chances of larger companies facing difficulties surviving longer post-IPO if the resources are underutilized (Ahmad et al., 2021; Iwasaki & Kočenda, 2019). Nonetheless, this study follows the majority of literature that larger companies promote positive initial, long-term performances and survival post-IPO.

H4a: There is a positive relationship between companies' size and initial performance.

H4b: There is a positive relationship between companies' size and long-term performance.

H4c: There is a positive relationship between companies' size and survival.

2.15.2 Company Age

Companies' age is identified as the operating period of a company prior to an IPO. Usually, the company's age is employed to measure the risk and ex-ante uncertainty of IPO companies (Shari, 2018). Since older companies have a longer operating history, they are expected to have lower risks and ex-ante uncertainty, and vice versa. As information is limited during IPOs, younger companies often have conflicts with providing valuable information to investors as opposed to companies that have been in the business field for an extended period (Dong et al., 2011). A longer operating history contributes to larger companies becoming more transparent with their information disclosures, which can help battle uncertainty post-IPO. Older companies also possess more mature management and stable operating history for long-term sustainability. In accordance with Dong et al. (2011) and Shari (2022), older and matured companies have lesser risk due to extensive resources (e.g. financial and operational) that are well-managed to ensure they can sustain during their private lives.

Due to that, older companies are seen to have better long-term performance and survival post-IPO. Thus, this study proposes that companies' age has a positive relationship with companies' initial and long-term performance and survival post-IPO.

H5a: There is a positive relationship between companies' age and initial performance.

H5b: There is a positive relationship between companies' age and long-term performance.

H5c: There is a positive relationship between companies' age and survival.

2.15.3 IPO Proceeds

IPO proceeds are the amount of capital raised from companies' shares issuance in an IPO. The information disclosed about the IPO proceeds is for companies to inform the public on the companies' future directions in channelling the raised IPO proceeds post-IPO through several categories, which include growth and investment activities, research and development (R&D), financial obligations, working capital and listing expenses. Being one of the crucial information that falls in the mandatory items listed in the summary of companies' prospectuses, IPO proceeds can transmit useful information to and reduce uncertainty among investors based on the allocation that companies prioritise in becoming publicly listed companies (Ahmad-Zaluki & Badru, 2021). While IPO proceeds information is disclosed in the prospectus during IPO, the information remains timely as the utilisation extends more than 3-years post-IPO. Thus, not only is IPO proceeds information relevant to ensure companies' success in the initial and long-term performance post-IPO, but it is also feasible in predicting companies' long-term survival post-IPO.

The uncertainty associated with companies going public is also related to companies' IPO proceeds. A vast amount of literature has shown the importance of IPO proceeds disclosure to signal investors about companies' pricing strategies prior to an IPO (Amor & Kooli, 2017; Andriansyah & Messinis, 2016; Baluja & Singh, 2019; Derouiche et al., 2018; Iwasaki & Kočenda, 2019; Kumar & Sahoo, 2021; Liu et al., 2016; Loughran & Ritter, 2004; McGuinness, 2019; Mohd-Rashid et al., 2019; Mumtaz & Smith, 2019; Pour, 2015; Ritter & Welch, 2002; Silva & Bilinski, 2015; Ugur & Vivarelli, 2020). Most likely, companies with higher IPO proceeds indicate larger

issuance size or higher offer price and induce subscription among investors in an IPO. Similarly, Liu et al. (2016) and Ritter and Welch (2002) found that IPO proceeds can shape the market price movement and alleviate uncertainty, leading to positive initial performance post-IPO. While the information on IPO proceeds can help reduce uncertainty and increase subscription, the positive initial performance from securing higher capital funds in the earlier days of listing may also embed longer-term growth information that can positively affect companies' long-term value and performance (Wyatt, 2014). Schultz (1993) also asserts that higher IPO proceeds can minimize agency costs from higher amounts of funds if companies' forecasted performance is not as high as their expectations, indicating favourable long-term performance post-IPO. Thus, the higher IPO proceeds confirm wider growth opportunities through investments and reduce the chances of failure (McGuinness, 2019), leading to better survival in the long-term. Consistently, this study expects higher total IPO proceeds to positively affect initial, long-term performance and survival post-IPO.

H6a: There is a positive relationship between IPO proceeds and companies' initial performance.

H6b: There is a positive relationship between IPO proceeds and companies' long-term performance.

H6c: There is a positive relationship between IPO proceeds and companies' survival.

2.15.4 Underwriter Reputation

Underwriter refers to financial institutions involved with the valuation and underwriting of securities issuance for a fee in an IPO process. The reputation of the underwriters signifies the financial institutions' credibility in evaluating, promoting and selling IPOs. The role of underwriters in an IPO shows that they can enhance the certification effect as a reflection of issuance quality. The expectation of high-quality issuance to be underwritten by reputable underwriters exist because of good reputation underwriters will keep their good reputation by refraining from issuing low-quality issuance (Silva & Bilinski, 2015). The underwriters have the role of alleviating information asymmetry between the issuing companies' and prospective investors. Underwriters are able to certify their IPO issues to the market because they have the

incentive to underwrite the share issuance at an appropriate price to maintain their reputation, which will help enhance investors' confidence.

As a way to signal the good quality of shares' issuance, the companies are willing to pay higher costs to hire underwriters with a good reputation (Silva & Bilinski, 2015). This way, companies can secure favourable initial capital from high investor demand, leading to positive initial performance post-IPO. Considering that the companies have acquired adequate capital funds since the initial day of listing, they are expected to maintain a positive long-term performance. As the involvement of underwriters is also extended throughout companies' listing in the capital market, the long-term involvement of the underwriters must be related to companies' survival (Espenlaub et al., 2012). Reputable underwriters are expected to prefer backing and underwriting companies with a longer survival prospect post-IPO to ensure their reputational capital is unaffected. Thus, companies with reputable underwriters are presumed to have better long-term survivability. In sum, this study asserts that underwriter reputation should positively affect companies' initial, long-term performance and survival post-IPO.

H7a: There is a positive relationship between underwriter reputation and companies' initial performance.

H7b: There is a positive relationship between underwriter reputation and companies' long-term performance.

H7c: There is a positive relationship between underwriter reputation and companies' survival.

2.15.5 Insider Ownership

Insider ownership is the level of shareholdings retained by insiders[31] of issuers. As stated by Pour (2015), higher shareholder retention assures investors that management is acting in the best interests of all stakeholders. Higher ownership retention explains the shareholders' intention to monitor management's decisions from misusing the companies' liquidity (Pour, 2015). Thus, in an IPO in

[31] In this study, insiders are the directors, officers and advisers of listed issuers, management companies or trustee-managers.

which information is superior to the insiders, higher insider ownership reflects the commitment and confidence of insiders in the companies' prospects. While insiders must bear the non-diversifiable risk in an IPO, their commitment to retain their ownership post-IPO sends a positive signal to investors. Albada et al. (2018) and Espenlaub et al. (2012) found that higher insider ownership affects companies' post-IPO performances and survival.

On the contrary, some other studies found that higher insider ownership is detrimental to companies' post-IPO performances. Kumar and Sahoo (2021) argued that although higher insider ownership portrays commitment and confidence, the concentration of power among existing insiders may also be detrimental to the companies in the long-term because of the traditional practices[32] that are challenging to alter. This may lead to unnecessary tension in management practices, which induces conflict of interests, negatively impacting companies' post-IPO performances and survival. Mumtaz and Smith (2016) highlight that privately held companies issue shares to diversify ownership, raise funds for investment, and develop an exit strategy when funds are adequately collected. However, according to Mohd-Rashid et al. (2016), the higher percentage of ownership in the Malaysian IPO market reflects more of the insiders' belief in their companies as they are willing to hold on to their shares despite the exit opportunity that comes during an IPO. Accordingly, this study proposes that higher insider ownership positively affects companies' initial, long-term performance and survival post-IPO.

H8a: There is a positive relationship between insider ownership and companies' initial performance.

H8b: There is a positive relationship between insider ownership and companies' long-term performance.

H8c: There is a positive relationship between insider ownership and companies' survival.

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[32] Existing insiders may have an existing standard procedure they find to suit the business activities prior to IPO. However, some business practices may no longer be relevant once a company is publicly listed because of the listing requirements and guidelines. Additionally, this may create conflict of interest between the new insiders that might see things differently (Panda & Leepsa, 2017). Thus, the unparalleled thinking and directions between the existing and new insiders may result to low companies' performance in the future.

2.15.6 Assets of Companies

The pre-IPO total assets of companies are the sum of all assets owned by a company before an IPO. The total assets listed on the balance sheet remain is one of the main financial statements pieces of information included in the prospectus. Companies with larger total assets often have better financial health and resources, implying greater stability and growth potential (Yadav et al., 2023). Financial information such as companies' total assets have a significant role in the capital market as it can benchmark companies' future performance (Too & Somasundaram, 2011; Yadav et al., 2023). Past studies have revealed a significant relationship between companies' assets, and post-IPO performances and survival (Ahmad et al., 2021; Badru et al., 2018; Peristiani & Hong, 2004). Companies with larger assets prior to IPO indicate greater financial stability that provides a cushion for post-IPO investments and growth initiatives, which can guarantee favourable post-IPO performances and survival.

Additionally, companies with larger assets pre-IPO tend to have better opportunities in acquiring new resources and financing post-IPO due to the existing business opportunities that can create confidence among investors in creating future wealth (Lefebvre, 2023). The newly acquired resources have a crucial role in initiating the growth process for companies to broaden their geographical presence, innovate new products, and enter new markets in the long run (Lefebvre, 2023). Although broadening business activities can be risky, companies with larger resources can captivate and withstand unfavourable market conditions and exogenous shocks post-IPO (Ahmad et al., 2021), making business failure risk less concerning for investors. Thus, the companies' ability to maintain necessary resources better in the long-run should contribute to positive outcomes for their long-term survivability. Accordingly, this study suggests that companies' assets positively affect companies' post-IPO performances and survival.

H9a: There is a positive relationship between companies' assets and initial performance.

H9b: There is a positive relationship between companies' assets and long-term performance.

H9c: There is a positive relationship between companies' assets and survival.

2.15.7 Leverage of Companies

Companies' leverage refers to the use of liabilities or borrowed funds to finance their operations or investments. Higher leverage usually translates to higher risk, signifying an increasing financial risk and making companies unsustainable (Anuar & Chin, 2016). Higher leverage also makes the company more vulnerable to economic downturns with possible higher interest rates on future borrowings to compensate for the increased risks (Ayadi et al., 2019), and it can be costly for the companies to maintain a favourable capital structure post-IPO survival in the long run.

A substantial amount of leverage usually results to companies' poor initial performance (Gauvin & Power, 2019). Due to the riskier type of investment, it leads to lower initial demand for the companies' initial shares' issuance. As a result, the shares of the first day become lower in price, reflecting poor companies' initial performance. The lower initial valuation can further impact investor confidence, potentially hindering future growth. Companies with high leverage also indicate a higher commitment to repay their debts in the long run, which can limit their ability to innovate, stay competitive, and achieve long-term growth and, thus, will impact their long-term post-IPO performance (Shah et al., 2017). Consistently, the continuous pressure from creditors for companies to meet debt obligations can also restrict the companies' strategic flexibility and ability to adapt to changing market conditions, flattening the future cash flow stream (McGuinness, 2019). Ultimately, companies with high leverage pre-IPO will have a low potential to survive longer in the long run. Hence, this study posits that companies' leverage will negatively affect companies' post-IPO performances and survival in the long run.

H10a: There is a negative relationship between companies' leverage and initial performance.

H10b: There is a negative relationship between companies' leverage and long-term performance.

H10c: There is a negative relationship between companies' leverage and survival.

2.15.8 Sector of Companies

Companies' sector refers to a broad categorization of companies based on the nature of their businesses, in which companies share similar characteristics or operate in a similar industry. In the Malaysia share market, 21 sectors are available for the classification system that groups listed companies into different industries[33]. According to Zhang et al. (2018), different sectors are tied with different risks. The technology sector is the highest risk sector due to the nature of its businesses, which are rapidly advancing in technological advancements and market uncertainties.

Although technology sectors make lucrative returns from successful innovative outputs, the possibility of failure is almost equal, given that companies struggle to meet changing customer preferences (Kurznack & Timmer, 2019). Due to the uncertainty, investors are prone to avoid risking their investment in the initial market, affecting companies' initial performance post-IPO (How et al., 2007). Several past studies also argue that the research and development (R&D) and innovation activities that require consistent funding with high possibilities of failure can be the main reason for poor long-term post-IPO performance and survival risk (Fernandes and Paunov, 2015; Howell, 2016; Nemlioglu and Mallick, 2017). Similar to Shari (2022), companies in the high-technology sector with high growth listed in the ACE market of Bursa Malaysia face a higher risk of failure or lower survivability in the long-run. In line with past studies, this study suggests that companies listed in the technology sector will negatively affect companies' initial, long-term performance and survival.

H11a: There is a negative relationship between companies listed in the technology sector and initial performance.

H11b: There is a negative relationship between companies listed in the technology sector and long-term performance.

H11c: There is a negative relationship between companies listed in the technology sector and survival.

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[33] According to Bursa Malaysia (2024) "Bursa Malaysia Sector Classification of Applicants or Listed Issuers", the 21 sectors are construction, consumer products and services, energy, financial services, healthcare, industrial products and services, plantation, property, real estate investment trusts, technology, telecommunications and media, transportation and logistics, utilities, closed end fund, special purpose acquisition, bond conventional, bond Islamic, exchange traded fun (ETF)-commodity, ETF-equity, ETF-bond, and business trust.

2.15.9 Market Condition

Market condition is the state of a share market at a specified period. It is related to the behaviour of the overall share market relying on the number of companies entering the market for the new shares' issuance, often known as the "hot issue period" (Loughran & Ritter, 2004). Suppose the number of companies entering the share market increases; it creates a positive sentiment among the public that the market condition is favourable and a good time for investment opportunities. Similarly, companies will also find an opportunity to enter the market during good market conditions to take opportunities of favourable sentiment among investors. However, Baluja and Singh (2019) assert that companies with unclear direction usually dominate many market issues and do not plan to remain publicly listed companies in the long run. The bandwagon effect from opportunistic companies may be beneficial as a start. However, it remains a puzzle whether timing their market entrance would help companies withstand long-aftermarket conditions. Baluja and Singh (2019) highlight that market conditions remain relevant when evaluating companies' post-IPO performances and survival.

Higher demand for shares from investors is expected in the condition of high market entrance among new publicly listed companies (Yang et al., 2022), which leads to positive initial performance post-IPO. Meanwhile, good market conditions also encourage companies to remain competitive to ensure their future value is secured in the long run (Mohd-Rashid et al., 2019), positively impacting their long-term performance post-IPO. However, according to Ahmad and Jelic (2014), since opportunistic companies are deemed to time their entrance, a reverse economic cycle will have an unfavourable impact on their ability to remain listed in the long-run. Some opportunistic companies might have difficulties in surviving longer. Hence, although companies entering during good market conditions can perform well for the first few years of listing, this study suggests that opportunistic companies may not survive long-term. Overall, companies entering the share market for new shares issuance during good market conditions may positively affect initial and long-term performance post-IPO but negatively affect their survival in the long run.

H12a: There is a positive relationship between good market conditions and companies' initial performance.

H12b: There is a positive relationship between good market conditions and companies' long-term performance.

H12c: There is a negative relationship between good market conditions and companies' survival.

2.16 Chapter Summary

This chapter reviews the literature on the influence and relationship between companies' environmental, social, and governance (ESG) disclosure and companies' initial performance, long-term performance, survival post-IPO, and all other variables of this study. Since studies combining three IPO anomalies are limited in the Malaysian market scope, this study proposes filling in the gap by examining the relationship between ESG reporting, and companies' initial and long-term performance and survival post-IPO. This study also includes other independent variables (company's size and age, IPO proceeds, underwriter reputation, insider ownership, company's assets, company's leverage, company's sector and market condition) to control for the relationship in the multiple regression models.

CHAPTER 3
RESEARCH METHODOLOGY

3.1 Introduction

Chapter 3 begins with a description of this study's data, sample, and measurement of variables. Next, this chapter presents the research framework of this study, which exhibits the relationship between ESG elements and companies' post-IPO performances and survival. This chapter discusses the diagnostic checks that will be conducted before the multiple regression analyses. This chapter also presents the regression and equation models using the cross-sectional regression model for initial and long-term performance examinations. Lastly, the survival analysis models (Cox Proportional Hazard and Accelerated Failure Time) for survival examination.

3.2 Data and Sources

This study employs all companies listed in the Main Market and ACE Market of Bursa Malaysia from January 2012 to July 2019. According to Mohammad and Wasiuzzaman (2021), there was a noticeable increase in the disclosure of information about environmental, social, and governance (ESG) practices among companies listed in Malaysia starting in 2012. Thus, this study utilises a similar baseline year for the beginning of its sample. Since data needs to be collected within 3-years and 5-years for companies' long-term performance and survival, the sample period ends in July 2019to observe until the end of July 2024 (Figure 3.1).

This study includes secondary and cross-sectional data. The pre-listing and post-listing data of IPOs are gathered from several sources. Pre-listing data includes ESG information, IPO proceeds in monetary value and/or percentage, company's incorporation year, listing date, number of shares underwritten by investment banks, shareholders' ownership, IPO offer price, total assets, and total leverage. Post-listing data includes the share market index and the three periods of this study's examination data, which are the first-day closing price, three-year closing price, and the date of an event occurrence (if a company is delisted from the share market, underperforming in terms of its financial and operations and merged or acquired) for the survival data.

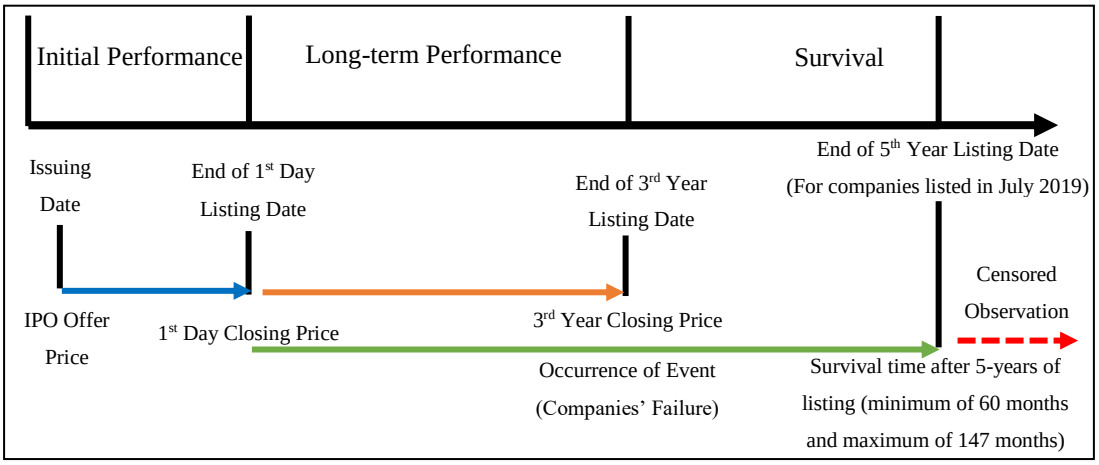


Figure 3.1 Flow of Data Observation and Collection

Regarding the source, information on companies' ESG practices can be retrieved in the companies' prospectuses under the "Business Overview" section. Other data from the companies' prospectuses include the IPO proceeds, the company's incorporation year, the number of shares underwritten by investment banks, shareholders' ownership, and the IPO offer price. Data for the first-day closing price, three-year closing price, and share market index will be extracted from the Thomson Reuters Eikon Datastream database, while the data for the event occurrence and listing date will be extracted from the Bursa Malaysia website. This study uses the Stata Release 17 statistical software to run its diagnostic tests, preliminary tests and multiple regression analyses. Table 3.1 summarizes the data gathering and sampling technique of this study.

3.3 Sample Description

A total of 131 IPOs were issued in Bursa Malaysia during the sample period of this study. Nonetheless, this study will employ various filtering processes to determine its final sample size. Following Ong et al. (2021) and Zheng and Li (2008), this study's sample selection excludes the following criteria:

1. Financial companies, including banks, insurance companies, real estate investment trusts, and financial services. This selection was made as companies in these sectors present their financial statements in distinct and specialised formats.
2. Companies listed in the LEAP market, since there is limited information

disclosed by the companies in this market.

3. Companies with incomplete or missing values within the sample.
4. Companies with outliers and extreme values.

After considering the exclusion criteria, this study ends with 100 IPOs listed from the Main and ACE markets on Bursa Malaysia. Detailed exclusion for each criterion is explained in Table 3.1.

Table 3.1

Summary of Data Collection and Sample Description

Criteria	Main Market and ACE Market of Bursa Malaysia	
IPO data collection	Pre-listing	• ESG reporting • IPO proceeds • Incorporation year • Listing date • Number of shares underwritten by investment banks • Shareholders' ownership • IPO offer price • Total assets • Total leverage
	Post-listing	• Share market index • First-day opening and closing price, Three-year closing price • Survival time
Sample Size	100 IPOs	
Sample Period	January 2012 to July 2019	
Sample Exclusion	• Financial companies, including banks, insurance companies, real estate investment trusts, and financial services (2 IPOs) • LEAP companies (22 IPOs) • Incomplete values, outliers, or extreme values (7 IPOs)	
Observation Frame	• 1-day (initial performance) - From companies' listing date (beginning January 2012) to first day post-IPO. • 3-years (long-term performance) - From companies' listing date (beginning January 2012) to third year post-IPO. • 5-years minimum (survival) - From companies' listing date (beginning January 2012) to the occurrence of the event date (failure). - Companies with no event occurrence (e.g., delisted) within the five years post-IPO will be observed until the end of July 2019 (survive).	

3.4 Measurement of Initial Performance

This study defines the initial performance as the first listing day returns, which refers to the period starting from the date of issuance and ending at the close of the first day of trading. The initial performance is calculated as the offer-to-close return (OTC), which is the difference between the initial offering price on the date of issuance and the closing price on the first day of trading (Abdul-Rahim et al., 2012; Barry & Jennings, 1993; Dutta & McMillan, 2015; Kamaludin & Zakaria, 2018; Mehmood et al., 2021). The initial performance is positive if the share market price of a company exceeds its offer price on the listing day. The closing price is usually preferred, reflecting the companies' overall first-day performance (Megaravalli, 2022).

Apart from OTC, past studies also often evaluated the initial performance based on the difference between the opening price and the offering price (offer-to-open) (OTO) (Abdul-Rahim et al., 2012; Barry & Jennings, 1993; Yong & Zaidi, 2003). The opening price of a company's share on the first trading day eliminates the influence of valuation noises that may be present at the end of the first IPO trading day (Yong, 2019). Thus, to ensure the robustness of companies' initial performance analysis, this study adopts OTO and OTC measurements. The companies' initial performance measurements in this study are shown in Equations 3.1 and 3.2.

$$OTO_i = \frac{Popen_i - Poffer_i}{Poffer_i} X\ 100$$

Where,

OTO_i = Offer-to-open return of *i*th company.

$Popen_i$ = Opening price on first trading day of *i*th company.

$Poffer_i$ = Offer price of *i*th company.

(3.1)

$$OTC_i = \frac{Pclose_i - Poffer_i}{Poffer_i} X\ 100$$

Where,

OTC_i = Offer-to-close return of *i*th company.

$Pclose_i$ = Closing price on first trading day of *i*th company.

$Poffer_i$ = Offer price of *i*th company.

(3.2)

3.5 Measurement of Long-term Performance

Assessing companies' performance over an extended period appears as more intricate than evaluating only its short-term performance (Loughran and Ritter, 1995). The most suitable period for calculating long-term performance has yet to be found. However, the examination of companies' long-term performance in the IPO context is usually 1-year, 3-years, and/or 5-years post-IPO (refer to Table 2.2). Two distinctive approaches exist to measure companies' long-term performance: the event-time approach and calendar-time approach. According to Abdullah et al. (2019), the event-time approach performance is calculated using the abnormal return of a baseline reference relative to the date of the event. In contrast, the calendar-time approach relies on the average abnormal time series returns to monthly portfolios of event companies (Dutta, 2015). Abnormal returns in an event-time approach are typically quantified through the utilisation of two distinct measures: cumulative average abnormal return (CAAR), and the buy-and-hold abnormal return (BHAR), while the use of the calendar-time approach involves the development of either the Fama-French three-factor model or the Capital Asset Pricing Model (CAPM). Regardless, prior studies have frequently employed the event-time approach to assess the long-term performance of IPOs.

There are at least three reasons why the event-time approach holds greater significance as a preferred approach in measuring long-term performance of IPOs compared to the calendar-time approach. The buy-and-hold abnormal return (BHAR) as measured using the event-time approach, effectively captures the investor's perspective of holding securities over an extended duration (Barber & Lyon, 1997 and Lyon et al., 1999). The event-time approach can also assess the performance of abnormal returns subsequent to their initial listing (Perera, 2014b), unlike the calendar-time approach, which is less robust in its predictive abilities (Loughran & Ritter, 2000) and tends to be inaccurately specified when used in random samples (Lyon et al., 1999). The event-time approach specifically considers the abnormal return behaviour for a sample of companies experiencing a common type of event (e.g., post-IPO). Thus, following past studies (Álvarez-Otero, 2022; Gupta et al., 2019; Kamaludin & Zakaria, 2018; Kumar & Sahoo, 2021), this study estimates long-term performance 3-years (36 months) post-IPO employing the event-time approach (CAAR and BHAR).

Several reasons to adopt the 36-month observation window for long-

term performance. Firstly, Bursa Malaysia (2023), under the "IPO Performance"[34], states that a period of 1-year post-IPO is considered as the first rolling period for new listings in the market, indicating that 1-year post-IPO is only the initial observation window for companies post-IPO performance. Secondly, three years post-IPO is considered an average period for examining companies' long-term performance (Poulsen & Nielsen, 2017). Companies within three years should have had the opportunity to implement necessary business strategies, navigate market challenges, and demonstrate an ability to generate sustained growth for the long-term performance examination to be reflective. Thirdly, this study follows most of the past studies in the Malaysian market (Table 2.2) to adopt the 36-month observation window when examining companies' long-term performance post-IPO. Equations 3.3 and 3.4 exhibit the measurement of companies' long-term performance.

3.5.1 Cumulative Average Abnormal Return (CAAR)

The cumulative average abnormal return is initially measured through the summation of the difference between the monthly average raw returns of each company and the monthly return of the share market benchmark index. Considering the Financial Times Share Exchange Bursa Malaysia Emas Index (FTSEBMEI) holistically represents both the constituents of FTSE Bursa Malaysia Top 100 Index and FTSE Bursa Malaysia Small Cap Index, this study adopts the FTSEBMEI as the market benchmark index. Then, the cumulative average abnormal return of companies can be measured through the summation of the average abnormal return of each company in the 36-months observation window.

Step 1: Calculate the abnormal return

$$AR_{i,t} = R_{i,t} - MR_{i,t}$$

Where,

$AR_{i,t}$ = Abnormal return of *i*th company in month *t.*

$R_{i,t}$ = Actual return of *i*th company in month *t.*

[34] Refer to: https://www.bursamalaysia.com/listing/listing_resources/ipo/ipo_performance for further information regarding IPO performance in Malaysia. The earliest information provided is since December 2023.

$MR_{i,t}$ = Market return of *i* (FTSEBMEI) in month *t.*

(3.3a)

Step 2: Calculate the average of the abnormal return

$$\overline{AAR_t} = \frac{1}{n}\sum_{i=1}^{n} AR_{i,t}$$

Where,

$\overline{AR_t}$ = Average abnormal return for a portfolio of *n* companies for the month *t.*

(3.3b)

Step 3: Calculate the cumulative average abnormal return

$$CAAR_{q,s} = \sum_{i=q}^{s} \overline{AAR_t}$$

Where,

$CAAR_{q,s}$= Cumulative average abnormal return of company from event *q* to *s.*

(3.3c)

3.5.2 Buy-and-Hold Abnormal Return (BHAR)

For robustness, another approach to measuring companies' long-term performance is used, which is the market-adjusted buy-and hold abnormal return (BHAR). Firstly, this study calculates the geometric mean return of each company to avoid negative return problems that will occur in the dataset (Ljungqvist, 1997), providing long-term holding period returns for each company. Then, this study computes the difference between each company's long-term holding period return and the long-term holding period return for the share market benchmark index, i.e., the FTSEBMEI to acquire the buy and hold abnormal returns (BHAR) over the 36-months observation window.

$$BHAR_{i,t} = \left[\prod_{t=T_1}^{T_2}(1 + R_{i,t}) - 1\right] - \left[\prod_{t=T_1}^{T_2}(1 + MR_{i,t}) - 1\right]$$

Where,

$BHAR_{i,t}$ = Buy and holding abnormal return of *i*th company in month *t*

(3.4)

3.6 Measurement of Survival

The survival of companies refers to the time-to-survive, which signifies the duration of time (in months) from the listing date of IPOs until the point at which the companies cease to exist (Espenlaub et al., 2012; Neneh & Smit, 2014; Pommet, 2017; Pour, 2015). The indication of companies as surviving companies is following those that remain listed in the share market without an occurrence of an event that can change the companies' status within the observation period. In contrast, non-surviving companies are those that experience an occurrence of an event within the period of observation. In this context, the event refers to companies that either do not meet the listing requirements, acquired or merged or are listed in the PN17 or GN3 frameworks (Alyasa-Gan et al., 2023). Moreover, in the context of survival analysis models, it is vital to consider censored data. Including a binary variable becomes imperative to indicate whether an observation is censored or uncensored. Hensler et al. (1997) state that the survival data often exhibits right-censoring, indicating that the outcome of survival surpassing the observation period remains unobserved and limited within a specified time frame.

Thus, to assess the duration of companies' survival, this study needs the incorporation of both the time-to-survive and a binary variable denoted by "1" or "0". Equations 3.5 and 3.6 illustrate the measurement of companies' survival.

Step 1: Estimation of time-to-survive of *i*th company.

$$SUR_i = (t_{1i} - t_{0i}) \tag{3.5}$$

Where,

SURi = Time-to-survive of *i*th company.

t_{1i} = Last month of survival observation of *i*th company.

t_{0i} = Listing month of *i*th company.

Step 2: Estimation of censored observation.

$$D^{Survive}{}_i = IF\ Censored = 1$$
$$IF\ Not\ censored = 0 \tag{3.6}$$

Where,

$D^{Survive}_{i}$ = Censored data (survive) of *i*th company using dummy variable.

Figure 3.2 exhibits the timeline of companies' survival, wherein the measurement of companies' survival duration commences at a specific time and extends until the end of the observation period. The binary variable is used to indicate right-censored (representing surviving companies, denoted as "1") or uncensored (representing non-surviving companies, denoted as "0") throughout the timeline. For example, company "A" is classified as right-censored. This is because company "A" is a continuously listed company, and its performance is being monitored from its listing date until the conclusion of the observation period in this particular study, which is July 2024. Meanwhile, company "B" is classified as non-censored data, specifically non-surviving companies, due to certain deficiencies between its listing date and the conclusion of the observation period.

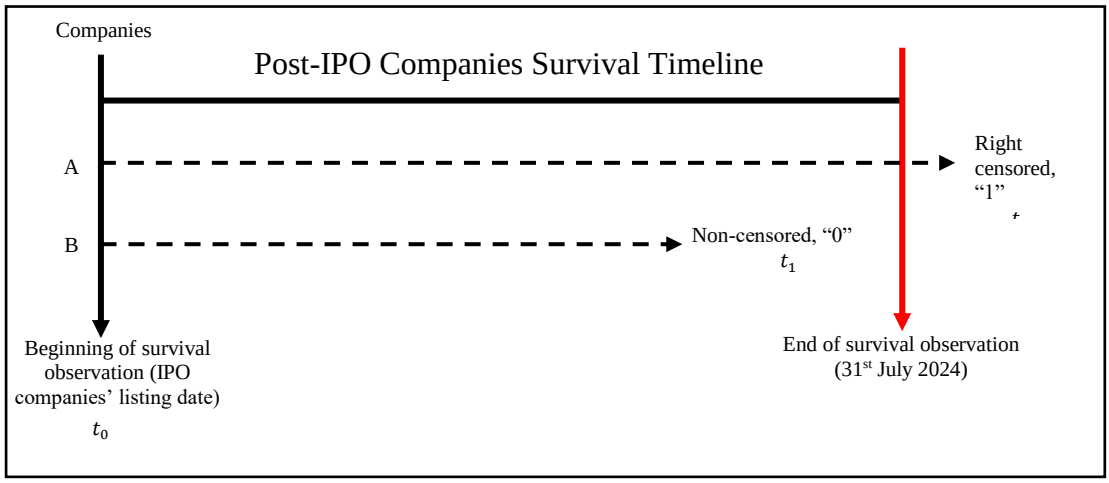


Figure 3.2 Timeline of Companies' Survival

This study highlights that regardless of the survival analysis methods (COX or AFT), measuring companies' survival remains similar for both methods, including companies' time-to-survive, binary variable and censored observation. The key differences between the two methods are in their formulation and interpretation of parameterization of hazard (COX) and survival time (AFT), coefficient analysis on hazard ratio (COX) and survival time (AFT), unspecified survival distribution (COX) or specified survival distribution (AFT), and the models' assumptions in estimating companies' probability of survival (COX) or longevity of survival time (AFT).

3.7 Measurement of Environmental, Social and Governance

Companies' reporting of ESG practices involves providing a company's financial and non-financial information on its engagement with the environmental, social and governance, as evidenced in their corporate annual report or any other formal reports (Hackston & Milne, 1996). The ESG practices report guides stakeholders regarding implementing companies' initiatives, encompassing environmental, social, and governance elements. The parameters utilised in this study for companies' reporting of ESG practices measurements are derived from the ESG rating overview by FTSE Russell. Unlike the ESG rating model used for companies reporting their ESG practices in their annual reports, this study applies the ESG rating model to information available in the primary market document, i.e., Chapter 5, Section 5.02: Business Overview, of the prospectuses.

The index utilised in this study consists of five indicators for the Environmental index, five for the Social index and four for the Governance index, as shown in Table 3.2. This study adopts the indicators from the FTSE Russell's ESG scores, which are climate change, water security, biodiversity, pollution and resources, and supply chain environment for the Environmental (E) elements, health and safety, labour standards, human rights and community, customer responsibility, and supply chain social for the Social (S) elements and anti-corruption, tax transparency, risk management and corporate governance for the Governance (G) elements. However, all the information is in text format, which needs to be quantified for the regression analysis.

To hand-collect the data from the companies' prospectuses, this study utilises the AntConc software[35], a freeware corpus analysis toolkit, to concord and analyse each text reflecting the companies' initiatives incorporating ESG practices. To ensure consistency in collecting ESG elements, the process is based solely on the 14 FTSE Russell indicators as keywords. Each prospectus is systematically reviewed using the same keywords and cross-checked through repeated reviews to minimise omission errors and subjective interpretation. The use of structured indicators, standardised keywords, and software-assisted text concordance enhances the transparency, replicability, and reliability of the ESG measurement approach.

[35] Refer to Appendix 2.

Table 3.2

ESG Scoring Elements

Environment	Social	Governance
Climate change	Health and safety	Anti-corruption
Water security	Labour standards	Tax transparency
Biodiversity	Human rights and community	Risk management
Pollution and resources	Customer responsibility	Corporate governance
Supply chain environment	Supply chain social	

Source: FTSE Russell ESG Indices

First, this study identifies companies' business activities revolving around the fourteen indicators of ESG elements. Second, this study sets a score of 1 for companies practising any of the 5 indicators for E, 5 for S, and 4 for G, while a score of 0 is for those that do not report any ESG practices in their business activities. Following Nicolo et al. (2023), this study calculates the ESG index by dividing each company's cumulative score by the total number of indicators for each ESG element and converting the result to a percentage. The total ESG index is then calculated by accumulating the individual ESG indices for each company. The construction of both a total ESG score (TOTESG) and individual ESG score is intended to examine the aggregate signaling effect of ESG reporting and the potentially differentiated effects of each ESG element on post-IPO outcomes. The total ESG reporting should reflect the overall quality of ESG disclosure. In contrast, the disaggregated measures allow the study to identify whether environmental, social or governance disclosures exert distinct influences on companies' initial performance, long-term performance and survival.

3.7.1 Environmental Index

$$ESCORE_i = \frac{EREP_i}{TEREP_i} \; X \; 100 \tag{3.7}$$

Where,

$ESCORE_i$ = Environmental score of *i*th company.

$EREP_i$ = Number of environmental reporting of *i*th company.

TEREP = Total reporting from five environment indicators, which are biodiversity, climate change, pollution and resources, supply chain environment and water security of *i*th company.

3.7.2 Social Index

$$SSCORE_i = \frac{SREP_i}{TSREP_i} \; X \; 100 \tag{3.8}$$

Where,

SSCORE$_i$ = Social score of *i*th company.

SREP$_i$ = Number of social reporting of *i*th company.

TSREP$_i$ = Total reporting from 5 social indicators, which are customer responsibility, health and safety, human rights and community, labour standards and supply chain social of *i*th company.

3.7.3 Governance Index

$$GSCORE_i = \frac{GREP_i}{TGREP_i} \; X \; 100 \tag{3.9}$$

Where,

GSCORE$_i$= Governance score of *i*th company.

GREP$_i$ = Number of governance reporting of *i*th company.

TGREP$_i$ = Total reporting from 4 ESG indicators of governance, which are anti-corruption, corporate governance, risk management and tax transparency of *i*th company.

3.8 Measurement of Other Determinants

3.8.1 Company Size

The definition of company size can vary based on the context and the specific aspects being considered. Commonly, company size refers to the magnitude of a business entity, often measured by various quantitative factors such as revenue, market capitalisation, number of employees, or market presence (Brealey et al., 2020). While there might not be a single definitive source that provides a universal definition of company size, Bursa Malaysia indicates the size of a company from its market capitalisation. Thus, this study is in accordance with Bursa Malaysia, measuring

company size by multiplying the IPO offer price and number of outstanding shares (Pommet, 2017; Yaakub & Sherif, 2019). To reduce the effect of extreme values, this study expresses the market capitalisation value in the natural logarithm (Cirillo et al., 2017). The equation is as follows:

$$SIZE_i = [Ln_i(NOS_i \; X \; OFFER_i)] \tag{3.10}$$

Where,

$SIZE_i$ = Size of *i*th company.

Ln_i = Natural logarithm.

NOS_i = Total number of shares outstanding during IPO of *i*th company.

$OFFER_i$ = Offer price for IPO of *i*th company.

3.8.2 Company Age

Company age is the duration of IPO companies' incorporation year, approximated by the logarithm of one plus the number of years since the company was created (Wasiuzzaman et al., 2018). Company age is the time difference (in years) between the companies' incorporation date and IPO listing date (Anwar & Mohd-Rashid, 2021; Kumar & Sahoo, 2021). Company age requires suitable consideration in theoretical and empirical studies investigating the determinants of companies' post-IPO performance (Kurniawan et al., 2022). Company age, evident by past studies, does have an impact on companies' performance or other success indicators, such as post-IPO performances (initial return and long-term return) and survival (Ferri et al., 2023; Fu et al., 2022; Pulino et al., 2022). The equation is as follows:

$$AGE_i = [LISTyear_i - INCyear_i] \tag{3.11}$$

Where,

AGE_i = Age of *i*th company.

$LISTyear_i$ = Listing year of *i*th company.

$INCyear_i$ = Incorporation year of *i*th company.

3.8.3 IPO Proceeds

IPO proceeds represent the proportion of IPO proceeds raised by the companies in the IPO, which are segregated into different categories. Different companies usually have different future directions, observable by the diversity in the percentages of IPO proceeds allocated to several categories. In the companies' prospectus, the proportion of IPO proceeds is reported in monetary value (i.e., Ringgit Malaysia). The amount of funds acquired during an IPO has a crucial role in the efficacy of the decision to go public, as it influences the primary advantages derived from selling shares to the public (Dambra et al., 2021).

In the case where IPO proceeds are higher, companies have the chance to strengthen investor confidence and convey credible signals to the public about substantial capital accumulation, which is an indicator of companies' favourable post-IPO performance (Kao & Chen, 2020). Thus, allocating a larger portion of the proceeds from new issuances to investments enhances companies' share prices, boosting companies' post-IPO performances (McGuinness, 2019). Hence, companies are secured with good reputations and substantial capital accumulation to survive better. To estimate the IPO proceeds, the gross IPO proceeds that companies obtain from their IPO are aggregated (Agustina & Clara, 2021) and translated into a natural logarithm (Killins, 2019). Equation 3.12 presents the measurement.

$$PRO_i = [\mathrm{Ln}(\Sigma GROPRO_i)] \tag{3.12}$$

Where,

PRO_i = IPO proceeds of *i*th company.

$\Sigma GROPRO_i$ = Total gross IPO proceeds of *i*th company.

3.8.4 Underwriter Reputation

Underwriter reputation represents the ability of investment banks to value, market and promote IPOs (Brockman et al., 2023). The IPO companies collaborating with respected underwriters usually signify that the companies are of good quality and worth investing in. Mitigating information asymmetry among stakeholders is crucial for an efficient IPO, and public-going companies often use investment banks as an

important intermediary to reduce the information asymmetry in IPOs. That is, underwriters allow the communication of value-relevant information about companies to prospective investors (Chen et al., 2023), influencing the companies' post-IPO performances. Following Abdul-Rahman and Che-Yahya (2019), and Sundarasen et al. (2017), underwriter reputation is estimated by the percentage of total shares underwritten by an investment bank or underwriter to the total shares underwritten by all underwriters in a listing year. Equation 3.13 presents the measurement of underwriters.

$$UW_i = \frac{UWT_i}{TOTUWT_i} \; X \; 100 \tag{3.13}$$

Where,

UW_i = Underwriter reputation of *i*th company.

UWT_i = Underwriting amount for and *i*th investment bank in the respective listing year.

$TOTUWT_i$ = Total underwriting amount of *i*th company.

3.8.5 Insider Ownership

Insider ownership is a means to symbolise the actions of insiders (i.e., the board of directors and top officers) to align their behaviour with the interests of investors after the public listing (Hensler et al., 1997). In other words, the retained shareholdings by insiders refer to the perceived level of dedication by individuals with inside knowledge towards future success and the respective companies. Insider ownership can be examined by the proportion of shares held by insiders during an IPO (Ahmad & Jelic, 2014; Yang & Sheu, 2006). Retrieving from prospectus, shareholder retention is assessed by the percentage of existing owners' shares over the total number of shares outstanding (Mohd-Rashid et al., 2019), as shown in Equation (3.14).

$$OWNER_i = \frac{EXIST_i - OFFSALE_i}{EXIST_i + NEW_i} \; X \; 100 \tag{3.14}$$

Where,

$OWNER_i$ = Insider ownership of *i*th company.

$EXIST_i$ = Total pre-IPO existing shares of *i*th company.

$OFFSALE_i$ = Offer for sale shares of *i*th company.

NEW_i = Public issue of *i*th company.

3.8.6 Company Assets

The total assets are a key piece of financial information in the prospectus that reflects companies' available resources to operate its business activities. Companies with higher total assets are typically classified as companies with superior financial well-being and resources, indicating high stability and the possibility of growth (Yadav et al., 2023). Thus, companies with larger assets reported should be able to grasp public confidence in creating future investment wealth, producing a higher likelihood of favourable post-IPO performances and survival (Ayadi et al., 2020). This study employs companies' total assets reported in their pre-IPO prospectuses to examine how companies' total resources are useful in generating positive post-IPO performance and survival. This study expresses the total assets value in the natural logarithm to reduce the effect of extreme values (Cirillo et al., 2017; Lefebvre, 2023), as in Equation 3.15.

$$TOTA_i = [Ln_i(TOTA_i)] \tag{3.15}$$

Where,

$TOTA_i$ = Total Assets of *i*th company.

Ln_i = Natural logarithm.

3.8.7 Leverage of Companies

Companies rely on leverage by borrowing funds to finance operations or investments. The impact of leverage depends on the companies' debt structure, interest rates, growth plans, and overall financial health (Anuar & Chin, 2016). Leverage can be examined by debt-to-equity ratio (D/E), specifically comparing debt to shareholder equity (i.e., the capital investors invest in the companies). Information transmitted using the D/E measurement clearly shows how much funds are borrowed relative to the owners' investment in the companies for their prospects. A higher ratio indicates higher companies' financial risk that can distort investors' confidence, companies' post-IPO

performances and survival. Retrieving D/E from the prospectus, it is assessed by the percentage of dividing companies' total liabilities by the shareholder equity (Shah et al., 2017; Wang, 2019), as shown in Equation (3.16).

$$LEVERAGE_i = \frac{LIABLITIES_i}{EQUITY_i} \; X \; 100 \tag{3.16}$$

Where,

LEVERAGE = Leverage of *i*th company.

LIABILITES$_i$ = Pre-IPO total liabilities of *i*th company.

EQUITY$_i$ = Pre-IPO shareholders' equity of *i*th company.

3.8.8 Company Sector

The term "companies' sector" encompasses organizations that exhibit comparable traits or operate within the same general industry. The Malaysian share market offers a classification of listed companies into 21 sectors[36]. Among sectors in the capital market, technology stands out as the highest-risk sector due to its fast-paced technological breakthroughs and market uncertainty (Zhang et al., 2018). The sector of companies can be examined by using a dummy variable, denoting "1" for companies listed in the technology sector or "0" for companies listed in sectors other than the technology sector (Abu Bakar & Rosbi, 2016; Saleh & Che-Yahya, 2021). Equations 3.17 illustrate the measurement of the companies sector.

$$\begin{aligned} D^{SECTOR}{}_i = IF\ TECH_i \quad &= 1 \\ IF\ \text{NON} - TECH_i \quad &= 0 \end{aligned} \tag{3.17}$$

Where,

D^{SECTOR_i} = Dummy sector of *i*th company.

TECH = Technology sector.

NON-TECH = Non-technology sector.

[36] As of February 2024, Bursa Malaysia published a list of Bursa Malaysia Sector Classification of Applicants or Listed Issuers. The 21 sectors are in Footnote 48.

3.8.9 Market Condition

The term "share market condition" pertains to a share market's health status or well-being. Share market conditions also can be assessed by a range of indicators, including but not limited to price fluctuations, trade volumes, market volatility, and investor sentiment. The prevailing market conditions in the IPO market reflect investors' sentiments (Che-Yahya & Abdul-Rahim, 2019). During periods characterised by economic growth and positive sentiment, share markets typically exhibit strong performance, estimated by upward trends in share prices and heightened investor confidence, affecting companies' ability to function well and maintain favourable conditions post-IPO. Several studies in the Malaysian market adopt the hot or cold market condition using dummy variable, denoting "1" for the hot market and "0" for otherwise (e.g., Alyasa-Gan & Che-Yahya, 2022; Abdul-Rahim et al., 2012). Other studies employed the share market indices, either using the FTSE Bursa Emas Index (Albada et al., 2018;2019; Abdul-Rahim et al., 2015) or the KLCI (Che-Yahya et al., 2023; Saleh & Che-Yahya, 2021; Younesi et al., 2012). Considering that Bursa Malaysia refers to KLCI as its benchmark index (Bursa Malaysia, 2024), this study follows the notion of measuring the market condition using the KLCI. Equation 3.18 shows the measurement of market condition.

$$MC_t = \frac{\frac{\sum(KLCI_t - KLCI_{t-1})}{KLCI_{t-1}}}{n} X100 \tag{3.18}$$

Where,

MC_t = Market condition during the *t*th listing day (initial performance) or year (long-term performance and survival).

$KLCI_t$ = KLCI of first listing day, 3-years post-IPO, or 5-years post-IPO.

$KLCI_{t-1}$ = KLCI of a year before listing, or first day of listing day.

n = 1 is for initial performance, 3 is for long-term performance, 5 is for survival.

Table 3.3

Summary of Variables Measurements

No.	Variables	Notation	Definition	Measurement
1.	Initial Performance	OTO	Offer-to-open (%)	$OTO_i = \frac{Popen_i - Poffer_i}{Poffer_i} X\ 100$
		OTC	Offer-to-close	$OTC_i = \frac{Pclose_i - Poffer_i}{Poffer_i} X\ 100$
2.	Long-term Performance	CAAR	Cumulative average abnormal return of company (%)	$CAAR_{q,s} = \sum_{i=q}^{s} \overline{AAR_t}$
		BHAR	Buy and holding abnormal return (%)	$BHAR_{i,t} = \left[\prod_{t=T_1}^{T_2}(1 + R_{i,t}) - 1\right] - \left[\prod_{t=T_1}^{T_2}(1 + MR_{i,t}) - 1\right]$
3.	Survival	SURVIVAL	Time-to-survive (months)	$SUR_i = (t_{1i} - t_{0i})$
			Binary variable (1 or 0)	$D^{SURVIVE}{}_i = IF\ Censored = 1$ $IF\ Not\ censored = 0$
4.	Total ESG Score	TOTESG	ESG score	$TOTESGG_i = \text{ESCORE}_i + SSCORE_i + \text{GSCORE}_i$
5.	Environmental	ESCORE	Environmental score	$\text{ESCORE}_i = \frac{\text{EREP}_i}{\text{TEREP}_i}$ X 100
6.	Social	SSCORE	Social score	$SSCORE_i = \frac{SREP_i}{\text{TSREP}_i} X\ 100$
7.	Governance	GSCORE	Governance score	$\text{GSCORE}_i = \frac{\text{GREP}_i}{\text{TGREP}_i}$ X 100
8.	Company Size	SIZE	Market capitalisation (Ln)	$SIZE_i = [Ln_i(NOS_i\ X\ OFFER_i)]$
9.	Company Age	AGE	Company age from IPO incorporation year to listing year (Ln)	$AGE_i = [LISTyear_i - INCyear_i]$
10.	IPO Proceeds	PRO	Total gross IPO proceeds (RM)	$PRO_i = [Ln(\Sigma GROPRO_i)]$
11.	Underwriter Reputation	UW	Underwriter market share (%)	$UW_i = \frac{UWT_i}{TOTUWT_i} X\ 100$
12.	Insider Ownership	OWNER	Insider ownership (%)	$SHRE_i = \frac{EXIST_i - OFFSALE_i}{EXIST_i + NEW_i} X\ 100$
13.	Total Assets	TOTA	Total assets (Ln)	$TOTA_i = [Ln_i(\text{TOTA}_i)]$
14.	Leverage	LEVERAGE	Debt to equity ratio	$LEVERAGE_i = \frac{\text{LIABILITIES}_i}{EQUITY} x\ 100$

15.	Dummy Sector	SECTOR	Dummy Technology	$D^{SECTOR}{}_i = IF\ Tech\ sector = 1$ $IF\ Non-tech\ sector = 0$
16.	Market Condition	MC	KLCI (%)	$MC_t = \frac{\sum(KLCI_t - KLCI_{t-1})}{\frac{KLCI_{t-1}}{n}} X100$

3.9 Research Framework and Research Analysis Flow

Figure 3.3 presents the interconnections among the main independent variables, namely ESG practise reporting, and the other independent variables, including company size, company age, IPO proceeds, underwriter reputation, insider ownership, company total assets, company leverage, company sector and market condition. They are proposed to have a relationship with companies' initial performance, long-term performance, and survival. The research analysis flow is shown in Figure 3.4.

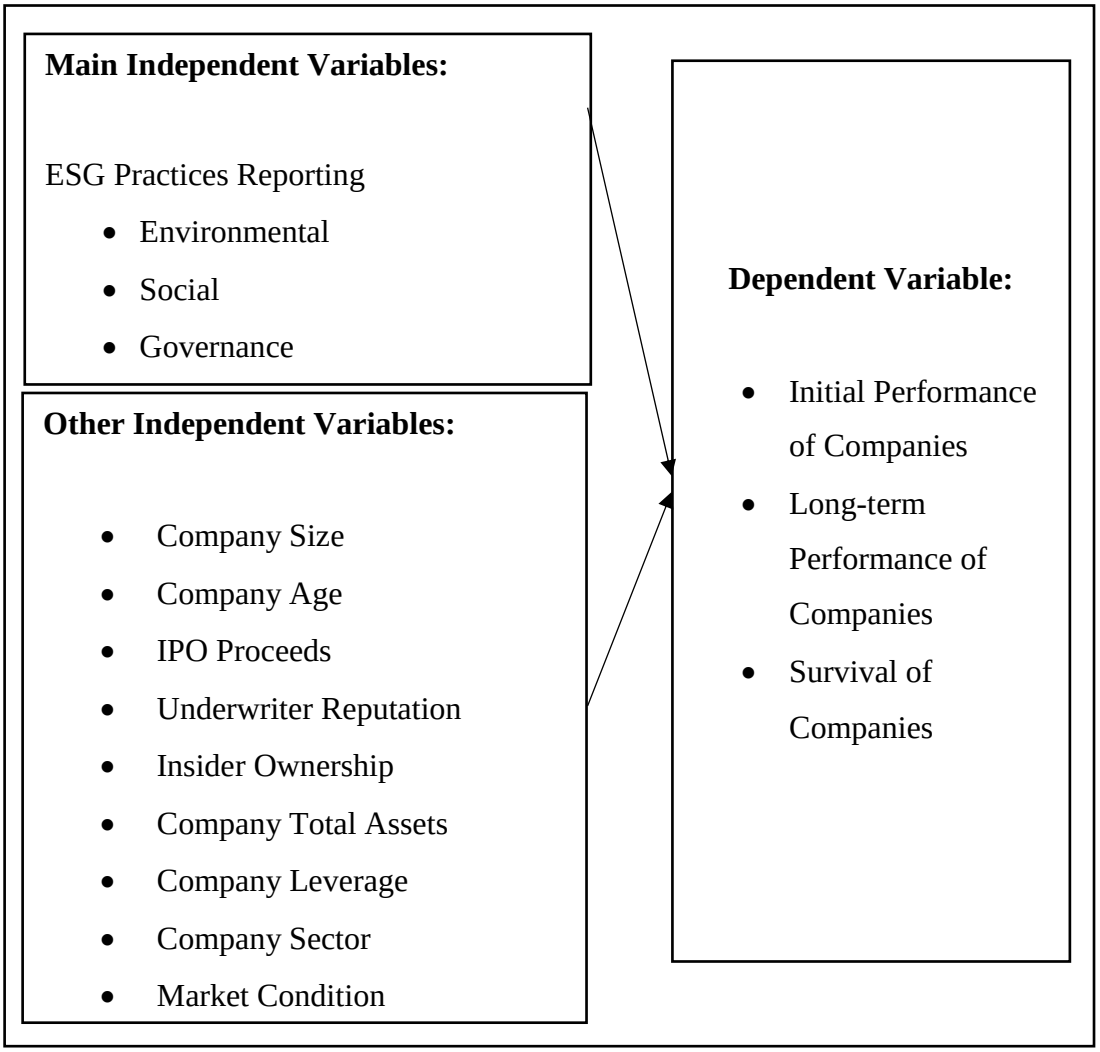


Figure 3.3 Research Framework on the determinants of companies' initial performance, long-term performance and survival

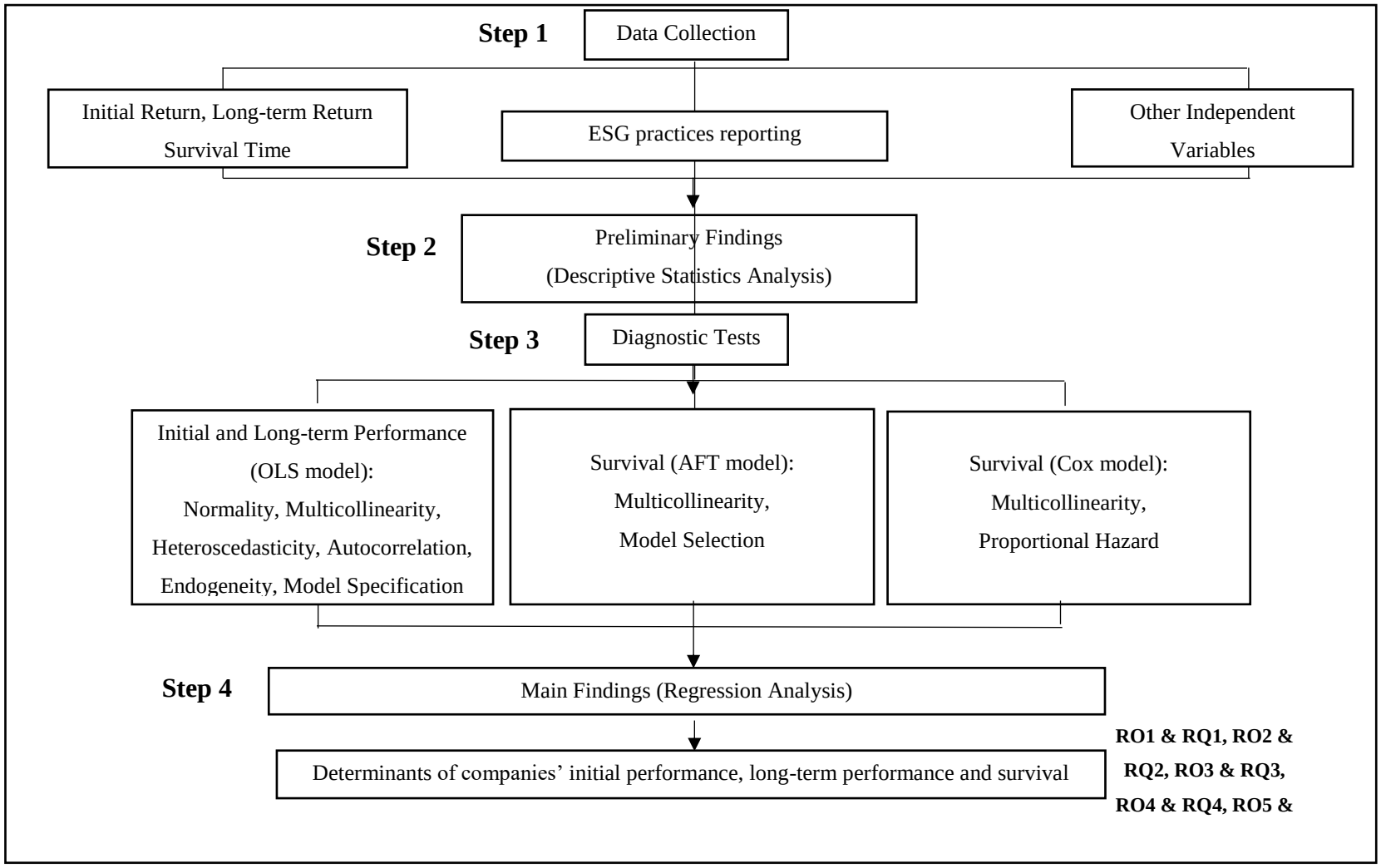


Figure 3.4 Flow of Research Analysis

3.10 Cross-Sectional Regression Models on the Relationship between ESG Practices Reporting and Companies' Initial and Long-term Performances

Companies' initial and long-term performances are measured by companies' 1-day and 3-year returns. The regression models for this study's post-IPO performances are divided into three equations. Equations 3.19 and 3.20 are developed to address Hypotheses 1, 4a, 5a, 6a, 7a, 8a, 9a, 10a, 11a, and 12a. Meanwhile, Equations 3.20 and 3.21 are developed to address Hypothesis 2, 4b, 5b, 6b, 7b, 8b, 9b, 10b, 11b, and 12b of this study. The models include the other independent variables in this study: company size, company age, IPO proceeds, underwriter reputation, insider ownership, company total assets, company leverage, company sector and market condition.

$$\widehat{IP_i} = \hat{\alpha} + \hat{\beta}_1 TOTESG_i + (\hat{\beta}_e \sum_{t=1}^{L} OIV_{i,e}) + \varepsilon_i \tag{3.19}$$

$$\widehat{IP_i} = \hat{\alpha} + \hat{\beta}_1 ESCORE_i + \hat{\beta}_2 SSCORE_i + \hat{\beta}_3 GSCORE_i + (\hat{\beta}_e \sum_{t=1}^{L} OIV_{i,e}) + \varepsilon_i \tag{3.20}$$

$$\widehat{LTP_i} = \hat{\alpha} + \hat{\beta}_1 TOTESG_i + \hat{\beta}_2 IP_i + (\hat{\beta}_e \sum_{t=1}^{L} OIV_{i,e}) + \varepsilon_i \tag{3.21}$$

$$\widehat{LTP_i} = \hat{\alpha} + \hat{\beta}_1 ESCORE_i + \hat{\beta}_2 SSCORE_i + \hat{\beta}_3 GSCORE_i + \hat{\beta}_4 IP_i + (\hat{\beta}_e \sum_{t=1}^{L} OIV_{i,e}) + \varepsilon_i \tag{3.22}$$

Where,

$\widehat{IP_i}$ = Initial performance.

$\widehat{LTP_i}$ = Long-term performance.

i = *i*th company.

α = Constant term.

$\hat{\beta}$ = Coefficient of the respective independent variable.

TOTESG = Total of ESG score.

ESCORE = Environmental score.

SSCORE = Social score.

GSCORE = Governance score.

OIV = Other independent variables *L* which are listed as follows;

SIZE = Company size.

AGE = Company age.

PRO = Gross IPO proceeds.

UW = Underwriter reputation.

OWNER = Insider ownership.

TOTA = Total assets.

LEVERAGE = Debt-to-equity ratio.

D^{SECTOR} = Dummy sector.

MC = Market condition.

ε_i = Error term.

3.11 Survival Regression Models on the Relationship between ESG Practices Reporting and Companies' Survival

Companies' survival is measured by the time-to-survive, including the observation of censored data within 5-years of estimation post-IPO. The survival regression model, designed as in Equations 3.23 and 3.24, addresses Hypothesis 3, 4c, 5c, 6c, 7c, 8c, 9c, 10c, 11c, and 12c of this study. This study employs the AFT as the main regression analysis, reflecting companies' survival. For robustness, COX (Equation 3.25) is employed to examine the relationship between the independent variables and companies' failure.

The AFT model is a parametric survival method that estimates companies' time-to-survive by specifying survival data's underlying distribution. In contrast, the COX model is a semi-parametric method that estimates companies' time-to-failure without specifying the underlying distribution of survival data. The AFT model includes the exponential coefficient, which is all independent variables' acceleration or deceleration factors on companies' survival. However, instead of emphasizing companies' time-to-survive as in the AFT model, the COX model estimates companies' risk of failure using the hazard ratio, which relates to the increasing or decreasing probability of companies' failure risk. Since the two are relatively different, this study intends to employ both models for robust analyses. The survival regression model includes other independent

variables of this study: company size, company age, IPO proceeds, underwriter reputation, insider ownership, company's assets, company's leverage, company's sector and market condition.

$$Ln(SURVIVE_i) = \alpha + \hat{\beta}_1 TOTESG_i + \hat{\beta}_2 IP_i + \hat{\beta}_3 LTP_i + \beta_e \sum_{t=1}^{L} OIV_{i,e}) + \varepsilon_i \quad (3.23)$$

$$Ln(SURVIVE_i) = \alpha + \hat{\beta}_1 ESCORE_i + \hat{\beta}_2 SSCORE_i + \hat{\beta}_3 GSCORE_i + \hat{\beta}_4 IP_i + \hat{\beta}_5 LTP_i + \beta_e \sum_{t=1}^{L} OIV_{i,e}) + \varepsilon_i \quad (3.24)$$

$$h(t: x_i) = \alpha + h_0(t) \exp x_i \beta_x \quad (3.25)$$

Where,

$Ln(SURVIVE_i)$ = Natural logarithm of the time to survive.

$h(t;x_i)$ = The hazard rate function of time to failure for *i*th company.

x = The vector of independent variables.

$h_0(t)$ = the baseline hazard function at zero, no parametrization.

$\widehat{IP_i}$ = Initial performance.

$\widehat{LTP_i}$ = Long-term performance.

i = *i*th company.

α = Constant term.

β = Coefficient of the respective independent variable.

TOTESG = Total of ESG score.

ESCORE = Environmental score.

SSCORE = Social score.

GSCORE = Governance score.

OIV = Other independent variables *L* which are listed as follows;

SIZE = Company size.

AGE = Company age.

PRO = Gross IPO proceeds.

UW = Underwriter reputation.

OWNER = Insider ownership.

TOTA = Total assets.

LEVERAGE = Debt-to-equity ratio.

D^{SECTOR} = Dummy sector.

MC = Market condition.

ε_i = Error term.

It is worth emphasizing that this study is consistent with its argument from the Problem Statement section that each phase of a company's performance relies on the success of the previous one. This study tests the relationship between companies' previous performance, future performance, and survivability. The inclusion of IP in LTP models and the inclusion of IP and LTP variables in the survival models are needed to illustrate companies' potential favourable post-IPO long-term performance and survival from experiencing favourable performance in the previous phases.

3.12 Diagnostic Tests

In order to meet the underlying assumptions of regression models and increase the reliability of the findings of this study from the multiple regression analyses, this study conducts several diagnostic tests on its data. For the cross-sectional regression models, this study employs five diagnostic tests: normality, multicollinearity, heteroscedasticity, autocorrelation and model specification test. For the survival regression models, this study employs three diagnostic tests: multicollinearity, model selection test i.e, for AFT model and proportional hazard test i.e., for COX model, and model specification test. The subsequent sections explain the diagnostic procedures.

3.12.1 Normality

Data that are considered normal exhibit a distribution that conforms to the shape of a bell curve (Gujarati, 2009). Data normality can be examined using several methods, including the residuals histograms, utilizing a normal probability plot (NPP), and applying the Jargue-Bera (JB) tests. Following Gujarati (2009), the JB test is applied in this study to assess normality. The Jarque-Bera (JB) test is used to determine the skewness (S) and kurtosis (K) of the residual (μ). The skewness and kurtosis

coefficients for a variable that follows a normal distribution are expected to be 0 and 3, respectively. Thus, the JB statistics are anticipated to be 0, given that the hypothesis of normally distributed residuals is rejected when the p-value is less than 0.10.

3.12.2 Multicollinearity

Gujarati (2009) states that a multicollinearity issue exists when two independent variables exhibit a strong correlation, reducing the ability to assess the individual effect of each independent variable on a dependent variable. This indicates the presence of multicollinearity in the variables. It is suggested that a high correlation value between independent variables can result in a suboptimal estimation of the regression model, but only if the correlation surpasses a preset threshold. This study uses the Pearson Correlation Coefficient Matrix (PCCM) table and the Variance Inflation Factor (VIF) test to examine multicollinearity. Wooldridge (2020) stated that the PCCM threshold of 0.90 indicates a high correlation between two independent variables. If the correlation value exceeds 0.90, it suggests the presence of severe multicollinearity issues between the variables. Based on the VIF test, it is generally accepted that an independent variable showing a VIF value exceeding 10 indicates a high degree of correlation with other independent variables (Wooldridge, 2020). On the other hand, VIF value approaches 1 indicates a low degree of correlation in the regression model. The PCCM test enables a study to find a strong correlation between two independent variables. Additionally, the VIF test allows for individually examining the multicollinearity issue in independent variables. If severe multicollinearity arises, this study must identify and prioritise the independent variable that requires thorough examination.

3.12.3 Heteroscedasticity

Wooldridge (2020) states that heteroscedasticity describes a situation where the variability of the errors (residuals) in a regression model is not constant across all levels of the independent variables. In other words, the residual's spread or dispersion changes as the independent variables' values change, leading to inefficient and biased estimates of the regression coefficients. The Huber-White test is utilized in this study to identify the presence of heteroscedasticity. This test is preferred due to its broader applicability, as it does not depend on the assumptions of normality and does not require the data to

follow a normal distribution (Dougherty, 2011). The null hypothesis will be rejected if the p-value is less than 0.1, indicating the presence of heteroscedasticity. This study will fail to reject the null hypothesis of homoscedasticity if the p-value is equal to or greater than 0.1.

3.12.4 Autocorrelation

Autocorrelation, also known as serial correlation, is a statistical phenomenon where the error terms (residuals) in a time series or regression model are correlated (Asteriou & Hall, 2015). This violates the assumption of independence of observations, which is a key assumption in a linear regression model. Autocorrelation can arise in time series data when consecutive observations are not independent, and it can also occur in cross-sectional data when there is a pattern of correlation among the residuals. There are several techniques to examine autocorrelation, such as the graphical method, the runs test (also known as the Geary test), the Durbin-Watson d test, and the Breusch-Godfrey (BG) test. The Durbin-Watson d test is used in this study to assess the presence of autocorrelation with a value ranging from 0 to 4. This test has been widely used in the literature to identify serial correlation (Wooldridge, 2010). One advantage of employing the Durbin-Watson d test is that it relies on the estimated residuals that are commonly calculated in regression analysis. A regression model can be unaffected by significant autocorrelation if the Durbin-Watson *d* test statistic falls within the range of 1.5 to 2.5. Any value that falls below 1.5 concludes a presence of positive autocorrelation (upper bound), and a value that falls above 2.5 concludes a presence of negative autocorrelation (lower bound) (Wooldridge, 2022).

3.12.5 Endogeneity

One of the assumptions in OLS regression hinges on the crucial assumption of exogeneity. This assumption stipulates that the expected value of the error term, denoted by ε, conditional on the independent variables, represented by X, is equal to zero ($E(\varepsilon|X) = 0$) (Wooldridge, 2020). In simpler terms, endogeneity is a situation that signifies the existence of correlation or dependence between the error terms and the independent variables. When this endogeneity assumption holds, the least squares estimator, denoted by *b*, demonstrably possesses the desirable properties of being biased and consistent in

estimating the true population parameter β (Singh et al., 2017). The main causes of endogeneity in an OLS model are measurement error, reverse causality or simultaneity, omitted variables, omitted sample selection, or lagged dependent variables. These causes will lead to an inconsistent regression estimation, resulting in a biased result. The Durbin, Hausman and Wu (DHW) test is used to identify whether each independent variable is endogenous or exogenous (Singh et al., 2017). Thus, the null hypothesis will be rejected if the p-value is less than 0.1, indicating the presence of endogeneity.

3.12.6 Model Selection

An AFT model is a parametric survival regression model that requires specified survival data distribution (Cleves et al., 2016). The Akaike Information Criterion (AIC) is a widely used model selection criterion in statistics and econometrics. It is a measure that balances the goodness of fit of a statistical model with the complexity of the model. The AIC is particularly useful when comparing different models that may have different numbers of parameters. In the context of model selection, when comparing different models for the survival distributions (e.g., Weibull, Exponential, Log-normal), the model with the lowest AIC value is considered the best, as it achieves a good balance between goodness of fit and simplicity.

$$AIC = -2LnL + 2(k + c) \tag{3.25}$$

Where,

L = The maximised value of the log-likelihood estimation.

k = The number of independent variables.

c = The number of model-specific distributional parameters.

3.12.7 Proportional Hazard

The proportional hazards assumption is fundamental in survival analysis when using the Cox model. The assumption states that the hazard function for any two individuals is proportional over time. In other words, the hazard ratio between two individuals is constant over time (Cleves et al., 2016). The Schoenfeld residuals test is one way to test the assumption of proportional hazards. Schoenfeld residuals are based

on the difference between the observed and expected values of the independent variables for each company at the time to failure. The proportional hazards assumption implies that these residuals should remain constant over time. This study employs the Schoenfeld residual test, a standard and widely accepted method for assessing proportional hazards in Cox models (Cleves et al., 2016). Its standardized nature makes it easy to implement and interpret across different studies and datasets.

3.12.8 Model Specification

The model specification test holds significant importance as it verifies whether a study has appropriately chosen a model for the regression model. There are various criteria defining a favourable model. These criteria include the stability of the model's parameters, the absence of severe correlation between the variables and the error term, consistency with existing theories, and the ability to make useful predictions (Gujarati, 2009). This study conducts the Ramsey Regression Specification Error Test (RESET) to assess the suitability of the regression models used in this study for empirical analysis and interpretation. If the p-value obtained from the RESET test is less than 0.10, this study will reject the null hypothesis, which suggests a misspecification of the functional form (Gujarati, 2009). It is generally expected that the p-value of the RESET test should be more than 0.1 as an indication of the non-existence of model misspecification.

3.13 Chapter Summary

This study includes a total of 100 companies listed in the Main Market and ACE Market from January 2012 to July 2019, with an observation window of 1-day for companies' initial performance, 3-years for companies' long-term performance and 5-years for companies' survival (end of observation period: July 2024). Several filtering processes are conducted to finalize the sample of this study. This study employs the share's first-day return to estimate companies' initial performance, the share's 3-years return post-IPO for companies' long-term performance, and 5-years censoring observation period for companies' survival. In examining the relationship between each determinant and companies' post-IPO performances and survival, several diagnostic tests are performed, including multicollinearity, heteroskedasticity, autocorrelation, proportional hazard, model selection, and model specification tests to ensure the

reliability of the regression analysis results. Once the reliability of the data is confirmed, this study runs the cross-sectional regression analysis using the ordinary least square models for companies' post-IPO performances analyses and the survival model for companies' survival analyses.

CHAPTER 4
FINDINGS AND DISCUSSION

4.1 Introduction

This chapter presents the preliminary and main findings of this study. Section 4.2 and Section 4.3 discuss the preliminary findings, which include descriptive statistics analyses of initial performance, long-term performance, survival, ESG, and other independent variables. This chapter continues with diagnostic tests, including normality, multicollinearity, heteroscedasticity, autocorrelation, endogeneity, model selection, and model specification. This chapter concludes with the main findings (Section 4.6), which examine the relationship between the independent variables and companies' post-IPO performance and survival.

4.2 Descriptive Statistics of Dependent Variables

Initial performance, long-term performance and survival are the dependent variables of this study. This study defines initial performance as a company's first-day return, long-term performance as a company's third-year return, and survival as a company actively trading without facing difficulties such as inability to fulfil listing requirements, poor financial or operational performance, merger or acquisition, or delisting. This study encompasses all companies listed from January 2012 to July 2019 and observes them according to the observation period for each dependent variable (1 day, 3 years, and 5 years post-IPO). Table 4.1 exhibits the descriptive analysis of the dependent variables of this study.

OTO (offer-to-opening price) and OTC (offer-to-closing price) represent the initial performance of companies based on their returns on the first trading day. The mean value of OTO is 17.45 percent, while OTC is slightly lower at 17.37 percent. This suggests that, on average, companies experience a positive return on their first trading day. The medians of OTO and OTC are 13.65 percent and 10.79 percent, respectively, which are lower than their corresponding means. This indicates the presence of right-skewness and several high-performing outliers. The minimum values reveal substantial negative returns, with OTO at -34.96 percent and OTC at -24.31 percent, highlighting that some companies suffer significant underperformance upon listing. The maximum

values are high, with OTO reaching 90.00 percent and OTC peaking at 113.67 percent, indicating substantial initial gains. The standard deviations, 28.58 for OTO and 31.38 for OTC, indicate considerable variability and dispersion in companies' initial performance, reflecting the volatile nature of companies' initial performance to IPOs.

Table 4.1

Descriptive Statistics of Dependent Variables from 2012 to 2018

Variables	Mean	Median	Minimum	Maximum	Standard Deviation
OTO	17.45	13.65	-34.96	90.00	28.58
OTC	17.37	10.79	-24.31	113.67	31.38
CAAR	16.48	-1.03	-52.82	159.98	56.46
BHAR	7.46	-4.57	-60.50	151.86	53.62
SURVIVAL	93.49	98.00	0	147	35.79

Notes: OTO and OTC are the companies' initial performance measured using offer to opening and closing price, respectively, CAAR and BHAR are the companies' long-term performance measured using the event study approach which are cumulative and buy-hold abnormal return, and SURVIVAL is the companies' survival measured with companies' time-to-survive, which is from companies' listing date until the end time that the companies have survived, expressed in months.

OTO and OTC means align closely with the dataset in Table 1.1 and Figure 1.2 at 17 percent. The high standard deviation of OTO and OTC also supports Table 1.1 and Figure 1.2, representing dispersion and volatility in earlier observation periods of initial performance post-IPO, which declines to lower than 20 percent starting in 2013. However, this study reports a higher initial performance of companies in the Malaysian market than a recent study by Che-Yahya et al. (2023), which used a sample of companies listed from 2004 to 2020, reporting a mean of -1.5 percent. This is potentially due to the sample difference between the studies. However, this study reports a marginally lower initial performance compared to Albada et al. (2023) and Albada et al. (2025), which employed samples from 2010 to 2019 and 2004 to 2021, respectively. The studies report an average initial performance of 21 percent and 27 percent, implying that the consequences of information asymmetry may be the rationale behind the higher opening and closing prices compared to the offer price, resulting in companies' higher initial performance.

CAAR (Cumulative Average Abnormal Return) and BHAR (Buy-and-Hold Abnormal Return) measure the long-term performance of companies after listing, specifically three years post-IPO. The mean CAAR is 16.48 percent, whereas the mean BHAR is significantly lower at 7.46 percent, suggesting that companies, on average,

generate positive abnormal returns over the long term. The median values are -1.03 percent for CAAR and -4.57 percent for BHAR, both negative, indicating that more than half of the sample companies underperform in the long run. The minimum values further highlight this trend, with CAAR plunging to -52.82 percent and BHAR to -60.50 percent signifying severe underperformance for some companies. On the other end, the maximum values are considerably high at 159.98 percent for CAAR and 151.86 percent for BHAR, reflecting that a subset of companies substantially outperformed. The high standard deviations, 56.46 for CAAR and 53.62 for BHAR, underscore the significant dispersion and risk associated with long-term performance.

The mean of CAAR (16.48 percent) and BHAR (7.46 percent) demonstrates that companies' performance is more favourable when evaluated cumulatively rather than using the buy-and-hold strategy. This is consistent with Table 1.2 and Figure 1.3 reporting higher long-term performance for CAAR as compared to the BHAR method. The negative medians at -1.03 percent for CAAR and -4.57 percent for BHAR in Table 4.1 also align and confirm that overall, more than half of the companies in the sample underperform in the long-run. This finding is consistent with Abbas et al. (2024) who reported a median of -21 percent for companies listed from 2007 to 2015. The minimum values of -52.82 percent and -60.50 percent indicate that the companies are incurring a loss of more than 50 percent, 3-years post-IPO. The minimum values are more extreme compared to those of Abdul Rahman and Che-Yahya (2019) (- 31.87 percent). The substantial negative minimum values for both CAAR and BHAR underscore the potential significant losses for companies in the years following their IPO. This finding suggests that a significant proportion of companies may experience substantial value erosion.

The SURVIVAL variable represents the duration, in months, that companies remain active post-listing without facing difficulties in fulfilling listing requirements, neither merged nor acquired nor delisted. The SURVIVAL mean is 93.49 months, suggesting that, on average, companies survive nearly eight years after listing. The median survival time is 98 months, slightly higher than the mean, indicating a relatively symmetrical distribution with slight left skewness. The SURVIVAL minimum value is 0, reflecting that some companies become inactive, exit, or cease operations almost immediately after listing. Meanwhile, the SURVIVAL maximum reaches 147 months, indicating the presence of censored observations, which suggest extended survival beyond this study's observation period (July 2024). The standard deviation of 35.79

months indicates a significant variation in SURVIVAL from its mean.

The mean of 93.49 for SURVIVAL is consistent with Alyasa-Gan et al. (2023), who reported a mean of 98.50 months for companies listed from 2000 to 2014. The mean reported for SURVIVAL in this study, however, is lower than that of Ahmad et al. (2021), who reported a mean of 17.05 years for companies listed from 1990 to 2017. This difference is explainable because SURVIVAL data is based on the definition of survival time in each study. Since this study employs a SURVIVAL definition that considers several criteria beyond delisted companies, it is only sensible that the SURVIVAL mean in this study is lower than that of those with only one criterion consideration. The minimum SURVIVAL value of 0 further confirms the statement in Table 1.3 and Figure 1.4, which reports SURVIVAL of less than 12 months, reinforcing the issue of companies' survivability in the Malaysian market. Overall, the alarming trends in companies' performances and survival post-IPO support the importance of evaluating post-IPO performance and survival, not only through return metrics but also through survival analysis metrics.

4.3 Descriptive Statistics of Independent Variables

This section reports and discusses the descriptive statistics of the main independent variables: the environmental, social, and governance scores. The discussion of the descriptive statistics for other independent variables (i.e., company size, company age, total IPO proceeds, underwriter reputation, insider ownership, total assets, leverage, sector, and market conditions) is also in this section.

Table 4.2

Descriptive Statistics of the Independent Variables

Variables	Mean	Median	Minimum	Maximum	Standard Deviation
TOTESG	40.9286	42.8571	0.0000	85.7143	16.2710
ESCORE	17.4000	20.0000	0.0000	80.0000	20.0300
SSCORE	35.2000	40.0000	0.0000	100.0000	21.4800
GSCORE	58.7500	50.0000	0.0000	75.00	16.43
SIZE (Mil)	1481.534	203.0250	31.64000	22787.00	3881.338
AGE	7.5400	2.0000	1.0000	41.0000	10.2656
PRO (Mil)	295.2420	36.50000	0.0000	5300.000	904.8328
UW	0.0800	0.0570	0.0063	0.3731	0.0772
OWNER	69.7414	70.8350	0.0000	100.0000	16.8843
TOTA ('000)	63010.25	2025.500	9.0000	2100000	298863.6
LEVERAGE	2.0650	0.861	0.0143	15.0392	3.4887
DSECTOR	0.1200	0.0000	0.0000	1.0000	0.3266

MCD1	15.7918	8.0000	-144.39	235.9400	79.5890
MC3YCAAR	-4.1794	-5.82	-23.77	16.810	8.0176
MC3YBHAR	-12.8	-16.5	-75	43.0000	22.9690
MC5YCAAR	-5.6252	-6.065	-25.44	15.0400	9.4897
MC5YBHAR	-10.4605	-10.425	-48.8	23.3800	16.6989

4.3.1 Environmental, Social and Governance Scores

Table 4.2 exhibits the descriptive statistics for all the independent variables in this study. Beginning with the TOTESG, which is the total score for ESG, it has a mean of 40.93 percent and a median of 42.86 percent. The minimum and maximum values range between 0 to 85.71 percent. A minimum of 0 for TOTESG indicates that there are companies with unobservable ESG practices reporting, while the maximum value suggests that there are other companies found to report high ESG practices. The high standard deviation reflects substantial dispersion of overall ESG practices reporting among companies in the Malaysia market.

Specifically, the ESCORE is the environmental reporting score, with a mean of 17.40 percent and a median of 20 percent. The value indicates that companies in Malaysia have low engagement to report their environmental activities, at only 17.4 percent, on average. A lower mean than the median suggests that only a small number of companies with slightly higher environmental practices are reporting, while the rest of the companies are in the large majority. Similar to TOTESG, ESCORE has a minimum of 0 with a maximum of 80 percent, indicating that some companies fail to report environmental practices prior to IPO, while others report the majority of 4 out of the 5 environmental practices. Based on our observation, there are a total of 44 companies with an ESCORE of 0 (minimum) and 2 companies with an ESCORE of 80 percent (maximum). Table 4.2 reports a standard deviation of 20 for ESCORE. The low mean and spread confirm that environmental practices reporting is limited across companies in the Malaysian market.

SSCORE is the social practices reporting score, reporting a mean of 35.2 percent and a median of 40 percent. In the same way, a lower mean than the median suggests only a small number of companies with slightly higher social practices reporting, and otherwise, for the other large number of companies. SSCORE reports a higher mean and median compared to ESCORE, at 40 percent, and is left-skewed. Although the minimum value is 0, only 13 companies with unobservable social practices are reporting, with some reporting all social practices pre-IPO (achieving a maximum of

100 percent). This means that companies in the Malaysian market put greater emphasis on reporting social practices than environmental practices.

GSCORE is the governance practices reporting score, reporting a mean of 58.75 percent and a median of 50 percent. Unlike ESCORE and SSCORE, the GSCORE mean is higher than the median, suggesting that a large number of companies report higher governance practices. This is evident from the mean surpassing 50 percent, suggesting companies report more than half of the governance practices pre-IPO. Although the minimum value is 0, there is only one company with unobservable governance practices reporting, with more than 40 companies reporting the majority of governance practices pre-IPO (a maximum of 75 percent). In an overall outlook of the three indicators, companies in the Malaysian market put the greatest emphasis on reporting governance practices.

Despite efforts by policymakers to emphasise the importance of transparency in sustainability-related information and encourage responsible investment, many Malaysian companies continue to provide minimal ESG disclosures, particularly for environmental and social practices. This is reflected in the relatively low proportion of ESG-compliant companies listed on the FTSE4Good Bursa Malaysia (F4GBM) Index, with only 3 percent in 2014 and around 13.88 percent[37] by the end of 2024. These findings are consistent with the argument by Mohammad and Wasiuzzaman (2021), who noted that the lack of mandatory ESG reporting contributes to the generally low level of ESG disclosure among pre-IPO companies in Malaysia.

4.3.2 Company Size

The company's size (or SIZE) is measured by the company's market capitalisation. The mean and median values for SIZE are RM1,481,534,000 and RM203,025,000, respectively. The minimum and maximum value for SIZE range between RM31,640,000 to RM22,787,000,000. The standard deviation of SIZE is RM3,881,000,000. This suggests a highly skewed distribution in which the majority of the companies in the sample are smaller, with a few large companies, significantly increasing the mean. The largest company during its IPO listing is IHH Healthcare

[37] Only 147 companies are listed in the F4GBM index as at December 2024 as opposed to 1059 companies listed on Bursa Malaysia.

Berhad, indicating that the company have the biggest market capitalisation among the companies in the sample of this study.

The average company size value reported in this study is higher than the values reported in Tajuddin et al. (2015) and Yaakub and Sherif (2019), at RM470,030,000 and RM511,520,000, respectively. This study features a more recent sample than previous studies, indicating that companies in the Malaysian market are experiencing growth. In fact, a more recent study by Li et al. (2023) found a higher SIZE among companies in the Malaysian market with a mean of RM12,802,600,000. Ahmad et al. (2021) also posit that companies listed in the Malaysian market are expanding. However, while larger companies are perceived to be more experienced, they can also indicate a higher risk of business failure than smaller companies due to the extensive operating activities and competition required to remain relevant in the market.

4.3.3 Company Age

AGE is the company's age measured from the company's incorporation year to its listing year. Table 4.2 exhibits that the mean and median values are 7.54 years and 2 years, ranging from a minimum value of 1 year and a maximum value of 41 years, respectively. AGE reports a standard deviation of 10.27 years. This study observes a varied pattern for companies' AGE mean across past studies in the Malaysian market: at 8 years (Ahmad et al., 2021), 16 years (Abbas et al., 2022), 14.6 years (Che-Yahya et al., 2023), and 11 years (Kalgo et al., 2023). The difference in AGE values across studies may be due to variations in sample selection and periods.

This study reports a low median value for AGE, which strongly indicates that the IPO companies in this study are relatively young, with some being as young as a year old. Evidently, there are 75 companies in this study's sample going public at an AGE of less than 10 years after their incorporation. Unlike developed markets like the U.S., where, on average, only companies with at least a decade of age will go public (Siev & Qadan, 2022), this study found that younger companies have major potential for growth in the Malaysian market. It signals a shift in the Malaysian IPO landscape, potentially reflecting the growth of start-ups and technology-driven businesses seeking public funding earlier in their lifecycle.

4.3.4 IPO Proceeds

The IPO proceeds (PRO) refer to the expected amount of IPO proceeds raised during the exercise of an IPO, typically divided into three categories: growth, debt repayment, and working capital (Alyasa-Gan et al., 2024). The mean and median values for PRO are RM295,242,000 and RM36,500,000, respectively. PRO value ranges between RM0 (minimum) to RM5,300,000,000 (maximum). The standard deviation is RM904,832,800, indicating a highly skewed distribution in which a small number of companies in the sample raised a large sum of proceeds going public.

The mean for PRO in this study shows that there is an inclining trend for the IPO proceeds raised among IPOs in the Malaysian market. In comparison with Kalgo et al. (2022), who reported a mean of RM126,000,000 for companies listed from 2002 to 2013, and Badru et al. (2016), who reported a mean of RM88,270,000 for companies listed from 2005 to 2015, this study reports a significantly higher mean. The higher mean reported in this study could be due to the PRO value of recently listed companies raising a larger sum of capital while going public. For instance, Lotte Chemical Titan Holdings Berhad, listed in 2017, raised as much as RM5,300,000,000 during its IPO (maximum). In fact, Badru (2021) states that the amount of raised IPO proceeds should vary across industries, market conditions, and most importantly, the size of the companies listed. A minimum value of zero for PRO indicates that the IPO proceeds raised will be allocated to the selling shareholders (existing owners) of the company, i.e., the IPO shares are being offered using the offer-for-sale method.

4.3.5 Underwriter Reputation

The underwriter reputation (UW) is the amount of issuance an underwriter underwrites as opposed to the total issuance of all other underwriters in a year. The mean and median values for UW are 8 percent and 5.7 percent, respectively. UW value ranges between 0.6 percent (minimum) to 37.31 percent (maximum). The standard deviation is 7.72 percent, indicating a moderately right-skewed distribution. A lower median and a right-skewed distribution indicate that most underwriters manage to underwrite a small share of the total IPOs. However, there are a few underwriters of high reputation that dominate the IPO issuance in certain years.

For instance, MIDF Amanah Investment Bank Berhad issued 37.18 percent of

the total IPO in 2016. A higher UW value indicates market dominance and credibility among underwriters, which will ultimately affect investor confidence (Chen et al., 2023). The outcome of this study is comparable to that of Che-Yahya et al. (2017), Che-Yahya et al. (2018), and Abdul Rahman and Che-Yahya (2019), which found mean values of 7.74 percent, 7.80 percent, and 8.58 percent for UW, respectively. These consistent findings suggest that while most underwriters maintain moderate market shares, the influence of dominant players, such as MIDF Amanah Investment Bank Berhad, can significantly impact IPO dynamics in certain years. The presence of such underwriters is thus an important consideration when evaluating the quality and expected outcomes of IPOs.

4.3.6 Insider Ownership

Table 4.2 presents the mean and median of insider ownership (OWNER) at 69.74 percent and 70.84 percent, respectively. The minimum and maximum value of OWNER is 0 percent and 100 percent, with a standard deviation of 16.88 percent. On average, insiders in the Malaysian listed companies prefer to retain more than 50 percent of their shareholdings during IPO, indicating high insiders' confidence in the companies' prospects. Furthermore, there are also companies with insiders who possess utter confidence in the company's prospects, maintaining their full shareholdings upon listing (100 percent). The high OWNER value also signals the companies' potential growth through the insiders' commitment (Mohd-Rashid et al., 2016).

In contrast, a minimum value of 0 percent implies that insiders have no intention to maintain their shareholdings. This means that there are IPOs issued with 100 percent of the shares using the offer-for-sale method. Comparing the mean value to Yatim (2011) at 57.34 percent, Mohd-Rashid et al. (2019) at 72 percent, Albada et al. (2018) at 67.52 percent, and Kalgo et al. (2022) at 71 percent, the OWNER mean of this study is within the range of more than 50 percent. Similarly, this study reports a mean OWNER higher than the other 32 markets (both developed and developing markets) reported by Espenlaub et al. (2016) at 53.74 percent, positing that insiders in the Malaysian market remain confident in the companies' prospects post-IPO.

4.3.7 Company Assets

TOTA is the company's total assets. Table 4.2 shows that the mean and median values are RM63,010,250,000 and RM2,025,500,000, respectively, with a range from a minimum value of RM9,000,000 to a maximum value of RM2,100,000,000,000. This study observes a varied pattern for companies' assets mean across past studies in the Malaysian market: at RM18,150,000 from 2005 to 2015 (Ahmad-Zaluki & Badru, 2020), RM8,017,050 from 1997 to 2017 (Ahmad et al., 2021), and RM5, 761,334,000 from 2012 to 2017 (Mohammad & Waisuzzaman, 2021). Similar to company size and age, the differences in companies' characteristics in a study are due to the different sample selection and periods. TOTA reports a standard deviation of RM298,864,000,000, indicating a highly skewed distribution in which a small number of companies in the sample have significantly larger asset values compared to the majority of the companies in the sample.

For instance, the company with the highest value of TOTA is ABM Fujiya Berhad, a company listed in 2013. The high value of TOTA reported in this study indicates that companies possess substantial assets prior to going public, thereby giving them greater access to additional resources and financing after the IPO. However, in the event of business operations expanding, it also carries inherent risks, as companies with large TOTA may face lower operational flexibility, making them more vulnerable during economic downturns (Ahmad et al., 2021).

4.3.8 Company Leverage

LEVRAGE is the company's total liabilities to equity. Table 4.2 shows that the mean and median values are 2.07 and 0.86, respectively, with a range from a minimum value of 0.01 to a maximum value of 15.04. On average, LEVERAGE in the Malaysian listed companies is more than one. This indicates that the majority of companies in the sample are debt-financed rather than equity-financed, which can raise potential concerns regarding financial risk and solvency, especially in uncertain market environments. However, this is not uncommon in emerging markets, where debt may be a more accessible or cost-effective financing option compared to equity (Rajan & Zingales, 1995). High LEVRAGE can amplify returns during favourable periods, but it also increases vulnerability to cash flow disruptions and interest rate fluctuations

(Purwanto & Pardistya, 2021; Zainudin et al., 2017).

The standard deviation is 3.49, revealing that while some companies are more conservative in debt financing, many companies rely heavily on it. Out of 54 companies with LEVERAGE of more than one, 44 of them are listed in the Main Market. This finding is consistent with past studies, which suggest that larger companies are riskier than smaller companies, as noted by Ahmad et al. (2021) and Iwasaki and Kočenda (2019). The studies also indicate that large companies often choose voluntary delisting with the intention of returning to private ownership, primarily to restructure or simplify their capital structure.

4.3.9 Company Sector

Company sector ($D^{SECTOR)}$ uses a dummy value of 1 to designate technology and 0 otherwise. Table 4.2 presents that the mean and median for D^{SECTOR} are 0.12 and 0, respectively. The standard deviation is reported at 0.3266. The mean value of 0.12 suggests that, on average, only 12 per cent of the IPO companies listed between 2012 and 2019 are from the technology sector, while the remaining 88 percent are from other sectors, such as industrial products, consumer services, and other sectors not directly related to technology. This reflects the limited representation of technology companies in Malaysian IPOs during the observed period.

This is consistent with findings from Badru et al. (2018) and Saleh and Che-Yahya (2021), which report that 25 percent and 18 percent of the total companies listed are in technology sectors. These findings indicate that Malaysia's IPO market is skewed toward conventional sectors, with technology sectors accounting for only a small proportion of listings. The underrepresentation of the technology sector may be attributed to several factors, including higher perceived risk, unpredictable revenue streams, and the intangible nature of assets in the technology sector, which can complicate valuation and deter conservative investors. Nevertheless, as global capital markets evolve and digital innovation accelerates, the participation of technology companies in IPOs is expected to grow, potentially reshaping investor sentiment and market structure (Fineberg et al., 2025).

4.3.10 Market Condition

The market conditions are divided into several terms (initial and long-term performance), which are market conditions on the first day post-IPO (MCD1), third year post-IPO using CAAR method (MC3YCAAR) or BHAR method (MC3YBHAR), and fifth year post-IPO using CAAR method (MC5YCAAR) or BHAR method (MC5YBHAR). Table 4.2 reports that the average MCD1 is 15.79 percent with a median of 8 percent, ranging from -144.39 percent (minimum) to 235.94 percent (maximum). Next, the mean and median for MC3YCAAR are -4.18 percent and -5.82 percent ranging from -23.77 percent (minimum) and 16.81 percent (maximum). The mean and median for MC3YBHAR are -12.8 percent and -16.5 percent ranging from -75 percent (minimum) and 43 percent (maximum). Next, the mean and median for MC5YCAAR are -5.63 percent and -6.07 percent, respectively, ranging from -25 percent (minimum) and 15 percent (maximum). The mean and median for MC5YBHAR are -10.46 percent and -10.43 percent ranging from -48.8 percent (minimum) and 23.38 percent (maximum). The standard deviation for each term varies differently with MCD1 at 79.59 percent, MC3YCAAR at 8.02 percent, MC3YBHAR at 22.97 percent, MC5YCAAR at 9.49 percent, and MC5YBHAR at 16.70 percent.

This high average MCD1 suggests that the IPO market has a positive sentiment on the first day of trading. However, the vast range and high standard deviation indicate significant volatility and variability in first-day market performance, driven by investor speculation or pricing inefficiencies in the IPO market, especially in the developing markets (Fleming et al., 2021; Yang et al., 2022). Analysing the long-term market performance (MC3YCAAR and MC3YBHAR), this study reveals a negative average long-term market condition, indicating a trend of underperformance in the long-run.

Abdul-Rahim et al. (2015) and Che-Yahya et al. (2023) reported positive MCD1 results in their studies (0.90 percent and 42 percent, respectively). Although the values vary, the positive value reported across studies, including this one, confirms the phenomenon of positive sentiment among investors on the IPO's initial trading day. It can also be related to the underpricing phenomenon (Wang et al., 2024). Other study as Abbas et al. (2023), also confirm the negative long-term market performance of Malaysian IPOs, reporting an average of -3.94 percent MC3YCAAR for companies listed from 2007 to 2015. This suggests that the market is unable to maintain its initial positive momentum in the long-run, resulting in losses for investors holding their shares

3 years and 5 years post-IPO.

4.4 Diagnostic Test Findings for Initial and Long-Term Performance Models

This section discusses the diagnostic test results, which include normality, multicollinearity, heteroscedasticity, autocorrelation, endogeneity, model selection, proportional hazards, and model specification tests. All of the diagnostic tests employed are also used to ensure that this study meets the requirements of testing the Ordinary Least Squares models (initial and long-term performance) and the survival analysis models. There are a total of 14 models, ranging from initial performance models to long-term performance models and survival models, each differing according to the ESG pillars, measurement of the dependent variable, and other independent variables included in this study.

Model 1 and Model 2 represent initial performance models. Model 3 to Model 6 represent long-term performance models. Model 7 to Model 14 represent survival models. All models are divided based on the examination of ESG reporting influencing (collective and individual components) companies' post-IPO performances and survival.

4.4.1 Jarque-Bera Findings

Skewness, kurtosis, and the Jarque-Bera (JB) test are employed to assess the normality of the data. For a variable that follows a normal distribution, the expected values for skewness and kurtosis are 0 and 3, respectively (Gujarati, 2009). The value for JB test should be closer to 0, with a p-value of more than 0.05 to reject null hypothesis of non-normal distribution (Gujarati, 2009).

Referring to Table 4.3, OTO shows positive skewness (0.7658) and is leptokurtic (kurtosis value of 3.73). The JB statistic is 11.97, which is statistically significant (p-value of 0.0025), indicating that the distribution of OTO is non-normally distributed. OTC is positively skewed (1.61) and is leptokurtic (kurtosis value of 5.94), reflecting a concentration of values at lower levels and heavy tails. The JB statistic is 79.30 and is highly significant (at the 1 percent level), confirming data non-normality. The CAAR presents positive skewness (1.24) and moderate leptokurtosis (kurtosis value of 3.91). The JB statistic is highly significant (28.33), indicating a non-normal

distribution. BHAR is positively skewed (1.22) and leptokurtic (kurtosis value of 4.03). The JB statistic is 29.12, confirming non-normality. Collectively, the dependent variables for the initial and long-term performance models are non-normally distributed.

Table 4.3

Skewness, Kurtosis and Jargue-Bera Tests

Variables	Skewness	Kurtosis	Jargue-Bera	P-value	Observation
OTO	0.76580	3.7264	11.9733	0.00	100
OTC	1.6134	5.936	79.3009	0.00	100
CAAR	1.2417	3.7944	28.3266	0.00	100
BHAR	1.2164	4.0345	29.1211	0.00	100
TOTESG	0.1194	2.79	0.2987	0.86	100
ESCORE	1.1716	2.8791	25.8519	0.00	100
SSCORE	0.2427	3.8448	1.2151	0.54	100
GSCORE	-0.7218	2.7633	9.384	0.01	100
SIZE (Mil)	3.9390	3.4102	1277.563	0.00	100
AGE	1.7573	18.6382	71.1977	0.00	100
PRO (Mil)	4.4690	5.176	1989.952	0.00	100
UW	2.7200	22.9424	331.6557	0.00	100
OWNER	-1.6194	10.0713	144.2204	0.00	100
TOTA (‘000)	6.1409	7.9115	6471.219	0.00	100
LEVERAGE	2.7373	40.4466	307.4362	0.00	100
DSECTOR	2.3387	9.6192	141.3233	0.00	100
MCD1	0.8674	6.4697	19.0227	0.00	100
MC3YCAAR	0.4789	4.2474	4.6014	0.10	100
MC3YBHAR	0.2114	3.4323	1.178	0.55	100
MC5YCAAR	0.2663	3.3225	1.6610	0.44	100
MC5YBHAR	0.0257	2.661	0.4560	0.80	100

TOTESG displays near-zero skewness (0.12) and is mesokurtic (kurtosis value of 2.88). The non-significant JB statistic (0.2987, p-value of 0.86) suggests normally distributed data. ESCORE shows positive skewness (1.17) and leptokurtic (kurtosis value of 3.84). The significant JB statistic (25.85) indicates non-normality. SSCORE also displays near-zero skewness (skewness of 0.2427) and mesokurtic (kurtosis value of 2.76), with a non-significant JB statistic (1.22, p-value of 0.54). GSCORE is negatively skewed (-0.7218) and is slightly leptokurtic (kurtosis value of 3.41). The JB statistic (9.38, p-value of 0.01) confirms non-normality. Overall, TOTESG and SSCORE exhibit normally distributed data, while ESCORE and GSCORE exhibit non-normal distributions.

SIZE is highly positively skewed (skewness of 3.94) and highly leptokurtic (kurtosis value of 18.64). The JB statistic (1277.56, p- value of 0.00) shows strong

evidence against normality. The AGE distribution is positively skewed (skewness of 1.76) and leptokurtic (kurtosis value of 5.18), and the JB statistic (71.20, p-value of 0.0000) indicates non-normality. PRO is positively skewed (skewness of 4.47) and leptokurtic (kurtosis value of 22.94). The JB statistic (1989.95, p-value of 0.00) indicates a highly non-normal distribution. UW also exhibits high positive skewness (2.72) and leptokurtic (kurtosis value of 10.0713), with a significant JB statistic (331.66, p-value of 0.00), confirming non-normality. OWNER is negatively skewed (-1.6194) and leptokurtic (kurtosis value of 7.91). The JB statistic (144.22, p-value of 0.00) confirms that this variable is non-normally distributed. TOTA exhibits right-skewness (6.14) and leptokurtosis (40.45). The JB statistic (6471.22, p-value of 0.00) strongly indicates non-normality.

LEVERAGE is positively skewed (2.74) and leptokurtic (kurtosis value of 9.62), with a JB statistic of 307.44 (p-value of 0.00), indicating non-normality. D^{SECTOR} is positively skewed (2.34) and leptokurtic (kurtosis value of 6.47). The JB statistic (141.33, p-value of 0.00) suggests a non-normal distribution. MCD1 is moderately skewed (0.8674) and leptokurtic (kurtosis value of 4.25). The significant JB test (19.02, p-value of 0.00) reveals a non-normal distribution. MC3YCAAR is moderately skewed (0.4789) and is mesokurtic (kurtosis value of 3.43). The JB statistic (4.60, p-value of 0.10) is not statistically significant, suggesting that this variable follows a normal distribution. MC3YBHAR has a near-zero skewness (skewness value of 0.2114) and is mesokurtic (kurtosis value of 3.32). A JB statistic of 1.178 (p-value of 0.55) indicates that the data appear normally distributed. MC5YCAAR also has a near-zero skewness (0.2663) and mesokurtic (2.66). The JB statistic (1.66, p-value of 0.44) supports the hypothesis that the data is normally distributed. MC5YBHAR shows moderate skewness (0.0257) and mesokurtic (kurtosis value of 2.67). The non-significant JB statistic (0.4560, p-value of 0.80) confirms that MC5YBHAR is normally distributed.

It is illustrated that the MC3YCAAR, MC3YBHAR, MC5YCAAR, and MC5YBHAR data are normally distributed, while the SIZE, AGE, PRO, UW, OWNER, TOTA, LEVERAGE, DSECTOR, and MCD1 data are not. The non-normal distribution of the data indicates that the residuals do not adhere to the OLS model assumption. Volgevang (2005) discusses the cause of non-normality as being due to the presence of outliers and extreme values in residuals. However, Yusoff et al. (2022) confirm that this is a commonality across studies using financial data, which often consist of non-normally distributed data, and that the violation is tolerable and will not

be the main issue in cross-sectional regression models. This study employs three methods to address the issue of outliers and extreme values: box plots, extremes, and winsorization at 1 percent, 5 percent and 10 percent.

4.4.2 Pearson Correlation Coefficient Matrix and Variance Inflation Factor Findings

The Pearson Correlation Coefficient Matrix (PCCM) and Variance Inflation Factor (VIF) tests examine the presence of multicollinearity. Appendix 3 to Appendix 5 display the findings for the PCCM tests, and Appendix 6 to Appendix 8 display the findings for the VIF tests. Wooldridge (2020) suggests that a value above 0.90 for PCCM between two independent variables signals a strong correlation, potentially indicating severe multicollinearity. Similarly, based on the VIF test, Wooldridge (2020) posits that a VIF value exceeding 10 for an independent variable generally indicates a high degree of correlation with other independent variables, suggesting the existence of severe multicollinearity in the model. The highest correlation found between independent variables is between SIZE and TOTA, which is 0.554 across both initial and long-term performance models. The highest correlation found between independent variables is between PRO and SIZE, with a reported value of 0.6057 across the survival models. Consistently, the VIF test findings report the highest VIF value at 1.84 in Appendix 7 (long-term performance using BHAR). Considering that a severe multicollinearity issue between independent variables only exists in a model if the value of PCCM surpasses 0.90 and the VIF value is at or exceeds 10, this study confirms that no severe multicollinearity issue exists in the initial and long-term performance models.

4.4.3 Huber White Test Findings

The Huber-White test is utilised in this study to identify the presence of heteroscedasticity. According to Wooldridge (2020), heteroscedasticity occurs when the spread of the errors (residuals) in a regression model varies across different values of the independent variables. The null hypothesis of homoscedasticity is rejected if the p-value is less than 0.05, indicating the presence of heteroscedasticity. Appendix 9 presents the initial performance models, which show insignificant p-values of more than 0.05, at 0.4935, 0.2437, 0.7166, and 0.4045, respectively. The insignificant p-values

indicate that the residuals in the regression models remain relatively constant across the independent variables. Thus, this study accepts the null hypothesis of homoscedasticity.

However, Appendix 10, which reports the long-term performance models, yields significant p-values of 0.0023, 0.0058, 0.0023, 0.0328, 0.0238, 0.0079, 0.0139, and 0.0002, respectively. This indicates that the null hypothesis of homoscedasticity needs to be rejected, concluding the presence of heteroscedasticity in the long-term performance models. This study follows the notion that heteroscedasticity must be addressed to ensure unbiased findings. Following Yusoff et al. (2022), the Newey-West test is employed for long-term performance models.

4.4.4 Durbin Watson d Test Findings

The Durbin-Watson test is utilised to identify the presence of autocorrelation. The existence of autocorrelation violates the assumption of observation independence. Each model follows a different upper bound (dU) and lower bound (dL), depending on the number of independent variables. This study follows the Durbin Watson Significance Table. Suppose the observed value of the test statistic is less than the dL. In that case, the null hypothesis of non-autocorrelated errors in favour of the hypothesis of positive first-order autocorrelation is rejected. If the test statistic value is greater than dU or between dU and dL, this study will not reject the null hypothesis.

According to the Durbin-Watson Significance Table (refer to Appendices 19 and 20), models consisting of 10 independent variables have dU and dL values of 1.46 and 1.90, respectively, while models consisting of 12 independent variables have dU and dL values of 1.42 and 1.95, respectively. Based on the findings in Appendix 11, models 1 to 4 report values ranging between 1.48 and 1.84. This indicates that the test produces values between the stated dU and dL, signifying that all estimated regression models for initial performance are free from severe autocorrelation issues. Next are the regression models for the long-term performance. Models consisting of 11 independent variables have dU and dL values of 1.44 and 1.92, respectively, while models consisting of 13 independent variables have dU and dL values of 1.39 and 1.97, respectively. Based on the findings in Appendix 12, values range between 2.17 and 2.38. This indicates that the test produces values above that of the dU, signifying that all estimated

regression models for long-term performance are also free from severe autocorrelation issues.

4.4.5 Residual Test Findings

The Residual test is employed to examine the presence of endogeneity among variables in this study. Endogeneity occurs when one or more independent variables are correlated with the error term, potentially resulting in biased and inconsistent regression estimates. The null hypothesis of exogenous is rejected if the p-value for the variable's residual is significant, i.e., a p-value less than 0.05. According to the residual tests performed for both initial and long-term performance models in Appendices 13 and 14, the results show that none of the independent variables' residual terms are statistically significant when tested in the models. All independent variables' p-value residual terms fall above 0.05. This indicates that the independent variables are uncorrelated with the error terms. Therefore, there is no evidence of endogeneity in the regression models for initial performance and long-term performance in this study.

4.4.6 Ramsey RESET Test Findings

The Ramsey RESET test is employed to verify the appropriateness of the regression models in this study. A p-value of more than 0.05 indicates the non-existence of model misspecification, signifying the model is appropriately specified for the regression analysis. Referring to the findings for both initial and long-term performance models in Appendices 15 and 16, the p-values are 0.1381, 0.2893, 0.1988, and 0.8328 for initial performance models. The p-values for long-term performance models are 0.0986, 0.1676, 0.0978, 0.1617, 0.3598, 0.0706, 0.2316, and 0.2014. The findings show that all regression models for initial and long-term performances are specified correctly.

4.5 Diagnostic Test Findings for Survival Models

Survival models comprise Cox Proportional Hazard (COX) and Accelerated Failure Time (AFT) models. Consistent with Figure 3.4, this study performs three tests for the survival model. This study performs the PCCM and VIF tests, the Akaike information criterion test for AFT, and the Schoenfeld residual test for COX.

4.5.1 Pearson Correlation Coefficient Matrix and Variance Inflation Factor Findings

Referring to Appendix 5, the highest correlation found in the survival models is between PRO and SIZE, reported at 0.6057. The highest VIF value is reported at 2.41 in Appendix 8 for survival models. Considering this study, following the notion that severe multicollinearity issues between independent variables only exist in a model if the value of PCCM surpasses 0.90 and the VIF value is at or exceeds 10, this study confirms that there is no severe multicollinearity issue in the survival models.

4.5.2 Akaike Information Criterion Findings

This study uses the Akaike Information Criterion (AIC) test to determine the best-fitting model among survival distributions. The AIC test is the preferred method for selecting the best-fitted model among non-nested models, including the Exponential, Weibull, Log-normal, and Log-logistic (Cleves et al., 2017). Based on the AIC test, the best-fitted model for this study is the Exponential density survival distribution. The Exponential distribution model is chosen based on the lowest AIC value, which is 169.34, 176.37, 170.22, 175.99, 175.60, 171.44, 172.62, and 172.22, respectively. Appendix 17 presents the comparison of AIC values among all models.

4.5.3 Schoenfeld Residual Test Findings

This study employs the Schoenfeld residuals test to assess the proportional hazard function in the Cox model. A significant p-value, i.e., less than 0.05, is evidence of specification violation of the proportional hazard assumption. Referring to Appendix 18, the global test indicates p-values of more than 0.05, which are at 0.2020, 0.6963, 0.2158, 0.3160, 0.67, 0.1985, 0.7533, and 0.7852, respectively. Based on the findings, this study concludes that there is no evidence to suggest that the COX models violate the proportional hazards assumption.

4.6 Determinants of Initial Performance, Long-term Performance, and Survival

4.6.1 The Relationship between ESG and Initial Performance

Table 4.4 displays the findings for the determinants of initial performance, which include ESG (TOTESG, ESCORE, SSCORE, and GSCORE), company-specific characteristics (SIZE, AGE, TOTA, and LEVERAGE), issuance characteristics (PRO, UW, OWNER, and DSECTOR), and market conditions (MCD1). The main analysis for the determinants of initial performance uses the offer-to-close (OTC) returns. Model 1 adopts the total ESG score as the main independent variable, while Model 2 adopts the individual components of the ESG score as the main independent variable.

Model 1 exhibits an F-statistic of 2.13 (p-value of 0.03), indicating a significant model at the 5 percent level. The R-squared value is 0.1934. The model reports an adjusted R-squared of 0.1028, indicating that approximately 10.28 percent of the variation in OTC is explained by the independent variables used in the model. Five independent variables are statistically significant to OTC in Model 1, which are TOTESG, AGE, LEVERAGE, D^{SECTOR} and MCD1. The significant level varies from 5 percent and 10 percent level. Other independent variables found insignificant are SIZE, PRO, UW, OWNER and TOTA.

Model 2 exhibits an F-statistic of 3.69 (p-value of 0.00), indicating a highly significant model at the 1 percent level. The R-squared value is 0.3374. The model reports an adjusted R-squared of 0.2460, indicating that approximately 24.60 percent of the variation in OTC is explained by the independent variables used in the model. Four independent variables are statistically significant in Model 2: ESCORE, AGE, UW, and MCD1. The significance level varies from a 1 percent level to a 10 percent level. Other independent variables found insignificant are SSCORE, GSCORE, SIZE, PRO, OWNER, TOTA, LEVERAGE, and D^{SECTOR}.

For Model 1, TOTESG is statistically significant at the 10 percent level, signifying a positive influence of TOTESG on OTC. A coefficient of 0.0018 indicates that with a per-unit change of TOTESG, OTO and OTC are to change by 0.0018 units. The findings suggest that companies with higher transparency on ESG practices reporting will experience favourable performance on their first trading day. Overall, this study successfully achieves its Research Objective 1 and effectively answers its

Research Question 1. Hypothetically, this study is able to support H1a.

Table 4.4

Multiple Regression Analysis of Initial Performance Models (Offer-to-close)

Variables	Exp. Sign	Model 1: TOTESG		Model 2: E,S,G	
		Coefficient	t-stats	Coefficient	t-stats
Main Independent Variables					
TOTESG	+ve	0.0018	1.78*		
ESCORE	+ve			0.7315	1.85*
SSCORE	+ve			-0.1206	-0.39
GSCORE	+ve			-0.3350	-0.71
Other Independent Variables					
SIZE	+ve	0.0102	1.100	-0.0288	-0.59
AGE	+ve	-0.0024	-2.03**	-0.0100	-1.79*
PRO	+ve	-0.0019	-0.75	-0.0043	-0.36
UW	+ve	0.0167	0.9600	1.3424	4.42***
OWNER	+ve	-0.0018	-0.0800	0.0005	0.16
TOTA	+ve	0.0000	-0.6500	-0.0766	-0.96
LEVERAGE	-ve	-0.0081	-2.17**	-0.0043	-0.25
D^{SECTOR}	-ve	0.0919	2.35**	0.1508	0.81
MCD1	+ve	0.0003	1.750*	0.0023	3.03***
R^2		0.1934		0.3374	
Adjusted R^2		0.1028		0.2460	
F-statistics		2.13		3.69	
p-value F-statistics		0.0296		0.002	

Note: Asterisks ***,**, and * indicate significant at 1 percent, 5 percent, and 10 percent, respectively. ESCORE is the score of environmental reporting, SSCORE is the score of social reporting, GSCORE is the score of governance reporting, SIZE is the company size, AGE is the company age, PRO is the IPO proceeds, UW is the underwriter reputation, TOTA is the total assets, LEVERAGE is the debt-to-equity ratio, D^{SECTOR} is the dummy tech sector, and MCD1 is the market condition first-day post-IPO.

ESG is tested individually in Model 2, with ESCORE being statistically significant at the 10 percent level. There is a positive influence of ESCORE on OTC. A coefficient of 0.7315 indicates that with a per-unit change in ESCORE, OTC changes

by 0.7315 units. Although ESCORE is marginally significant, the positive relationship between ESCORE and OTC reflect investors' preference for companies to report higher environmental practices over social and governance practices. In fact, SSCORE and GSCORE are found to be insignificant under the determinants of initial performance. Hypothetically, this study is able to support H1b, but unable to support H1c and H1d.

From a collective perspective, ESG practices reporting serves as a positive signalling mechanism for the quality of IPO issuances, particularly on the first day of trading. Higher levels of ESG disclosure are associated with improved transparency and reduced informational gap between issuing companies and investors (Silanes et al., 2019; Goul et al., 2011). Consistent with the findings of Baker et al. (2021) and Feng et al. (2018), ESG practices reporting helps reduce uncertainty surrounding a company's valuation during its IPO, inducing investors' confidence to subscribe to the issued shares. Companies that disclose higher ESG practices reporting also demonstrate their alignment with policy-driven ESG agendas, signalling their legitimacy through responsible practices that benefit not only the issuing companies but also investors and society at large (Au et al., 2023). Offering comprehensive ESG practices reporting signals companies' reporting quality, which can enhance companies' value and reduce potential risks in the long-run. This reduces the informational asymmetry between companies and potential investors during an IPO offering, enhancing issuance demand, resulting in higher IPO subscriptions and improving companies' post-IPO initial performance.

From the legitimacy theory perspective, reporting ESG practices enhances companies' reputation and enables them to gain legitimacy for their business activities from stakeholders, thereby reducing uncertainty associated with IPO issuance. In line with the arguments in Sadiq et al. (2020) and Baker et al. (2021), companies' value and performance are congruent with the social system's value framework that companies can offer during IPO. By reporting higher ESG practices, companies demonstrate that they are conforming to the rising societal expectations around sustainability, ethics, and stakeholder accountability, instilling confidence in the companies' business activities. The finding confirms that companies offering higher reporting on environmental practices (ESCORE) tend to exhibit favourable initial performance. As climate change and environmental risks increase, ESG reporting reflects companies' transparency regarding their vulnerability to potential damage, liability, and financial losses (Chen et al., 2023). If investors believe the companies' ESG practices information disclosure

includes sustainable information, the companies' legitimacy and reputation are safeguarded and enhanced (Ameer and Othman, 2012). This is especially relevant to companies in the Malaysian market, where policymakers (e.g., Bursa Malaysia and Securities Commission Malaysia) have introduced guidelines and developed frameworks that mandate companies to report on ESG practices, assisting investors in making strategic investment decisions. Consequently, investors become attracted to invest in Malaysian IPOs, increasing companies' initial performance post-IPO.

Furthermore, this study found that SSCORE has a negative but insignificant relationship with companies' initial performance. Despite the insignificance, the negative correlation between SSCORE and initial performance is inconsistent with the proposition of this study that companies reporting higher social practices will increase the initial performance. Investors may interpret social initiatives as costly rather than value drivers. According to Feltovich et al. (2021), investing heavily in social activities may be interpreted as a financial burden rather than a strategic advantage, particularly in companies with a limited financial history. Offering social responsibility activities is expensive, and in order for companies to compensate for this cost, they often pass it on to workers by offering lower wages, which can demotivate them (Feltovich et al., 2021). This disproportionate act[38] , which emphasises corporate social responsibility without protecting labours, may create uncertainty among investors regarding companies' reporting credibility on social practices, discouraging investors from subscribing to issued IPOs. However, due to the insignificance, this study is unable to conclude the influence of SSCORE on companies' initial performance.

Similar to SSCORE, GSCORE reports a negative but insignificant influence on companies' initial performance. While the initial argument in this study suggests that higher ESG practices reporting can alleviate information asymmetry, this study's findings observe that higher GSCORE reporting can be related to stricter governance within a company. Although having good control within a company may be necessary to ensure close monitoring (Chatterjee et al., 2024), higher governance practices also reflect control complexity, which hampers effective monitoring and decision-making (Guest, 2009). A higher level of control may also decrease companies' operational efficiency, as it delays the process for management and the board of directors to make

[38] Only 18 percent of companies in the sample report labour standards, 21 percent emphasized on human rights and community, and only 6 percent reports supply chain social practices.

a conclusive decision, especially among companies in developing markets (Almashhadani & Almashhadani, 2022). This sends signals of limitations on managerial flexibility to investors, reducing the perceived benefits of higher information transparency and discouraging investors' subscription. A study by Wahab et al. (2008) also found that institutional ownership is positively related to governance prior to 2001; however, after governance reforms (via the MCCG), the relationship becomes less favourable, suggesting that a more stringent regime may reduce the attractiveness of investment, or that monitoring becomes endogenous. Hence, this may lead to fewer subscriptions from investors, which in turn may hamper the IPO price on its first trading day and reflect lower initial performance. However, due to the insignificance, this study is unable to conclude the influence of GSCORE on companies' initial performance.

4.6.2 The Relationship between ESG and Long-term Performance

Table 4.5 displays the findings for the determinants of long-term performance, which include ESG (TOTESG, ESCORE, SSCORE, and GSCORE), company-specific characteristics (SIZE, AGE, TOTA, LEVERAGE), issuance characteristics (PRO, UW, OWNER, DSECTOR), and market conditions (MC3YCAAR). The main analysis for the determinants of long-term performance uses CAAR (Model 3 to Model 6). Models 3 and 4 adopt the total ESG score as the main independent variable, while Models 5 and 6 adopt the individual components of the ESG score as the main independent variable. The models also include OTO and OTC to study the integration between prior performances and companies' sustainability.

Model 3 exhibits an F-statistic of 1.74 (p-value of 0.08), indicating a significant model at the 10 percent level. The R-squared is 0.1787. The model reports an adjusted R-squared of 0.076, suggesting that about 7.6 percent of the variation in CAAR is explained by the independent variables employed. Significant independent variables are TOTESG, OTO, SIZE, PRO, and MCD3YCAAR. Model 4 exhibits an F-statistic of 1.65, with a p-value of 10 percent level. The R-squared is 0.1712 with an adjusted R-squared of 0.0677, suggesting that about 6.77 percent of the variation in CAAR is explained by the independent variables employed. Significant independent variables are TOTESG, OTC, SIZE, TOTA, and MCD3YCAAR.

Model 5 exhibits an F-statistic of 1.61 (p-value of 0.10), indicating a significant model at the 10 percent level. The R-squared is 0.1920. The model reports an adjusted

R-squared of 0.0699, suggesting that about 7 percent of the variation in CAAR is explained by the independent variables employed. Significant independent variables are SSCORE, OTO, AGE3Y, PRO, and MCD3YCAAR. Model 6 exhibits an F-statistic of 1.6 (p-value of 0.10), indicating a significant model at the 10 percent level. The R-squared is 0.195. The model reports an adjusted R-squared of 0.0734, suggesting that about 7.34 percent of the variation in CAAR is explained by the independent variables employed. Significant independent variables are OTC, PRO, and MCD3YCAAR.

For Models 3 and 4, TOTESG is statistically significant at the 10 percent levels for CAAR. The findings report a uniform negative influence of TOTESG on companies' long-term performance. A coefficient of -0.0065 and -0.0056 indicates that, with a per-unit change in TOTESG, long-term performance is expected to change by the stated units, respectively. Instead of the initial proposition of this study that companies with higher transparency in ESG practices reporting will experience favourable performance in the long-run, the findings suggest that higher ESG practices reporting leads to long-term underperformance.

For Model 5 and 6, the individual components of ESG are examined as factors affecting companies' long-term performance. This study found that SSCORE has a negative and significant influence on companies' long-term performance. At the same time, the other two (ESCORE and GSCORE) remain insignificant throughout the long-term performance models. The findings suggest that companies with higher social practices reporting will face difficulties in gaining favourable long-term performance post-IPO. Overall, this study achieves its Research Objective 2 and able to answer to its Research Question 2. Hypothetically, this study is unable to support H2a, H2b, H2c, and H2d.

The influence of ESG practices reporting on long-term performance contrasts with initial performance, suggesting a diminishing effect of a positive signalling tool

Table 4.5

Multiple Regression Analysis of Long-term Performance Models (CAAR) – Newey-West Test

Variables	Exp. Sign	Model 3: TOTESG		Model 4: TOTESG		Model 5: E,S,G		Model 6: E,S,G	
		Coefficient	t-stats	Coefficient	t-stats	Coefficient	t-stats	Coefficient	t-stats
Main Independent Variable									
TOTESG	+ve	-0.0065	-1.9000*	-0.0056	-1.7047*				
ESCORE	+ve					-0.0800	-0.2281	-0.1456	-0.3906
SSCORE	+ve					-0.3684	-1.7253*	-0.2980	-1.1420
GSCORE	+ve					0.1227	0.4096	0.1201	0.2182
Other Independent Variables									
OTO	+ve	-0.4949	-3.1545***	-	-	-0.5265	-3.1928***	-	-
OTC	+ve	-	-	-0.0039	-2.9227***	-	-	-0.0054	-3.1883***
SIZE	+ve	-0.1063	-2.2863**	-0.0974	-2.1071**	-0.0007	-0.4071	-0.0871	-1.4384
AGE	+ve	-0.0042	-0.7829	-0.0052	-1.1007	-0.5986	-1.7396*	-0.0049	-0.9214
PRO	+ve	-0.0147	-1.8250*	-0.0098	-1.3825	-0.0008	-1.7417*	-0.0007	-1.9581**
UW	+ve	-0.3853	-0.7445	-0.0395	-0.6106	-0.1240	-0.5718	-0.2082	-0.7140
OWNER	+ve	0.0029	0.6925	0.0019	0.7685	0.0020	0.8248	0.0023	0.6962
TOTA	+ve	0.7910	1.5840	0.0911	1.8668*	0.0704	1.4798	0.1141	1.9836**
LEVERAGE	-ve	-0.0082	-0.2924	-0.0081	-0.8345	0.0043	0.2360	0.0022	0.1442
D^{SECTOR}	-ve	0.1075	0.5401	0.1788	0.8689	0.1283	0.6985	0.2857	1.1482
MC3YCAAR	+ve	-1.0149	-2.0786**	-1.5636	-2.4252**	-1.9582	-2.6697***	-2.3101	-2.5868***
R^2		0.1787		0.1712		0.1920		0.1950	
Adjusted R^2		0.0760		0.0677		0.0699		0.0734	
F-statistics		1.7405		1.6536		1.6126		1.6029	
p-value F-statistics		0.0774		0.0978		0.0991		0.0999	

Note: Asterisks ***,**, and * indicate significant at 1 percent, 5 percent, and 10 percent, respectively. OTO and OTC are the initial performances using offer-to-open and offer-to-close measurements. Other abbreviations are explained in Table 4.4.

when information asymmetry is no longer an issue. Over time, the market adjusts to new information, and investors reassess the companies' value based on either their financial or operational performance metrics. This act might lead to market correction, especially if ESG practices reporting do not translate into measurable improvements in companies' performance (Kang & Lam, 2022). There are also companies often lack the capacity to implement the reported ESG practices (Abbas et al., 2022).

The initial ESG practices reporting can lead to investors' scepticism, especially when companies rely on reporting the ESG practices to meet regulatory requirements. As a result, the companies' legitimacy erodes due to the greenwashing act and a lack of meaningful ESG practices reporting that cannot be translated into an enhancement of the companies' value (Ali et al., 2025). The act of greenwashing results in misleading reporting and could potentially harm the company's reputation, leading to deterioration in long-term performance. This is especially detrimental for companies listed in Malaysia, considering that these companies are still in the early stages of educating themselves about ESG reporting (Jamil & Wahyuni, 2024).

The finding of this study contradicts that of Fu et al. (2022), who found that ESG practices reporting positively influences companies' long-term performance. The contradiction may be explained by differences in market maturity and ESG adoption. According to the Ministry of Investment, Trade, and Innovation of Malaysia, the country has made significant progress in strengthening sustainability reporting, but it remains an emerging market where ESG practices are still developing and are often shaped by regulatory guidance rather than fully embedded market demand. In contrast, markets such as the U.S. have mature capital markets, deeper institutional investor participation, and established mechanisms for incorporating ESG information into valuation and investment decisions (Fu et al., 2022). As a result, ESG practices reporting in developed markets is more likely to be valued as a credible indicator of strategic sustainability and long-term value creation. In contrast, in Malaysia, ESG reporting may still be interpreted with greater caution due to concerns over disclosure quality and implementation capacity. This suggests that in less mature ESG environments, pre-IPO ESG reporting may yield limited long-term performance benefits if investors perceive it as symbolic and compliance-oriented.

Incorporating ESG practices can also be costly, and, ironically, some companies offset these costs by passing them on to their workers through lower wages (Feltovich et al., 2021). Therefore, investors may respond in the long term by reassessing whether

such reporting reflects genuine sustainability capability or merely reporting to satisfy investors' demands. This may signal a gap between disclosed commitments and actual capability, explaining the negative relationship between ESG reporting and long-term performance. Hence, the results reflect the challenges companies may face in securing investors' certainty through ESG practices reporting, leading to a deterioration in companies' long-term performance.

In examining the effect of the ESCORE, it is found that ESCORE is negatively related to companies' long-term performance, individually. This can be linked to costly environmental practices, such as carbon emission management, renewable energy, and waste management, which are also known to be translated into investments that are also known to strain companies' current profitability, potentially obstructing shareholders' wealth in the long run. Companies use environmental practices reporting to gain social acceptance and align with prevailing norms; however, when these initiatives lack credibility or tangible results, it erodes investors' confidence and trust (Tan, 2025). As a result, investors will withdraw capital, which will affect companies' long-term performance. According to Lin et al. (2025), reporting environmental practices without substantial progress or actual implementation may become a financial and reputational liability rather than enhancing companies' long-term performance. However, this finding is inconclusive due to the low p-value of ESCORE.

SSCORE have a significant and negative influence on companies' long-term performance. The significance of SSCORE indicates that social reporting influences companies' long-term performance, in line with Fu et al. (2022). However, while social responsibility practices are perceived to be beneficial to the public, they require ongoing investment in areas such as employee training, fair wages, and labour standards. For IPO companies with limited resources, these efforts can signal increased operational costs and can harm companies' long-term capital. Moreover, according to this study's data, numerous social practices are reported, with common statements such as "we care for our community" appearing in companies' prospectuses under the "nature of business" section. Such practices may result in "social-washing," in which investors question companies' ability to deliver on the pre-IPO-stated social practices post-IPO. Investors expecting outcomes and transparent reporting may lose confidence in companies that fail to align social practices reporting with tangible actions, particularly when the SSCORE is reported solely to meet regulatory requirements rather than as part of legitimate business strategies. Studies have shown that companies engaging in

representative social practices, rather than authentic and measurable ones, experience reduced investor confidence and face greater scrutiny from stakeholders (Abbas et al., 2023). Ultimately, such social practices reporting can result in companies' long-term underperformance.

GSCORE is found to be negatively related to companies' long-term performance. This can be attributed to several factors, including the potential for governance practices reporting as an attempt to divert attention from underlying governance issues (Tingle, 2024). In these cases, the costs associated with improving governance to match reported standards can exceed the benefits, creating financial strain and further deteriorating long-term performance. However, this argument is inconclusive due to the low significance exhibited in Table 4.5 for GSCORE.

4.6.3 Analysis of the Role of Initial Performance on Long-term Performance

Table 4.5 also displays the findings on the role of companies' initial performance in determining their long-term performance. All long-term performance models show that initial performance is statistically highly significant at the 1 percent level. The findings report a uniform negative influence of OTO and OTC on CAAR. Instead of the initial proposition of this study, which posited that companies with favourable initial performance would exhibit positive long-term performance, this study found that higher initial performance would lead to long-term underperformance. Although this study's initial proposition is that favourable initial performance may positively influence companies' long-term performance, Abdullah et al., (2019) state that the positive initial performance of companies is often driven by excessive investor enthusiasm or speculative trading that can harm companies in the long-run. As a result, overvalued IPOs at the time of listing may face downward price corrections in the long-run when investors reassess the companies' actual performance and prospects. This pattern is particularly evident in developing markets such as Malaysia, where speculative trading and investor sentiment tend to dominate price movements in the initial days of listing (Mehmood et al., 2021).

Evidently, Malaysian companies consistently underperform in the long run, with

average three-year returns of -51 percent and -72 percent[39]. These figures indicate a substantial loss of investor wealth, particularly for those with long-term investment objectives. The persistent underperformance is also supported by previous studies, such as Abdul Rahman and Che-Yahya (2019), which reinforce the notion that Malaysian companies struggle to attain favourable returns in the long-run. Companies' initial performance serves as a market signal reflecting investor sentiment and perceived quality (Funaoka & Nishimura, 2018). However, this study found that the positive initial performance reflects a signal that companies benefit from during periods of high information asymmetry. As investor optimism fades and the companies' financial results materialise, the valuation may decline due to investors' capital withdrawal, leading to long-term underperformance.

4.6.4 The Relationship between ESG and Survival

Table 4.6 and 4.7 display the findings for determinants of companies' survival, which are ESG (TOTESG, ESCORE, SSCORE, and GSCORE), company-specific characteristics (SIZE, AGE, TOTA, LEVERAGE), issuance characteristics (PRO, UW, OWNER, D^{SECTOR}) and market condition (MC5YCAAR and MC5YBHAR). The main analysis for determinants of survival focuses on the AFT model. Models are divided into two categories: those based on the total ESG score (Models 7, 8, 9, and 10) and those based on individual components of ESG (Models 11, 12, 13, and 14). The models also include CAAR, BHAR, OTO and OTC as independent variables for a robustness check.

This study employs the AFT model with an Exponential distribution as the baseline survival function, based on the Akaike Information Criterion (AIC) test. This study presents the standard coefficient estimation and the time ratio (TR), along with the related significant levels (1 percent, 5 percent and 10 percent). The TR is the exponentiated coefficient, whereby a TR with a value above (below) 1 for any independent variable should accelerate (decelerate) the companies' survival (Cleves et al., 2016). Overall, the regression model of this study exhibits a statistically significant likelihood ratio (LR) for all eight survival models (refer to Table 4.6 and 4.7), indicating

[39] Refer to Table 1.2 in the Problem Statement section for a summary of companies' average return from 2000 to 2020.

that the model is well-fitted. In the AFT survival models, TOTESG displayed consistent negative coefficients across models. In Model 7, the TR for TOTESG is 0.9743, while in Models 8, 9, and 10, the TRs are 0.9751, 0.9732, and 0.9754, respectively. The TR below 1 imply that higher ESG practices reporting shortens companies' survival time. For instance, the TR of 0.9751 indicates that for every 1 percent increase in TOTESG, companies' survival will decline by 2.49 percent (i.e., 1 – 0.9751 = 0.0249).

This study further divided ESG practices reporting into its three individual components to examine their individual influence on post-IPO survival time using the AFT model. Across models, the findings are consistent, with governance reporting (GSCORE) demonstrating a consistently significant influence on companies' survival time, while ESCORE and SSCORE are statistically insignificant. ESCORE and SSCORE are statistically insignificant, indicating that environmental and social practices reporting do not have a relationship with companies' survival time. In Models 11, 12, 13, and 14, the ESCORE TR values are 0.6699, 1.3834, 1.3494, and 1.8487, respectively. The conflicting TR (some above 1 and others are otherwise) suggest unpredictability in direction and an absence of predictive power. This reinforces the lack of ESCORE statistical influence on companies' survival time. SSCORE is also reported to be insignificant to companies' survival time. SSCORE produced TR of 0.73, 1.30, 0.64, and 0.64 in Model 11, 12, 13, and 14. GSCORE consistently exhibits a significant and negative relationship with companies' survival time. GSCORE showed a TR of 0.05, 0.02, 0.04, and 0.02, indicating that lower companies' survival times decrease as governance practices reporting increases. The negative coefficients reflect a TR less than 1, suggesting that companies reporting higher governance practices are more likely to shorten their survival time by 95 to 98 percent. Overall, this study successfully achieves its Research Objective 3 and effectively answers Research Question 3. Hypothetically, this study is unable to support H3a, H3b, H3c, and H3d.

This study found that TOTESG's deterioration effect on long-term performance has further implications for companies' survival, particularly for post-IPO companies. As ESG reporting fails to generate the expected performance gains or investors' confidence, companies face increased scrutiny from regulators and investors. When investors withdraw capital due to dissatisfaction with unfulfilled ESG reporting pre-IPO, companies experience liquidity constraints, declining market valuation, and reduced access to financing, all of which are critical threats to their survivability post-IPO. The erosion of investor confidence, when persistent, can result in stock

underperformance, delisting risk, or even market exit through insolvency or acquisition (Shari, 2022).

Similar to the relationship between ESG reporting and long-term performance, this study's findings contradict those of Fu et al. (2022), which found that ESG reporting enhances companies' survival. In emerging markets like Malaysia, where ESG regulatory requirements have been embedded in recent years[40], many companies are still adjusting to them. This is evident from the data of this study, which comprises more than half of the companies listed from 2012 to 2015. This challenge is intensified by the relatively recent regulatory requirements for sustainability reporting in the Malaysian context. Although Bursa Malaysia and the Securities Commission have introduced ESG-related frameworks, such as the FTSE4Good Index and the revised Prospectus Guidelines, widespread adoption began around 2015. As a result, many companies lack the experience and cultural readiness to embed ESG practices into their business activities. The transition to sustainability-oriented reporting poses challenges for companies to fulfil listing requirements, negatively impacting their ability to survive.

Moreover, companies become vulnerable to operational inefficiencies and rising compliance costs (Feltovich et al., 2021). The additional burdens arising from the lack of actual ESG implementation post-IPO can harm companies' long-term reputations. The mismatch between reporting and implementation can signal a potential cycle of declining performance, loss of legitimacy, and ultimately failure to meet listing requirements or maintain investor interest. Consequently, companies' survival is jeopardised. Thus, ESG practices reporting not only weakens long-term performance but also poses a consistent and compounding risk to the company's survival.

The findings show that ESCORE is statistically insignificant in relation to companies' survival times across all survival models. This indicates that the extent to which companies report environmental practices does not significantly prolong or reduce their post-IPO survival. From a theoretical standpoint, this result challenges the current standpoint of policymakers, positing that environmental reporting reduces information asymmetry and enhances companies' valuation and sustainability. Instead, the insignificance may suggest that investors either discount environmental claims due to perceived greenwashing or consider them immaterial in evaluating the long-term

[40] See Section 2.3, page 29 for further information on ESG Guidelines in the Malaysian Market.

Table 4.6

Multiple Regression Analysis of Survival Models (Total of ESG Score) – AFT Analysis

Variables	Exp. Sign	Model 7: TOTESG		Model 8: TOTESG		Model 9: TOTESG		Model 10: TOTESG	
		Time Ratio	z-stats	Time Ratio	z-stats	Time Ratio	z-stats	Time Ratio	z-stats
Main Independent Variable									
TOTESG	+ve	0.9743	-1.65*	0.9751	-1.75*	0.9732	-1.66*	0.9754	-1.75*
Other Independent Variables									
CAAR	+ve	1.0042	1.82*	1.4644	1.64*				
BHAR	+ve	-	-	-	-	1.0045	1.71*	1.2601	1.08
OTO	+ve	1.0416	2.15**	-	-	1.0396	2.17**	-	-
OTC	+ve	-	-	2.2086	1.38	-	-	1.876	1.03
SIZE	+ve	1.0490	1.51	1.1157	0.65	1.1639	1.03	1.0594	2.23**
AGE5Y	+ve	1.0266	1.53	1.028	0.99	1.0288	1.68*	1.0156	0.66
PRO	+ve	0.9234	-1.67*	0.8915	-1.64*	0.9216	-1.26	0.8951	-2.42**
UW	+ve	49.2202	1.28	16.961	0.93	2.1358	1.41	1.6414	1.09
OWNER	+ve	0.9996	-0.04	0.5847	-0.40	1.0007	0.05	1.1224	0.28
TOTA	+ve	0.9167	-0.97	0.8623	-1.36	0.8946	-1.13	0.8644	-1.46
LEVERAGE	-ve	1.0194	0.35	0.9789	-0.40	1.0105	0.15	0.9871	-0.27
D^{SECTOR}	-ve	0.2936	-1.42	0.3597	-1.20	0.3086	-1.34	0.3402	-1.30
MC5YCAAR	+ve	1.0072	0.24	0.9946	-0.21	-	-	-	-
MC5YBHAR	+ve	-	-	-	-	1.0039	0.21	1.0018	0.10
Observation		100		100		100		100	
Time at Risk		9,349.66		9,349.66		9,349.66		9,349.66	
LR(Prob>chi)^2		31.68***		28.87***		45.92***		36.90***	

Table 4.7

Multiple Regression Analysis of Survival Models (ESG individual component) – AFT Analysis

Variables	Exp. Sign	Model 11: E,S,G		Model 12: E,S,G		Model 13: E,S,G		Model 14: E,S,G	
		Time Ratio	z-stats	Time Ratio	z-stats	Time Ratio	z-stats	Time Ratio	z-stats
Main Independent Variables									
ESCORE	+ve	0.6699	-0.47	1.3834	0.31	1.3494	0.21	1.8487	0.44
SSCORE	+ve	0.7309	-0.32	1.2952	0.30	0.6368	-0.38	0.6385	-0.38
GSCORE	+ve	0.0497	-1.87*	0.0173	-2.33**	0.0354	-2.05**	0.0158	-2.43**
Other Independent Variables									
CAAR	+ve	1.0047	1.73	1.6120	2.05**	-	-	-	-
BHAR	+ve	-	-	-	-	1.0049	1.98**	1.0046	1.70*
OTO	+ve	1.0197	1.80*	-	-	1.0205	1.80*	-	-
OTC	+ve	-	-	1.0075	0.70	-	-	1.0117	0.59
SIZE	+ve	1.1433	0.88	1.0003	3.48***	1.0002	2.90***	1.0003	3.31***
AGE5Y	+ve	1.0387	1.67*	1.0497	1.64*	1.0388	1.66*	1.0355	1.48
PRO	+ve	0.9234	-1.24	0.9991	-2.96***	0.9991	-2.54***	0.9989	-2.87***
UW	+ve	11.5405	1.10	3.4765	0.67	11.0397	1.06	1.6119	1.51
OWNER	+ve	1.0001	0.01	0.9957	-0.46	0.9949	-0.47	0.9939	-0.56
TOTA	+ve	0.8418	-1.74*	0.5751	-2.59***	0.8046	-2.12**	0.5827	-2.67***
LEVERAGE	-ve	0.9891	-0.18	1.0423	0.89	1.0066	0.16	1.059	1.24
D^{SECTOR}	-ve	0.3407	-1.31	0.2736	-1.40	0.3102	-1.37	0.2751	-1.40
MC5YCAAR	+ve	1.0133	0.40	1.0264	0.87	-	-	-	-
MC5YBHAR	+ve	-	-	-	-	1.0078	0.45	1.0151	0.88
Observation		100		100		100		100	
Time at Risk		9,349.66		9,349.66		9,349.66		9,349.66	
LR(Prob>chi)^2		32.56***		36.24***		35.08***		33.09***	

sustainability of IPO companies, especially in an emerging market context like Malaysia, where ESG verification standards are still in the process of maturing.

Similarly, SSCORE has a low statistically significant relationship with companies' survival time. Despite growing attention to social factors such as employee welfare, diversity, and community engagement, the findings suggest that such reporting does not affect companies' post-IPO survival time. The lack of significance across all models implies that social disclosures are seen as generic or symbolic rather than strategic. This aligns with legitimacy theory, which suggests that compliance without substantive action often fails to confer legitimacy benefits. Additionally, many companies operate with limited resources, and social investments may be viewed as costly trade-offs rather than signals of strength, particularly when social reporting is not accompanied by measurable commitments or outcomes (Huang et al., 2019).

GSCORE exhibits a statistically significant and negative relationship with company survival, with p-values consistently below 0.10. Specifically, the TR indicate that higher GSCORE increases the companies' survival time. In contrast to the finding, Noor and Iskandar (2012), and Aly et al. (2024) report that the majority of studies have found governance to reduce information asymmetry and agency costs, thereby enhancing companies' value and survival. While governance reporting mitigates agency problems and assures investors of accountability, this study indicates that companies facing scrutiny or anticipating governance challenges may overemphasise governance reporting to manage investors' sentiment. In fact, this finding is consistent with the relationship between GSCORE and companies' initial performance, reflecting the prolonged effect of investors' scrutiny on GSCORE reporting.

Moreover, in a regulatory environment where compliance is sometimes driven by listing requirements rather than intrinsic commitment, high GSCORE values may reflect formalistic rather than functional governance, weakening their predictive value for companies' longevity (Ahmad et al., 2024). Such over-reporting may, paradoxically, erode investor trust if perceived as excessive or inconsistent with companies' business activities. This dissonance between reporting and actual governance quality may signal distress rather than strength, contributing to companies' struggle to survive longer.

4.6.5 Analysis on the Role of Initial Performance and Long-term Performance on Survival

Tables 4.6 and 4.7 also display the findings for the role of companies' initial performance and long-term performance on companies' survival time. The results consistently demonstrate that companies' initial performance (OTO and OTC) plays a significant role in influencing companies' survival time. Specifically, OTO is found to be statistically significant in the AFT models (Models 1, 3, 5, and 7), where it is associated with a time ratio above 1. This suggests that higher returns on the first trading day positively influence companies' survival time after the IPO. In contrast, OTC exhibits a generally positive but weaker significance on companies' survival time. For instance, although Model 12 and Model 14 include OTC, their respective p-values of 0.484 and 0.556 indicate that the influence of OTC on survival is not as robust as that of OTO. These findings suggest that early investor sentiment and enthusiasm, particularly evident at the market opening on the first day, hold greater predictive power for companies' survival times than the closing-day return. Collectively, these results support the premise that initial performance serves as a short-term market signal, reflecting the extent to which investors trust the companies' valuation and prospects at the time of listing. High OTO performance helps build early credibility and market legitimacy, extending companies' longevity post-IPO.

Long-term performance, measured through CAAR and BHAR, is also reported as a significant determinant of companies' survival time in several models. CAAR is particularly significant in Models 7, 8, and 12 at the 5 and 10 percent levels, suggesting that companies with higher cumulative average abnormal returns over the long run are more likely to remain listed. In Model 12 (p-value of 5 percent), the influence remains significant, reinforcing the role of long-term market returns in extending companies' survival. Similarly, BHAR shows a significant influence in Model 13 and Model 14 at 5 and 10 percent significance, respectively. This demonstrates that companies capable of generating positive buy-and-hold abnormal returns after listing tend to exhibit longer survival times. The significance of BHAR in these models affirms that investors reward companies that deliver consistent performance over time, thereby elongating their survival post-IPO.

The findings across both initial and long-term performance suggest an integrated relationship between post-IPO performances and companies' survival. Specifically, the

majority of the models collectively indicate a positive and statistically significant relationship between strong post-IPO performances and longer survival time. Initial performance (especially OTO) functions as a signalling tool of companies' quality and credibility. When investors respond positively to an IPO with a strong opening price, it helps the company establish early legitimacy and investor confidence. On the other hand, long-term performance signals the companies' ability to deliver on the expectations set during the IPO, reflecting actual operational and strategic soundness. This sustained value creation builds resilience and increases companies' survival time. These findings are paralleled with the signalling theory, where post-IPO performance serves as a proxy for reducing information asymmetry, and legitimacy theory, where a company's survival time pivots on continued alignment with investors' expectations and market norms.

4.6.6 The Relationship between the Other Independent Variables and Initial, Long-term Performances and Survival

The other independent variables included in this study are the size of the company, age of the company, IPO proceeds, underwriter reputation, insider ownership, total assets, leverage, company sector, and market condition. The other independent variables are included from Model 1 to Model 14. The significance of the other independent variables varies in each model.

4.6.6.1 Company Size

Size of the company (SIZE) refers to the market capitalisation. In contrast to the hypothesis, this study finds that SIZE has a negative relationship with companies' long-term performance. This can be seen from Models 3 and 4, suggesting that larger companies tend to experience long-term underperformance. In analysing the relationship between size and companies' survival time, this study reports a positive and significant relationship between size and companies' survival time (Models 10, 12, 13, and 14). The negative correlation between SIZE and initial performance aligns with the argument by Lafrance (2012), who posits that larger companies tend to have lower growth potential relative to smaller companies, particularly in developing economies like Malaysia. In these contexts, policy incentives and market attention often favour

small-cap companies, creating an environment in which smaller companies are perceived as more dynamic and capable of rapid growth. Additionally, Nguyen and Nguyen (2016) note that larger companies, due to their maturity and established revenue streams, are perceived as having limited growth potential, making them less attractive to speculative investors seeking quick gains during the IPO window. This perception reduces the likelihood that larger-cap companies will be subscribed to as highly as small-cap companies, making larger companies more likely to experience less favourable initial performance post-IPO. However, this study is unable to conclude the relationship due to the insignificant p-value.

This extends to companies' long-term performance, where larger companies are often unable to generate favourable performance over the long run. Since smaller companies have room for growth and business expansion, they tend to exhibit better long-term performance. Unlike smaller companies with initial capital gained during their IPOs, which can help boost companies' operational efficiency, larger-cap companies do not and face challenges to sustain investors' confidence in the long-run. Consequently, investors start withdrawing their capital, leading to a deterioration of companies' long-term performance. However, when assessing company survival, the role of SIZE is reversed. The findings suggest that larger companies are more likely to remain actively listed, highlighting the advantages of scale in ensuring companies' longevity. This is because larger companies possess greater financial buffers and diversified operations, which can help them navigate economic downturns, meet regulatory requirements, and maintain compliance with listing obligations (Ahmad et al., 2021). Thus, SIZE should promote longer survival times for companies. Hypothetically, this study is unable to support Hypothesis 4a (H4a) and Hypothesis 4b (H4b), but it is able to support Hypothesis 4c (H4c).

4.6.6.2 Company Age

Age of the company (AGE) refers to the length of the company's operation period prior to an IPO. In contrast to the hypothesis, this study finds that AGE is significant and has a negative relationship with companies' initial performance (Models 1 and 2), but a positive relationship with companies' survival time (Models 9, 11, 12, and 13). This study reports only low significance for the influence of AGE in Model 5, indicating the low predictive role of AGE on companies' long-term performance. The

findings of this study suggest that companies operating longer prior to their IPO tend to have unfavourable initial performance, but survive longer post-IPO. This finding is similar to SIZE, implying that younger companies attract higher interest from investors, possibly due to their perceived growth potential (Mansikkamaki, 2023; Mallinguh et al., 2020). As such, investors may favour younger companies with compelling growth potential over older, more mature companies that have limited growth potential. Furthermore, mature companies may be viewed as conservative or non-adaptive, which may not align with the speculative sentiment common in IPO markets, such as those in Malaysia (Mehmood et al., 2021). These perceptions lead to lower investor enthusiasm, resulting in reduced demand and lower performance on the first trading day.

Conversely, the positive relationship between AGE and survival post-IPO supports the argument that companies' maturity enhances operational resilience in Dong et al. (2011). Companies with longer operating histories typically have more stable cash flows, which can contribute to their ability to manage public listing obligations, comply with regulations, and navigate market fluctuations. Similar to Shari (2022), companies are perceived as stable and credible, and are more likely to maintain investors' trust, which is essential for long-term survival. Moreover, mature companies may have more conservative financial management practices and lower exposure to operational risks, further reinforcing their survival time post-IPO. Thus, this study concludes that it is unable to support Hypothesis 5a (H5a) and Hypothesis 5b (H5b), but can support Hypothesis 5c (H5c).

4.6.6.3 IPO Proceeds

IPO proceeds refer to the total amount gained by companies during an IPO, indicating the usage of the raised IPO proceeds. The amount of proceeds raised (PRO) shows a generally negative influence across all models. Although the relationship with initial performance is insignificant, it turns significantly negative in the long-term performance models (Models 3, 5, and 6), and remains negative and significant in survival models (Models 3, 4, 5, 7, 8, and 10). This suggests that companies raising excessive capital do not necessarily translate into better performances and survival post-IPO. This finding is consistent with some past studies (Ahmad-Zaluki & Badru, 2020; Wyatt, 2014) that found companies with higher IPO proceeds would face challenges during their first trading day. To be more specific, companies with higher motives for

growth[41] are viewed as risky due to their objective of business expansion with a high operating leverage.

Although growth may seem attractive, the use of IPO proceeds may also lead to a lack of value generation, as seen in the possibility of high cash flow volatility, which can lead to investors' speculation and companies' unsustainability (Alyasa-Gan et al., 2022). Since the utilisation of IPO proceeds is usually for the long-run (at least 3 years post-IPO), the impact of PRO can only be identified in the long-run. Companies with higher PRO are found to be entailed with performance deterioration and declining shareholder value, which discourages investors from subscribing to such shares post-IPO, negatively influencing companies' long-term performance and longevity. Hypothetically, this study is unable to support Hypothesis 6a (H6a), Hypothesis 6b (H6b), and Hypothesis 6c (H6c).

4.6.6.4 Underwriter Reputation

Underwriter reputation (UW) refers to the amount of issuance an underwriter underwrites as opposed to the total issuance of all underwriters in a year. From all models, only Model 2 shows positive and negative influence on companies' initial performance. UW is found to be insignificant to companies' long-term performance and survival time. While underwriters assist in pricing accuracy, the pre-IPO information should help retail investors (especially uninformed investors) make informed decisions once the shares go public. The expectation of high-quality issuance underwritten by reputable underwriters should alleviate information asymmetry between the issuing companies and prospective investors. UW also indicates the reliability of investment banks in promoting and valuing IPOs, reflecting the quality of IPOs and securing investors' confidence (Che-Yahya et al., 2023). With this perception, companies can secure favourable initial capital from high investor demand, leading to positive initial performance post-IPO. However, the variable remains mostly insignificant in long-term and survival models. These findings suggest that while reputable underwriters may help companies signal quality initially, underwriters have a low predictive role in companies'

[41] This study finds that majority of the companies' IPO proceeds are allocated for growth with an average of RM166,366,090 of the total IPO proceeds.

long-term performance and survival time. Thus, this study is unable to support Hypothesis 7a (H7a), Hypothesis 7b (H7b), and Hypothesis 7c (H7c).

4.6.6.5 Insider Ownership

Insider ownership (OWNER) is the shareholdings retained by existing shareholders in an issuing company. This study found somewhat mixed results of the association between the OWNER and the companies' initial performance. However, OWNER is consistently insignificant across all models. This result suggests that insider ownership does not significantly influence IPO performance or survival time. This contradicts previous literature (Albada et al., 2018; Espenlaub et al., 2012; Pour, 2015), which asserts that insider retention signals commitment and alignment with long-term goals. However, the negative association is similar to that of Mumtaz and Smith (2016) and Kumar and Sahoo (2021), who argue that the concentration of power among existing insiders may also be detrimental to companies in the long term due to traditional practices that are challenging to alter. This may lead to unnecessary tension in management practices, which can induce conflicts of interest and negatively impact companies' post-IPO performance. However, these arguments are inconclusive in this study, as OWNER is found to have low significance (more than 10 percent), making Hypothesis 8a (H8a), Hypothesis 8b (H8b), and Hypothesis 8c (H8c) unsupported.

4.6.6.6 Company Assets

Company assets (TOTA) show an insignificant relationship with companies' initial performance, but a significant and positive relationship with the long-term performance (Models 7, 8, 9, 10, 11, and 12). Tables 4.6 and 4.7 report a significant and negative relationship between TOTA and companies' survival time (Models 4, 6, 11, 12, 13, and 14). Companies with larger total assets are typically regarded as financially stable and well-resourced, characteristics that often signal greater capacity for sustained growth and risk absorption (Yadav et al., 2023). In capital markets, financial indicators such as total assets serve as important benchmarks for evaluating companies' future performance and investment potential (Too & Somasundaram, 2011; Yadav et al., 2023). TOTA reflects companies' operational scale, infrastructure readiness, and investment capability, which are factors that are especially critical for long-term

viability. Prior empirical researchers (see Badru et al., 2018; Peristiani & Hong, 2004) have consistently reported a positive and significant relationship between TOTA and long-term performance.

The negative relationship between TOTA and companies' survival time can be related to the underutilised resources argument highlighted in Ahmad et al. (2021). Another reason may be that companies with higher TOTA may also have the option to delist themselves from the stock market voluntarily. This is similar to Kashefi and Pour (2013), who argue that companies, especially those with higher intangible assets, are highly likely to delist themselves (as soon as 4 years post-IPO) due to their inability to raise more equity, lack of growth opportunities, and profitability. Hence, to avoid the higher cost of listing, companies choose to delist themselves from the market, thereby shortening their survival time post-IPO. Thus, this study is unable to support Hypothesis 9a (H9a) and Hypothesis 9c (H9c), but it is able to support Hypothesis 9b (H9b).

4.6.6.7 Company Leverage

Referring to the models, only Model 1 shows a negative and significant influence of LEVERAGE on companies' initial performance. Other models report that the LEVERAGE role has no significant impact on companies' long-term performance and survival time. However, this study observes a consistent negative association between LEVERAGE and companies' post-IPO performances and survival time. This is consistent with this study's initial argument that higher leverage results in companies' poor initial performance, long-term performance, and survival. Due to the riskier nature of the investment, it leads to lower initial demand for the companies' shares upon issuance. High LEVERAGE can also increase vulnerability to cash flow disruptions and interest rate fluctuations (Purwanto & Pardistya, 2021). The shares of the first day tend to be lower in price due to lower demand, which can negatively impact the long-term performance and survival of companies. However, due to insignificance across models, this study is unable to support Hypothesis 10a (H10a), Hypothesis 10b (H10b), and Hypothesis 10c (H10c).

4.6.6.8 Company Sector

Company sector (D^{SECTOR}) is the representation of companies' risk, which this

study measures using a dummy method ("1" is tech sector and "0" is otherwise). All models report insignificant influence of D^{SECTOR} on companies' post-IPO performances and survival, except Model 1 (low significance), showing a positive and statistically significant influence of D^{SECTOR} on companies' initial performance. In contrast to this study's hypothesis, the finding suggests that a risky sector attracts investors' demand. This is due to the higher returns that the technology sector usually offers, largely because of its speculative nature (Yong, 2019). Activities such as research and development (R&D) and innovation development have the potential to succeed and can offer lucrative returns to companies, making the technology sector attractive to investors. Ultimately, there should be a higher demand for D^{SECTOR} compared to other sectors, leading to favourable initial performance by companies post-IPO. However, the insignificance across other models leads this study to be unable to support Hypothesis 11a (H11a), Hypothesis 11b (H11b), and Hypothesis 11c (H11c).

4.6.6.9 Market Condition

Market conditions signify the KLCI benchmark index return for each duration. For example, MCD1 represents the market condition on the companies' first trading day, while MC3YCAAR and MC3YBHAR represent the market conditions on the companies' third year of listing. Similarly, MC5YCAAR and MC5YBHAR represent the market conditions on the companies' fifth year of listing. MCD1 exhibits a significant and consistent positive relationship with companies' initial performance throughout the models (Model 1 and Model 2), while MC3YCAAR exhibits a consistent negative relationship with companies' long-term performance (Models 3, 4, 5, and 6). However, MC5YCAAR and MC5YBHAR are insignificant throughout survival models. The positive coefficient in initial performance models is consistent with this study's hypothesis that companies entering the market during good market conditions should positively influence their immediate performance. It creates a positive sentiment among the public, indicating that market conditions are favourable and a good time for investment opportunities. Similarly, companies enter the market during favourable market conditions to capitalise on the opportunities presented by a positive investor sentiment, which should increase investors' demand, leading to a positive initial performance post-IPO. This finding is consistent with Che-Yahya et al. (2023) and Saleh and Che-Yahya (2021), who found a positive relationship between MCD1 and

companies' initial performance.

The negative relationship between market conditions and long-term performance can be explained by the raised performance benchmark for all companies during periods of strong market performance (Peristiani and Hoong, 2004). When general indices, such as the FBMKLCI, return are high, investors expect companies to match or outperform the market average. If the companies fail to deliver growth or financial results that justify their valuations, especially in comparison to other established listed companies, investors will shift their interests into more well-performing companies. In this sense, companies are generally unable to sustain positive long-term performance post-IPO. Hypothetically, this study is able to support Hypothesis 12a (H12a), but unable to support Hypothesis 12b (H12b), and Hypothesis 12c (H12c).

4.7 Robustness Analyses on the Determinants of Initial Performance, Long-term Performance, and Survival

4.7.1 Initial Performance using Offer-to-open

Table 4.8

Robustness Analysis of Initial Performance Models (Offer-to-open)

Variables	Exp. Sign	Model 1: OTO - TOTESG		Model 2: OTO – E,S,G	
		Coefficient	t-stats	Coefficient	t-stats
Main Independent Variable					
TOTESG	+ve	0.0081	1.66*		
ESCORE	+ve			0.4267	1.89*
SSCORE	+ve			-0.2366	-1.34
GSCORE	+ve			-0.6367	-2.34**

Note: Asterisks ***,**, and * indicate significance at 1 percent, 5 percent, and 10 percent, respectively. To ease presentation, only results on TOTESG, ESCORE, SSCORE, and GSCORE are presented. All diagnostic tests have been performed as explained in Section 4.5, with the tables located in the Appendices.

Table 4.8 displays the findings of robust analysis for determinants of initial performance, using Offer-to-open (OTO) measurement, instead of OTC. According to the regression results in Table 4.8, the findings for TOTESG and ESCORE remain consistent, with both variables continuing to be significant at the 10 percent level and

positively influencing companies' initial performance. SSCORE also remains insignificant following the robustness analysis. Notably, GSCORE becomes significant at the 5 percent level in the robustness model (OTO), exhibiting a negative relationship with companies' immediate opening performance. This indicates that investors, particularly institutional and sophisticated investors during the IPO offering stage, may view governance-related factors less favourably. This can affect how companies are valued at the market opening. This could be due to the quality of reporting governance practices among companies listed on Bursa Malaysia.

This argument aligns with Cooray et al. (2020), stating that there is limited quality governance reporting offered to investors except for the mandatory reporting requirements. In the case of this study, mandatory reporting, such as corporate governance mechanisms and tax transparency, can be found in almost all companies in the Malaysian market. Consistent with Table 4.8, GSCORE shows the highest average among the three ESG pillars. However, voluntary information, such as anti-corruption and risk management committees, is less frequently found in Malaysian companies' prospectuses. While reporting several governance-related information may help satisfy stakeholders and policymakers to some extent, the lack of value-added and quality governance practices discourages investors from considering such companies for their investment strategies, thereby hampering the first-trading-day price. As governance practices represent a long-term quality signal rather than an immediate trading impetus, they are more relevant to long-horizon investors who assess companies' quality over time (Tommaso & Gulinelli, 2019). This explains why the influence of GSCORE is evident only at the point of market opening and not during subsequent intraday price formation, which is predominantly driven by retail investor participation, sentiment, momentum, and short-term speculative behaviour.

4.7.2 Long-term Performance using BHAR and Robust Standard Error

Appendix 20 presents the findings of a robust analysis of determinants of long-term performance, using the BHAR measurement instead of the CAAR. The robustness analysis employed in the BHAR models demonstrates that the results remain broadly consistent with the main long-term performance findings in the CAAR models. The direction of the coefficients remains unchanged across all ESG specifications. Notably, the significance level for TOTESG strengthens from the 10 percent level in the CAAR

model to 5 percent level in the BHAR model, indicating a slightly stronger association between TOTESG and companies' long-term performance. Meanwhile, the results for ESCORE, SSCORE and GSCORE remain unchanged in both direction and significance, further confirming the stability of the long-term ESG effects across different long-term performance measurements. The discussion regarding the relationship between the main independent variables and companies' long-term performance is discussed in Section 4.6.2. Furthermore, several control variables showed variations in significance and direction across the robustness analysis. However, since the main independent variables (TOTESG, ESCORE, SSCORE, and GSCORE) retains its overall pattern across models, the variations in the control variables do not alter the core interpretation of the results in the main regression analysis.

This study performs an additional analysis by re-estimating the long-term performance models, particularly the CAAR model, using the robust standard error function in STATA. According to STATA, the robust function in STATA's regression commands allows for the control of robust standard errors, rather than relying on the default standard error. This option ensures that the standard errors are consistent when the assumption of homoscedasticity is violated. It adjusts the standard errors to be more reliable, without altering the regression coefficients of the variables in the model. Although the Newey-West test is a reliable method to address the heteroscedasticity issue in long-term performance models, the absence of an autocorrelation issue allows this study to perform an additional analysis employing an alternative corrective measure that focuses solely on correcting data heteroscedasticities. According to the results in Appendix 21, this study once again found that the main independent variables retain their significance (except for SSCORE, which produces higher significance at the 5 per cent level in the robustness model), further confirming the robustness of the long-term performance models' findings.

4.7.3 COX Analysis and Redefining Survival

Appendices 22 and 23 present the findings of a robust analysis on the determinants of companies' survival, using the COX model. However, it is important to highlight that the interpretation for COX models is inverted to AFT, which the model focuses on explaining the hazard ratio (HR) rather than the TR. The HR value above

(below) 1 for any independent variable should accelerate (decelerate) the company's failure. Although the coefficient direction in the COX models is inverted compared to the AFT models, both models provide a coherent conclusion that higher TOTESG and GSCORE values are associated with reduced company survival time and increased company failure, respectively, reinforcing the robustness of the findings across different survival modelling approaches. The discussion regarding the relationship between the main independent variables and companies' survival is discussed in Section 4.6.4.

As an extension to the robustness analysis, this study re-estimates the AFT models by redefining companies' survival according to the definition in past studies (Cirillo et al., 2016; Zhang et al., 2018), i.e., companies that remain listed as the surviving companies and companies that are delisted as the non-surviving companies. The results are shown in Appendices 24 and 25. Under this alternative definition, the results were statistically insignificant, suggesting that there was no discernible influence of ESG practices reporting on the companies' survival time. A plausible explanation lies in the small number of delisted companies in the sample (only five out of 100 IPOs), which limits the variation required for survival models to detect meaningful statistical relationships. With such an imbalanced distribution, the independent variables are unlikely to produce significance simply because the event of delisting is too rare. More importantly, this also confirms that ESG practices are not designed to capture delisting outcomes, but rather to reflect the resilience and continuity of companies over time, which more accurately captures sustainability.

It highlights this study's key contributions in redefining companies' survival to reflect long-run sustainability rather than mere listing status. By conceptualising survival in terms of companies' ability to remain active[42] in the share market five years post-IPO, this study provides a more meaningful assessment of how ESG practices reporting contributes to companies' survival time. The findings emphasise the importance of identifying the quality of ESG practices reporting before reaching the point of delisting as a signalling mechanism that conveys companies' long-term commitment, operational strength, and resilience to investors. This aligns with signalling theory, where transparent ESG reporting reduces information asymmetry, and legitimacy theory, where responsible ESG practices reporting reinforces

[42] Definition of companies' survival is discussed in Section 3.6.

companies' social acceptance and compliance with stakeholder expectations.

4.8 Chapter Summary

Chapter Four presents the empirical findings on the influence of ESG practices reporting on companies' initial performance, long-term performance, and survival post-IPO in the Malaysian market. The analysis begins with descriptive statistics and trend observations, which highlight three important insights: (i) the initial performance of Malaysian IPOs continues to show a declining pattern, (ii) long-term performance of more than half of the companies in the sample remains negative, and (iii) a significant number of companies experience shorter survival time as compared to the previous study. These patterns emphasise the importance of examining ESG practices as a potential determinant of post-IPO performance and survival.

The regression results for initial performance indicate that TOTESG has a positive influence on both offer-to-open and offer-to-close returns. The environmental component (ESCORE) consistently supports this positive effect across all initial performance models, indicating that both institutional and retail investors value environmental practices reporting during the early trading period. In contrast, higher governance practices reporting appears to suppress initial returns, suggesting that reporting them carries reputational or compliance-related implications that affect investors' short-term perceptions. These findings support the argument that ESG reporting serves as a signalling mechanism during the IPO stage, particularly in reducing information asymmetry and shaping investors' initial reactions to newly listed companies, thereby influencing their long-term value creation.

However, the findings for long-term performance show a different outcome. Both TOTESG and SSCORE exhibit negative and significant associations with CAAR and BHAR, indicating that higher ESG and social reporting prior to an IPO does not translate into superior long-term value creation. These results suggest that while ESG practices reporting may generate positive market reactions initially, poor reporting quality may unfavourably influence companies' long-term capabilities, consistent with legitimacy concerns and the potential for symbolic rather than substantive ESG reporting.

The survival analysis provides further evidence on the long-term implications of ESG practices. Across both AFT and COX models, TOTESG and GSCORE

consistently predict shorter survival time and a higher likelihood of failure. Higher levels of ESG and governance reporting are associated with reduced survival time, reinforcing the argument that ESG practices reporting must be accompanied by meaningful implementation to yield long-term benefits. An additional robustness assessment was conducted using an alternative definition of survival based on delisting status, following past studies. Under this definition, ESG practices reporting (collectively and individually) becomes insignificant due to the statistical limitations. The findings further confirm that ESG practices reporting are not intended to predict abrupt delisting outcomes, but rather to explain companies' resilience and continuity over time. This study's methodological contribution, therefore, lies in redefining survival as a continuous measure of companies' ability to remain active five years post-IPO, offering a more meaningful assessment of how sustainability reporting influences survival five years post-IPO.

CHAPTER 5
CONCLUSION

5.1 Introduction

This chapter concludes each chapter of this study. This chapter begins with a summary of the findings from the regression analysis, outlining the main issue and primary conclusion related to the objectives of this study. This chapter continues with an examination of the limitations of this study and provides recommendations for potential areas of future research. Lastly, this chapter discusses the implications of the findings for several parties, including policymakers, issuing companies, investors, and the current body of knowledge.

5.2 Summary and Conclusion

This study focuses on companies' initial performance, long-term performance, and survival post-IPO. Initial performance represents the first day share returns earned by investors following an IPO, typically measured by the difference between the offer and share prices during the initial trading day. In contrast, long-term performance reflects the returns generated over an extended period, calculated by comparing the share price on the first day of trading with the share prices after the third year post-IPO. A company's survival is its ability to continue operating and maintain its listing status actively, without the occurrence of events such as a merger or acquisition, non-fulfilment of listing requirements, or delisting from the share markets.

Past studies argue that abnormal initial performance in the developing markets such as Malaysia, is a common phenomenon due to the share market's speculative in nature (Mehmood et al., 2020), coupled with majority reporting the consistent phenomenon of long-term underperformance in the share market (Ahmad Zaluki, 2012; Abdul Rahman & Che-Yahya, 2019; Nordin & Mohd, 2011). Consistently, recent studies have extended the examination to companies' survival, reporting alarming statistics in which approximately 30 to 50 percent of companies are delisted after 5 to 7 years since their listing (Ahmad et al., 2021; Alyasa-Gan et al., 2022). In an attempt to confirm the arguments, this study obtained patterns for the companies' post-IPO

performance and survival using IPOs issued from 2000 to 2023 for a longer observation. Similarly, this study discovered a declining trend of companies' initial performance (Figure 1.2), consistent long-term underperformance phenomena (Figure 1.3) and over 90 percent of inactive companies failed to meet listing requirements or exhibit poor financial and operational performance post-IPO (Figure 1.4) in the Malaysian market.

Capturing and maintaining investors' interest and confidence should certainly be companies' top priority once they become public listed companies. One practical approach is to bridge the informational gap, or mitigate information asymmetry, by disclosing high-quality information during the IPO process (Firmansyah et al., 2023; Reber et al., 2022). From the early stages of being publicly listed, companies should prioritise the delivery of credible and transparent disclosures to increase investors' confidence. Companies should align their reporting practices with the evolving informational needs of investors and other stakeholders, particularly given the growing emphasis among investors on non-financial information that encompasses diverse aspects contributing to sustainable value creation. While other non-financial information discussed in past studies carries similar importance, what is lacking from the body of knowledge is recent, relevant information highlighted vigorously as value-relevant in the share market: ESG practices reporting. The roles of ESG practices reporting are examined using signalling and legitimacy theories.

Under signalling theory, ESG practices reporting is viewed as a strategic tool for reducing information asymmetry between the issuing company and potential investors during the IPO process. In markets like Malaysia, where historical financial track records of IPO companies are often limited, ESG disclosures serve as credible signals of companies' quality and long-term strategic orientation. By voluntarily disclosing detailed information on environmental, social, and governance initiatives, companies aim to communicate their commitment to sustainability, risk management, and ethical governance, signalling attributes highly valued by informed investors. As such, companies should be able to attract investors' confidence to secure subscriptions on the initial trading day and maintain investors' interest and certainty with the companies' commitment to benefit the environment and society. Consequently, companies can experience favourable long-term performance and survival in the long-run.

From the lens of legitimacy theory, ESG practices reporting is a mechanism through which companies seek to gain social approval and institutional acceptance.

Particularly relevant in emerging markets, where stakeholders expect companies to align with broader societal and regulatory norms, ESG disclosures are used to project companies' legitimacy and responsibility in the eyes of the public, regulators, and capital market participants. The reporting of ESG practices helps companies maintain their social license to operate and fulfil stakeholders' expectations, thereby enhancing their legitimacy and improving their chances of experiencing favourable post-IPO performances and survival in the long-run.

To answer all the propositions above, three main research objectives and three main research hypotheses are proposed (reproduced in Table 5.1) based on the theoretical and empirical arguments stipulated in past studies (Agustina & Clara, 2021; Bazrafshan, 2023; Baker et al., 2021; Cao et al., 2022; Garcia et al., 2017; Harasheh, 2022; Mohammad & Wasiuzzaman, 2021; Pulino et al., 2022; Reber et al., 2021).

Table 5.1

Summary of Hypotheses

Hypothesis Number	**Hypothesis Statement**
1(a)	There is a positive relationship between environmental, social, and governance practices disclosure and companies' initial performance.
1(b)	There is a positive relationship between environmental practice disclosure and companies' initial performance.
1(c)	There is a positive relationship between social practice disclosure and companies' initial performance.
1(d)	There is a positive relationship between governance practice disclosure and companies' initial performance.
2(a)	There is a positive relationship between environmental, social, and governance practices disclosure and companies' long-term performance.
2(b)	There is a positive relationship between environmental practice disclosure and companies' long-term performance.
2(c)	There is a positive relationship between social practice disclosure and companies' long-term performance.
2(d)	There is a positive relationship between governance practice disclosure and companies' long-term performance.
3(a)	There is a positive relationship between environmental, social, and governance practices disclosure and companies' survival.
3(b)	There is a positive relationship between environmental practice disclosure and companies' survival.
3(c)	There is a positive relationship between social practice disclosure and companies' survival.
3(d)	There is a positive relationship between governance practice disclosure and companies' survival.

The first objective of this study is to examine the role of ESG practices reporting on companies' initial performance. The second objective is to examine the role of ESG practices reporting on companies' long-term performance. The third objective is to

examine the role of ESG practices reporting on companies' survival. Nine other independent variables are also included in the examination from reviewing past studies' findings on the determinants of companies' initial performance (e.g., Ahmad-Zaluki & Badru, 2020; Kwon et al., 2022; Wyatt et al., 2014), long-term performance (e.g., Kang & Lam, 2022; Abbas et al., 2022), and survival (e.g., Ahmad et al., 2021; Alyasa-Gan et al., 2024; Shari, 2022). Thus, this study encompasses company size, age of the company, IPO proceeds, underwriter reputation, insider ownership, company assets, company leverage, company sector, and market conditions.

A final set of 100 IPOs listed on Bursa Malaysia in the ACE and Main Markets from 2012 to 2019 is employed to achieve the research objectives of this study. The cross-sectional data are analysed using multiple regression methods, specifically the ordinary least squares method for initial and long-term performances, and the survival analysis method for companies' survival. Each dependent variable is measured and analysed in two ways: first, initial performance is measured using the opening and closing prices. Second, long-term performance is measured using the CAAR and BHAR methods. Third, survival is analysed using the AFT and COX methods.

Findings from the descriptive statistics show that the average values of OTO and OTC closely reflect those reported in Table 1.1 and Figure 1.2, at approximately 17 percent, further confirming the declining trend in companies' initial performance in the Malaysian market. As stated in Section 4.2, this study reports higher initial performance than the recent study by Che-Yahya et al. (2023), reporting an average return of -1.5 percent for companies listed between 2004 and 2020. Nonetheless, the higher returns may reflect the consequences of information asymmetry, where limited transparency results in inflated opening and closing prices relative to offer prices, thereby elevating initial performance levels.

Regarding long-term performance, the average CAAR indicate that companies tend to perform better when evaluated through cumulative abnormal returns rather than the buy-and-hold strategy. These findings align with Table 1.2 and Figure 1.3, which show more favourable outcomes using the CAAR method. However, the negative median CAAR and BHAR suggest that more than half of the sampled companies underperform over the long-run. This pattern also confirms the phenomenon of long-term underperformance among Malaysian IPOs, underscoring the considerable financial risk and value erosion that companies face in the years following their listing.

In terms of company longevity, the average survival time reported in this study

is lower than reported by Ahmad et al. (2021) for companies, as the variation is likely explained by the more detailed and restrictive definition of survival applied in this study. The minimum survival value of zero further validates the findings in Table 1.3 and Figure 1.4, which report instances of companies exiting the market within 12 months, highlighting serious concerns surrounding post-IPO survivability in the Malaysian context. Collectively, the descriptive statistics findings emphasise the importance of assessing companies' post-IPO performance and survival rates.

The descriptive statistic findings for ESG highlight low ESG practices reporting among Malaysian IPOs. Despite efforts by regulators and policymakers to promote sustainability-related transparency and encourage responsible investment, ESG practices reporting among Malaysian companies remains limited, particularly in the environmental (ESCORE) and social (SSCORE) dimensions. This is evident in the reporting average, which falls below 50 percent for companies listed from 2012 to 2019. The findings further strengthen the need for this study to investigate the role of ESG practices in relation to companies' initial performance, long-term performance, and survival post-IPO.

The regression results on the influence of ESG practices reporting are divided into two parts for each dependent variable: the total ESG scores and the individual components of ESG. The results show that ESG's collective practices reporting consistently influence companies' initial performance, long-term performance and survival. When examined individually, this study discovered that environmental practices reporting has only a temporal effect on companies' post-IPO performance (significant only in the initial performance models). In contrast, social and governance practices reporting have extended effects on companies' post-IPO outcomes. However, the influence of ESG practices reporting is found to be majorly inverted from this study's initial proposition (except in the initial performance models).

The findings in the initial performance models strongly support this study's earlier proposition that ESG practices reporting should act as a positive signalling tool that can reduce uncertainty among investors. Reporting ESG practices enhances companies' reputations and enables them to gain legitimacy for their business activities from stakeholders. It also reduces uncertainty with the IPO issuance, ultimately increasing the subscription of shares on the initial trading day. Environmental practices reporting, especially, makes investors believe that companies are supporting current policy agendas to assist investors in practising sustainable and responsible investments.

Hence, companies' initial performance should increase post-IPO. In contrast, governance practices reporting reflects stringent and complex governance practices, which can hinder flexibility in decision-making and deter investors. This results in a decline in the IPO's initial performance.

The relationship between ESG practices reporting and long-term performance contrasts with the initial performance, reflecting a diminishing signalling effect once information asymmetry subsides. As markets absorb new information, investors start to reassess companies based on actual financial and operational results. This reassessment may lead to market corrections, particularly when ESG practices reporting fails to demonstrate tangible performance improvements. In the Malaysian context, many companies face implementation challenges, which may result in ESG practices being perceived as regulatory compliance rather than a genuine strategic commitment. Consequently, superficial reporting practices, or greenwashing, may erode investor trust and corporate legitimacy, ultimately harming companies' reputations and contributing to underperformance in the long-run. Individually, social practices reporting negatively affect companies' long-term performance due to the commonality of reporting among Malaysian IPOs in the social context. Investors expecting outcomes and transparent reporting may lose confidence in companies that fail to align social practices reporting with tangible actions, resulting in long-term underperformance.

A similar case for the survival models, finding that ESG practices reporting deteriorates companies' survival further. When ESG practices reporting does not yield the anticipated improvements in performance or investor confidence, companies become subject to heightened scrutiny from regulators and investors. A withdrawal of investor support, particularly when ESG commitments made prior to the IPO are not fulfilled, can lead to liquidity shortages, declining market valuations, and limited access to capital. These financial pressures pose significant risks to companies' ability to survive in the long-run. Similar to the initial performance models, companies facing scrutiny or anticipating governance challenges may overemphasise governance reporting to manage investors' sentiment, reflecting the prolonged impact of investors' scrutiny from the initial trading days to the point of companies' survival.

Overall, based on the results of the influence of ESG practices reporting on companies' initial performance, long-term performance, and survival, it can now be summarized that ESG practices reporting works as a reliable tool to predict companies' post-IPO performances and survival, particularly within the Malaysian market, where

investors' sentiment is highly sensitive to transparency. ESG practices reporting also reflects companies' legitimacy through the business activities that companies report before becoming publicly listed companies. However, this study also uncovers a more complex dynamic post-listing. ESG practices reporting, while initially beneficial, must be followed by consistent implementation and performance delivery. Investors can also evaluate ESG disclosures in isolation and continue to monitor whether companies uphold the commitments made in their IPO prospectuses and sustainability statements. Failure to deliver on these reports can result in market corrections, long-term underperformance, and non-survivability. Table 5.2, 5.3, and 5.4 summarise the main regression findings of this study.

Table 5.2

Summary of Main Independent Variable Results for Initial Performance Models

Models / Variables	Expected Sign	Initial Performance Model					
		OTC			OTO		
		Result Sign	Sig.	Support	Result Sign	Sig.	Support
TOTESG	+ve	+ve	Yes	Yes	+ve	Yes	Yes
ESCORE	+ve	+ve	Yes	Yes	+ve	Yes	Yes
SSCORE	+ve	-ve	No	No	-ve	No	No
GSCORE	+ve	-ve	No	No	-ve	Yes	No

Table 5.3

Summary of Main Independent Variable Results for Long-term Performance Models

Models / Variables	Expected Sign	Long-term Performance Model					
		CAAR			BHAR		
		Result Sign	Sig.	Support	Result Sign	Sig.	Support
TOTESG	+ve	-ve	Yes	No	-ve	Yes	No
ESCORE	+ve	-ve	No	No	-ve	No	No
SSCORE	+ve	-ve	Yes	No	-ve	Yes	No
GSCORE	+ve	-ve	No	No	-ve	No	No

Table 5.4

Summary of Main Independent Variable Results for Survival Models

Models / Variables	Expected Sign	Survival Model					
		AFT			COX		
		Result Sign	Sig.	Support	Result Sign	Sig.	Support
TOTESG	+ve	-ve	Yes	No	-ve	Yes	No
ESCORE	+ve	-ve	No	No	-ve	No	No
SSCORE	+ve	-ve	No	No	-ve	No	No
GSCORE	+ve	-ve	Yes	No	-ve	Yes	No

5.3 Limitations of this study

While this study offers valuable insights into the influence of ESG practices reporting on companies' initial performance, long-term performance, and survival in the Malaysian IPO context, several limitations must be acknowledged.

The first limitation pertains to the sample period selected for analysis. Due to the requirement of a minimum five-year post-IPO observation window for the survival models, the latest IPOs included in the dataset are those listed up to July 2019, thereby allowing tracking until July 2024, which represents the most recent available period during the execution of this study. Consequently, this study does not capture the initial performance, long-term performance, and survival dynamics of more recent IPOs, particularly those that occurred post-2019. The limitation of the sample also does not specifically capture the pre- and post-ESG implementation in the Malaysian market. This temporal limitation restricts the ability to assess the impact of current regulatory changes on the ESG trends of recent listed companies that may have emerged in recent years.

The second limitation involves data availability and accuracy in determining companies' survival status. This study primarily relies on manual data collection from companies' announcements published on the Bursa Malaysia website, specifically under Chapter 8 of the Continuing Listing Obligations for the Main and ACE Markets. Non-compliance with these obligations serves as a proxy for non-survival. However, the interpretation of these announcements is not always straightforward. Companies may disclose financial distress or operational failures using varied terminology such as

reporting defaults in loan repayments, liquidity issues, or suspension of trading without explicitly stating delisting status. This variability in disclosure language introduces potential classification error in distinguishing between surviving and non-surviving companies, which may affect the precision of the survival dataset.

The third limitation arises from the data collection method employed for ESG practices reporting, which was conducted manually through hand-collected disclosures found in the individual companies' IPO prospectuses. Specifically, information related to environmental, social, and governance practices was extracted from the "Nature of Business" and relevant narrative sections of each prospectus. This introduces potential measurement error and subjectivity. The interpretation of ESG-related content is highly dependent on the clarity, consistency, and comprehensiveness of each company's voluntary reporting. Variations in disclosure terminologies and depth across prospectuses may have led to inconsistent ESG scoring or omission of relevant information.

The fourth limitation relates to the generalizability of the findings beyond the Malaysian market context. This study is grounded within the specific institutional, regulatory, and disclosure environment of Malaysia, particularly in reference to the voluntary nature of ESG practices reporting as outlined in the 9th Revision of the Prospectus Guidelines issued by the Securities Commission Malaysia. Given the potential regulatory differences, the findings of this study, particularly those concerning the signalling and legitimacy effects of ESG practices reporting, may be applicable to other emerging markets, but only to the extent that similar disclosure norms, institutional mechanisms, and market sensitivities exist. As such, any replication or application of this study's findings in other jurisdictions should take into account the localised nuances of ESG reporting regimes and IPO disclosure requirements to ensure validity and relevance.

5.4 Recommendations of the study

In light of the limitations acknowledged in this study, several recommendations are proposed for future research to enhance the robustness, accuracy, and generalizability of similar investigations in the context of ESG practices reporting and post-IPO performances and survival.

First, to address the temporal limitation regarding the observation window and

the inclusion of more recent IPOs, future studies are encouraged to consider shorter post-IPO performance windows, such as 2-year long-term performance and 3-year survival, to enable the inclusion of more recent IPO cohorts beyond July 2019, including companies listed after major ESG-related regulatory developments. While the present study standardised the sample period to accommodate a three-year long-term performance window and a five-year post-IPO survival analysis up to July 2024, a shorter observation window may allow future studies to capture more recent market dynamics and assess whether the effects of pre-IPO ESG practices reporting have evolved under newer sustainability reporting expectations in Malaysia, such as the Twelfth Malaysia Plan (2021-2025). Such an approach may be particularly useful for examining the impact of recent regulatory initiatives, the growing demand for sustainable investment, and the maturation of ESG reporting practices among Malaysian IPOs. These developments may influence both the quality of pre-IPO ESG practices reporting and how investors interpret such disclosures in determining post-IPO outcomes. The use of shorter post-IPO horizons has also been adopted in prior studies (Ahmad-Zaluki & Kect, 2012; Fu et al., 2022; Gupta et al., 2019; Jog et al., 2019).

Second, to improve the accuracy of survival classification, future studies should incorporate multiple data sources and cross-verification mechanisms when identifying non-surviving companies. In addition to Bursa Malaysia's announcements, future studies may review databases (e.g., Bloomberg, Orbis) to triangulate signals of financial distress, delisting, or insolvency. This way, survival identification can be more precise. Similar to ESG practices reporting data, as ESG data availability improves in Malaysia and across ASEAN, future studies may benefit from leveraging structured ESG datasets provided by the London Stock Exchange. In addition, instead of treating all companies similarly when collecting ESG data, future studies may tailor the 14 ESG elements to industry-specific criteria. Future studies may tailor ESG measurement using industry-based materiality approaches, such as sector-specific indicators aligned with FTSE Russell materiality mappings or with frameworks from the Sustainability Accounting Standards Board (SASB). This may allow a more nuanced assessment of whether material ESG practices reporting better explains companies' post-IPO performance and survival. Such an approach may also help reduce measurement dilution and improve the precision of estimating the differential effects of ESG elements across industries.

This study recommends strengthening the external validity and cross-market

relevance of the findings; comparative studies across different ASEAN or emerging markets can be undertaken. The recommendation to conduct comparative studies is due to the possibility of similar regulatory frameworks and similar maturity in ESG reporting implementation, such as the Stock Exchange of Thailand (SET) and the Indonesia Stock Exchange (IDX). This makes the comparative analysis more meaningful and not random, allowing future studies to identify whether the signalling and legitimacy effects of ESG practices reporting are consistent or context-specific. It is also recommended that future studies integrate institutional theory or comparative regulatory frameworks to better interpret the interactions between ESG practices reporting, investor sentiment, and corporate outcomes across jurisdictions.

5.5 Implications of the study

5.5.1 Implication to the Body of Knowledge

This study makes a significant contribution to the existing literature in several key ways. First, it addresses a critical gap in IPO research by integrating ESG practices reporting, a relatively underexplored component in emerging markets, into the model of companies' post-IPO performances and survival. While most previous studies have focused primarily on financial indicators, this study adds a non-financial dimension (environmental, social, and governance practices), contributing to a multidimensional understanding of company performance and survival post-IPO.

Second, this study extends signalling theory and legitimacy theory to interpret how ESG practices reporting influences investor behaviour and trust. The findings validate these theories in a new empirical context, such as in the Malaysian market, demonstrating how ESG practices reporting can act as both informational signals to reduce information asymmetry and legitimacy-building tools to secure investors' confidence. The positive influence of ESG practices reporting and environmental disclosure on companies' initial performance suggests that investors perceive ESG information as value-relevant, enhancing confidence and influencing early market valuation. This study also extends the theory by showing that signalling effects may be time-contingent rather than uniformly persistent. Although ESG reporting generates favourable short-term market reactions, the negative influence of ESG reporting and companies' long-term performance suggests that signals valued at IPO may weaken, be

reassessed, or entail costs that affect long-term outcomes. This finding extends signalling theory by suggesting that the credibility or economic value of signals may vary across performance horizons.

This study also contributes to legitimacy theory by showing that ESG reporting may help companies gain legitimacy and investor acceptance during the IPO stage, as reflected in improved initial performance. However, the negative influence of ESG reporting and companies' long-term performance and survival further extends legitimacy theory by suggesting that legitimacy obtained through disclosure alone may not guarantee sustained economic benefits. Rather, legitimacy may provide early acceptance but may require substantive organisational capabilities to translate into measurable performance and survivability.

A further theoretical contribution is to demonstrate that ESG should not be treated as a homogeneous construct. The differentiated effects of environmental, social and governance disclosures suggest that each dimension operates through distinct signalling and legitimacy mechanisms. Environmental disclosure appears to serve as a stronger signal at the IPO stage. In contrast, social and governance disclosures suggest increased cost of capital and internal governance issues for long-term performance and survival. This finding contributes to both signalling and legitimacy theories by providing a more nuanced understanding of how the informational and legitimising roles of ESG dimensions may differ across companies' outcomes and time horizons, post-IPO. Overall, this study contributes to theory by not only supporting but also extending signalling and legitimacy theory to explain the role of pre-IPO ESG reporting practices in influencing companies' post-IPO performance and survival.

Third, the study introduces a hand-collected ESG disclosure and survival definition approaches using IPO prospectuses and keywords in Bursa Malaysia announcements, contributing methodological novelty. It serves as a reference for future studies in markets where standardised ESG and survival datasets are unavailable or limited in availability. Overall, the findings provide a foundation for further studies on ESG and companies' post-IPO performances and survival in Southeast Asia and other emerging economies.

5.5.2 Implications to the Policymakers

This study's findings provide strong justification for policymakers and

regulators, such as Bursa Malaysia and the Securities Commission Malaysia, to consider strengthening ESG disclosure policies for IPOs. Given that ESG practices reporting has been found to influence initial and long-term performance, as well as company survival, regulators may move toward mandating minimum ESG disclosure standards during the IPO stage. This study empirically found that ESG initially functions as a positive signal, but does not sustain long-term performance or survival unless substantiated. Therefore, Bursa Malaysia and the Securities Commission of Malaysia should strengthen mandatory ESG disclosure requirements, particularly for IPO-bound companies. Requirements should shift from narrative-style reporting to quantifiable, verifiable, and industry-specific sustainability indicators. This ensures companies communicate genuine ESG commitment rather than symbolic compliance.

The study also highlights the limitations of current voluntary disclosure frameworks, where ESG reporting varies significantly in terms of clarity, depth, and relevance. Policymakers may consider issuing granular ESG reporting guidelines or sector-specific guidelines to improve standardisation and comparability. These improvements would facilitate better investor decision-making and align with global movements toward responsible investment practices, such as the Task Force on Climate-related Financial Disclosures (TCFD) and Sustainable Development Goals (SDGs).

Additionally, the findings underscore the need for early ESG integration at the pre-listing stage, prompting regulators to incorporate ESG readiness assessments as part of IPO eligibility or prospectus vetting procedures. By institutionalising such frameworks, regulators can help promote transparent, resilient, and sustainable capital markets.

5.5.3 Implications to the Issuing Companies

This study presents a convincing circumstance for companies planning to go public to adopt proactive and strategic ESG reporting in their IPO prospectuses. This study demonstrates that companies that effectively report their ESG practices tend to exhibit more favourable initial performance. Issuing companies should view ESG practices reporting not merely as a compliance exercise, but as a strategic communication tool that can signal operational preparedness, stakeholder commitment, and governance strength. High-quality ESG reporting can help reduce investor

scepticism, lower perceived risk, and enhance post-IPO performance.

However, companies must be cautious of greenwashing or symbolic disclosures, as this study found that unsubstantiated or vague ESG claims may lead to long-term underperformance and loss of legitimacy among investors. Companies are encouraged to report measurable, relevant, and auditable ESG metrics, including implementation strategies, to reinforce investor confidence. Only this way can investors change their perception of greenwashing among IPOs in the stock market, which will help increase companies' long-term performance and survival.

5.5.4 Implication to Investors

For investors, particularly institutional investors and ESG-oriented funds, this study provides evidence that ESG practices reporting serves as a valuable screening criterion when evaluating IPOs. This study's findings support the use of ESG signals to identify companies with potential for higher initial returns. Investors should exercise critical appraisal of ESG practices reporting in IPO prospectuses, especially in emerging markets with voluntary frameworks. This study suggests that not all ESG practices reporting is equally meaningful; therefore, investors should look beyond generic sustainability narratives and focus on substance, credibility, and integration of ESG into core operations for sustainable investments.

This study offers insights into how inadequate ESG implementation or common reporting practices may lead to long-term underperformance and ultimately threaten companies' survival, underscoring the importance of continuous ESG due diligence following an IPO. This encourages investors to engage with companies and integrate ESG monitoring into their investment strategies.

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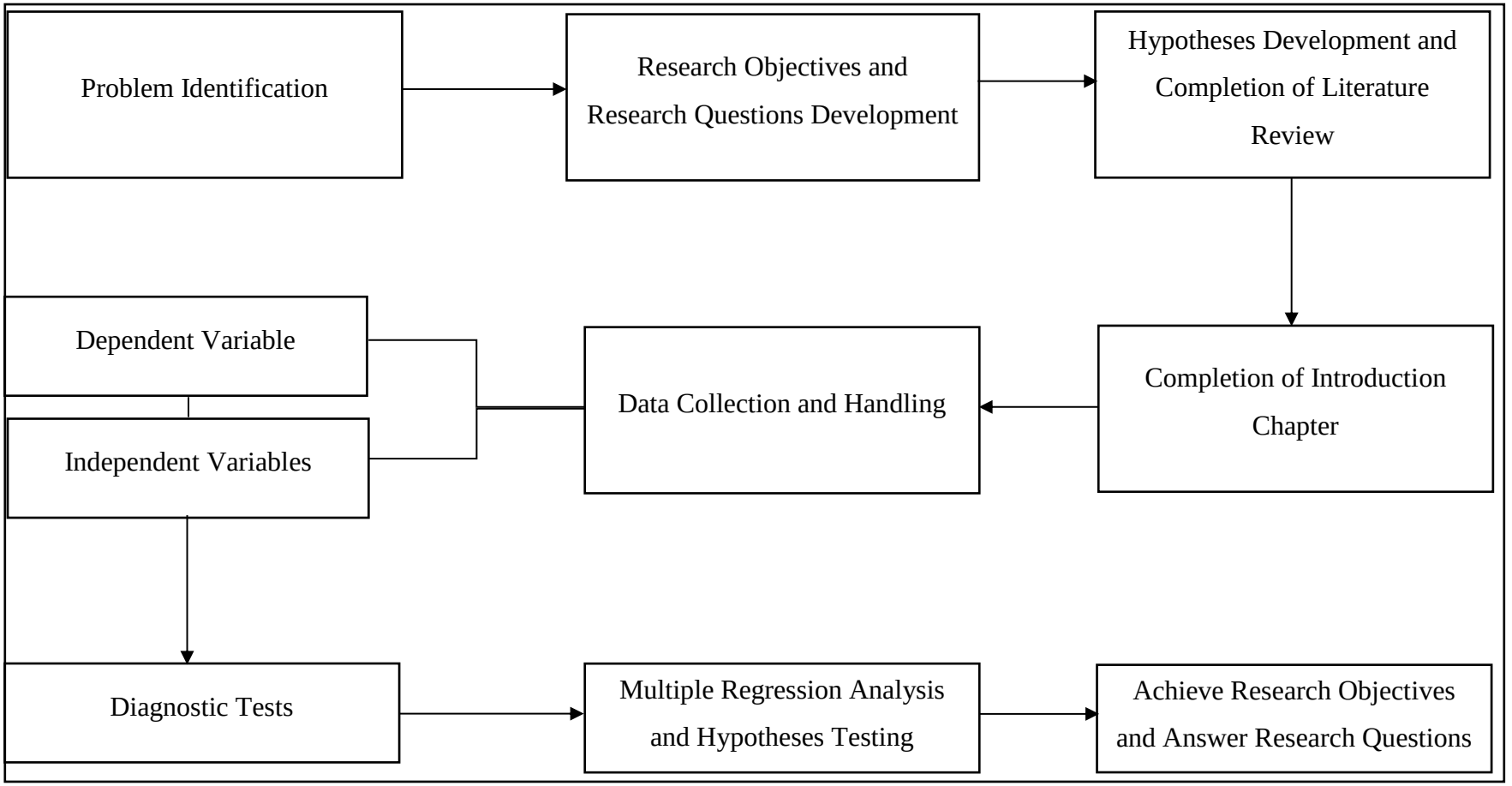
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APPENDICES

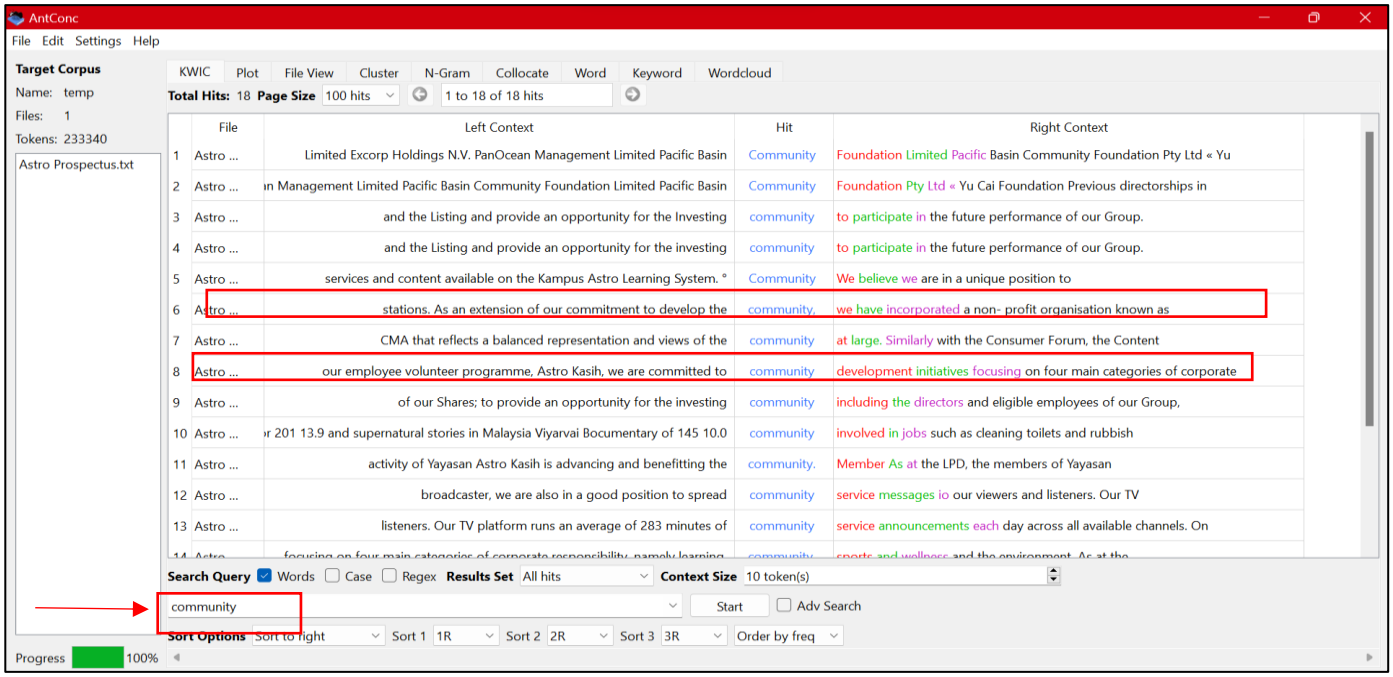
APPENDIX 1

Flow of Research Activity



APPENDIX 2

Analyzing ESG Information in Companies' Prospectuses



Source: Astro Malaysia Holdings Berhad prospectus

For example, the word "community" is inserted in the box to represent human rights and community indicators in the social element. Then, click "Start" to analyse the text in the prospectus. Next, this study identifies information, sentences and words reflecting the company's initiative by starting a foundation called "Astro Kasih" to benefit the community. A score of 1 is granted for Human Rights and Community indicator for Astro Malaysia Holdings Berhad.

APPENDIX 3

Pearson Correlation Coefficient of Initial Performance Models

Variables	OTO	OTC	ESG	SIZE	AGE	PRO	UW	OWNER	TOTA	LEVERAGE	D^{SECTOR}	MCD1
OTO	1	-	-0.1300	-0.2685	-0.2228	-0.1627	0.1270	0.0763	-0.2190	-0.2046	0.0857	0.0622
OTC	-	1	-0.1558	-0.2576	-0.1929	-0.0425	0.1873	0.0965	-0.2196	-0.2012	0.2358	0.1011
ESG	-0.1300	-0.1558	1	0.3399	0.0521	-0.1328	-0.0003	0.0334	0.4660	0.2051	-0.2954	0.0722
SIZE	-0.2685	-0.2576	0.3399	1	-0.0149	-0.0970	-0.3359	-0.2016	0.5554	0.3638	-0.1876	0.1924
AGE	-0.2228	-0.1929	0.0521	-0.0149	1	0.0664	0.0814	0.0774	0.0675	-0.1429	0.0769	-0.0516
PRO	-0.1627	-0.0425	-0.1328	-0.0970	0.0664	1	0.0190	-0.0680	-0.1451	0.0809	0.0364	-0.0765
UW	0.12670	0.1873	-0.0003	-0.3359	0.0814	0.0190	1	0.0858	-0.1153	-0.1860	0.1663	-0.0458
OWNER	0.0763	0.0965	0.0334	-0.2016	0.0774	-0.0680	0.0858	1	-0.1452	-0.1078	0.1053	-0.0333
TOTA	-0.2190	-0.2196	0.4660	0.5554	0.0675	-0.1451	-0.1153	-0.1452	1	0.2494	-0.2556	0.1841
LEVERAGE	-0.2046	-0.2012	0.2051	0.3638	-0.1429	0.0809	-0.1860	-0.1078	0.2494	1	-0.1542	0.1317
$\mathbf{D^{DSECTOR}}$	0.0857	0.2358	-0.2954	-0.1876	0.0769	0.0364	0.1663	0.1053	-0.2556	-0.1542	1	-0.1873
MCD1	0.0622	0.1011	0.0722	0.1924	-0.0516	-0.0765	-0.0458	-0.0333	0.1841	0.1317	-0.1873	1

Note: Model 1 independent variable is total of ESG score. OTO and OTC will not be regressed in the same model.

Variables	OTO	OTC	ESCORE	SSCORE	GSCORE	SIZE	AGE	PRO	UW	OWNER	TOTA	LEVERAGE	D^{SECTOR}	MCD1
OTO	1	-	-0.0436	-0.1837	-0.2247	-0.2685	-0.2228	-0.1627	0.1270	0.0763	-0.2190	-0.2046	0.0857	0.0622
OTC	-	1	-0.0857	-0.1895	-0.1449	-0.2576	-0.1929	-0.0425	0.1873	0.0965	-0.2196	-0.2012	0.2358	0.1011
ESCORE	-0.0436	-0.0857	1	0.2054	0.1005	0.1452	0.0963	0.1141	0.0469	0.0324	0.2992	-0.0064	-0.2606	-0.1187
SSCORE	-0.1837	-0.1895	0.2054	1	0.1202	0.2138	0.1621	-0.1226	-0.0172	-0.0287	0.2956	0.1559	-0.1474	-0.0392
GSCORE	-0.2247	-0.1449	0.1005	0.1202	1	0.2127	0.1065	-0.0126	0.0776	-0.0305	0.1813	0.1579	-0.0094	0.1979
SIZE	-0.2685	-0.2576	0.1452	0.2139	0.2127	1	-0.0149	-0.0970	-0.3359	-0.2016	0.5554	0.3638	-0.1876	0.1924
AGE	-0.2228	-0.1929	0.0962	0.1621	0.1065	-0.0149	1	0.0664	0.0814	0.0774	0.0675	-0.1429	0.0769	-0.0516
PRO	-0.1627	-0.0425	0.1141	-0.1226	-0.0126	-0.0970	0.0664	1	0.0190	-0.0680	-0.1451	0.0809	0.0364	-0.0765
UW	0.12670	0.1873	0.0469	-0.0172	0.0776	-0.3359	0.0814	0.0190	1	0.0858	-0.1153	-0.1860	0.1663	-0.0458
OWNER	0.0763	0.0965	0.0324	-0.0287	-0.0305	-0.2016	0.0774	-0.0680	0.0858	1	-0.1452	-0.1078	0.1053	-0.0333
TOTA	-0.2190	-0.2196	0.2992	0.2956	0.1813	0.5554	0.0675	-0.1451	-0.1153	-0.1452	1	0.2494	-0.2556	0.1841
LEVERAGE	-0.2046	-0.2012	-0.0064	0.1559	0.1579	0.3638	-0.1429	0.0809	-0.1860	-0.1078	0.2494	1	-0.1542	0.1317
$D^{DSECTOR}$	0.0857	0.2358	-0.2606	-0.1474	-0.0094	-0.1876	0.0769	0.0364	0.1663	0.1053	-0.2556	-0.1542	1	-0.1873
MCD1	0.0622	0.1011	-0.1187	-0.0392	0.1979	0.1924	-0.0516	-0.0765	-0.0458	-0.0333	0.1841	0.1317	-0.1873	1

Note: Model 2 independent variable is individual components of ESG. OTO and OTC will not be regressed in the same model.

APPENDIX 4

Pearson Correlation Coefficient of Long-Term Performance Models

VARIABLES	CAAR	BHAR	OTO	OTC	TOTESG	SIZE	AGE3Y	PRO	UW	OWNER	TOTA	LEVERAGE	D^{SECTOR}	MC3YCAAR	MC3YBHAR
CAAR	1	-	-0.2144	-0.1700	-0.1268	-0.1065	0.0457	-0.0431	-0.0622	0.0751	-0.0148	-0.0644	0.1347	-0.1364	-
BHAR	-	1	-0.2398	-0.1929	-0.1208	-0.0763	0.0256	-0.0833	-0.1032	0.0909	0.0274	-0.0399	0.1282	-0.0154	-0.0154
OTO	-0.2144	-0.2398	1	-	-0.1300	-0.2685	-0.2228	-0.1627	0.1270	0.0763	-0.2190	-0.2046	0.0857	-0.0902	-0.0902
OTC	-	-0.1929	-	1	-0.1558	-0.2576	-0.1929	-0.0425	0.1873	0.0965	-0.2196	-0.2012	0.2358	-0.1129	-0.1104
TOTESG	-0.1268	-0.1208	-0.1300	-0.1558	1	0.3399	0.0521	-0.1328	-0.0003	0.0334	0.4660	0.2051	-0.2954	0.2754	0.2754
SIZE	-0.1065	-0.0763	-0.2685	-0.2576	0.3399	1	-0.0149	-0.0970	-0.3359	-0.2016	0.5554	0.3638	-0.1876	0.0941	0.0941
AGE3Y	0.0457	0.0256	-0.2228	-0.1929	0.0521	-0.0149	1	0.0664	0.0814	0.0774	0.0675	-0.1429	0.0769	-0.1846	-0.1846
PRO	-0.0431	-0.0833	-0.1627	-0.0425	-0.1328	-0.0970	0.0664	1	0.0190	-0.0680	-0.1451	0.0809	0.0364	-0.2007	-0.2007
UW	-0.0622	-0.1032	0.1270	0.1873	-0.0003	-0.3359	0.0814	0.0190	1	0.0858	-0.1153	-0.1860	0.1663	-0.0186	-0.0186
OWNER	0.0751	0.0909	0.0763	0.0965	0.0334	-0.2016	0.0774	-0.0680	0.0858	1	-0.1452	-0.1078	0.1053	0.1295	0.1295
TOTA	-0.0148	0.0274	-0.2190	-0.2196	0.4660	0.5554	0.0675	-0.1451	-0.1153	-0.1452	1	0.2494	-0.2556	0.1943	0.1943
LEVERAGE	-0.0644	-0.0399	-0.2046	-0.2012	0.2051	0.3638	-0.1429	0.0809	-0.1860	-0.1078	0.2494	1	-0.1542	0.0836	0.0836
D^{SECTOR}	0.1347	0.1282	0.0857	0.2358	-0.2954	-0.1876	0.0769	0.0364	0.1663	0.1053	-0.2556	-0.1542	1	-0.1837	-0.1837
MC3YCAAR	-0.1364	-0.0154	-0.0902	-0.1129	0.2754	0.0941	-0.1846	-0.2007	-0.0186	0.1295	0.1943	0.0836	-0.1837	1	-
MC3YBHAR	-	-0.0154	-0.0902	-0.1104	0.2754	0.0941	-0.1846	-0.2007	-0.0186	0.1295	0.1943	0.0836	-0.1837	-	1

Note: Model 3 and 4 independent variable is total of ESG score. CAAR and BHAR will not be regressed in the same model.

VARIABLES	CAAR	BHAR	OTO	OTC	ESCORE	SSCORE	GSCORE
CAAR	1	-	-0.2144	-0.1700	-0.0881	-0.0448	-0.0453
BHAR	-	1	-0.2398	-0.1929	-0.1401	-0.0724	-0.0016
OTO	-0.2144	-0.2398	1	-	-0.0436	-0.1837	-0.2247
OTC	-0.1700	-0.1929	-	1	-0.0857	-0.1895	-0.1449
ESCORE	-0.0881	-0.1401	-0.0436	-0.0857	1	-0.0453	-0.2247
SSCORE	-0.0448	-0.0724	-0.1837	-0.1895	-0.0453	1	-0.2144
GSCORE	-0.0453	-0.0016	-0.2247	--0.1449	-0.2247	-0.2144	1

continued….

VARIABLES	SIZE	AGE3Y	PRO	UW	OWNER	TOTA	LEVERAGE	D^{SECTOR}	MC3YCAAR	MC3YBHAR
CAAR	-0.1065	0.0457	-0.0431	-0.0622	0.0751	-0.0148	-0.0644	0.1347	-0.1364	-
BHAR	-0.0763	0.0256	-0.0833	-0.1032	0.0909	0.0274	-0.0399	0.1282	-	-0.0154
OTO	-0.2685	-0.2228	-0.1627	0.1270	0.0763	-0.2190	-0.2046	0.0857	-0.0926	-0.0902
OTC	-0.2576	-0.1929	-0.0425	0.1873	0.0965	-0.2196	-0.2012	0.2358	-0.1129	-0.1104
ESCORE	0.1452	0.0963	0.1141	0.0469	0.0324	0.2992	-0.0064	-0.2606	0.0295	0.0319
SSCORE	0.2138	0.1621	-0.1226	-0.0172	-0.0287	0.2956	0.1559	-0.1474	0.0175	0.0044
GSCORE	0.2127	0.1065	-0.0126	0.0776	-0.0305	0.1813	0.1579	-0.0094	0.2718	0.2697
SIZE	1	-0.0149	-0.0970	-0.3359	-0.2016	0.5554	0.3638	-0.1876	0.0930	0.0941
AGE3Y	-0.0149	1	0.0664	0.0814	0.0774	0.0675	-0.1429	0.0769	-0.1797	-0.1846
PRO	-0.0970	0.0664	1	0.0190	-0.0680	-0.1451	0.0809	0.0364	-0.2101	-0.2007
UW	-0.3359	0.0814	0.0190	1	0.0858	-0.1153	-0.1860	0.1663	-0.0200	-0.0186
OWNER	-0.2016	0.0774	-0.0680	0.0858	1	-0.1452	-0.1078	0.1053	0.1299	0.1295
TOTA	0.5554	0.0675	-0.1451	-0.1153	-0.1452	1	0.2494	-0.2556	0.1974	0.1943
LEVERAGE	0.3638	-0.1429	0.0809	-0.1860	-0.1078	0.2494	1	-0.1542	0.0920	0.0836
D^{SECTOR}	-0.1876	0.0769	0.0364	0.1663	0.1053	-0.2556	-0.1542	1	-0.1777	-0.1837
MC3YCAAR	0.0930	-0.1797	-0.2101	-0.0200	0.1299	0.1974	0.0920	-0.1777	1	-
MC3YBHAR	0.0941	-0.1846	-0.2007	-0.0186	0.1295	0.1943	0.0836	-0.1837	-	1

Note: Model 3 and 4 independent variable is individual components of ESG. CAAR and BHAR will not be regressed in the same model.

APPENDIX 5

Pearson Correlation Coefficient of Survival Models

VARIABLES	SURVIVE	CAAR	BHAR	OTO	OTC	TOTESG	SIZE	AGE3Y	PRO	UW	OWNER	TOTA	LEVERAGE	D^{SECTOR}	MC5YCAAR	MC5YBHAR
SURVIVE	1	-0.0439	-0.0273	0.2201	0.1832	0.1680	0.0659	-0.1709	-0.0513	0.0230	0.0893	0.0915	0.1209	-0.2341	0.3258	0.3252
CAAR	-0.0439	1	-	-0.1959	-0.1296	-0.0737	-0.0601	0.1601	-0.0792	-0.0655	0.1246	-0.0099	-0.0693	0.3052	-0.0058	-
BHAR	-0.0273	-	1	-0.1975	-0.1336	-0.0753	-0.0462	0.1492	-0.0772	-0.0801	0.1280	0.0042	-0.0585	0.2993	0.0403	0.0403
OTO	0.2201	-0.1959	-0.1975	1	-	-0.0239	-0.2231	-0.1850	-0.1247	0.3095	0.0693	-0.1366	-0.1357	0.0247	0.0315	0.0315
OTC	0.1832	-0.1296	-0.1336	-	1	-0.0057	-0.2354	-0.1475	-0.1097	0.4528	0.0691	-0.1581	-0.1292	0.0862	0.0638	0.0612
TOTESG	0.1680	-0.0737	-0.0753	-0.0239	-0.0057	1	0.3399	0.0521	0.2242	-0.0003	0.0334	0.4660	0.2051	-0.2954	0.3360	0.3247
SIZE	0.0659	-0.0601	-0.0462	-0.2231	-0.2354	0.3399	1	-0.0149	0.6057	-0.3359	-0.2016	0.5554	0.3638	-0.1876	0.1248	0.1217
AGE3Y	-0.1709	0.1601	0.1492	-0.1850	-0.1475	0.0521	-0.0149	1	0.0315	0.0814	0.0774	0.0675	-0.1429	0.0769	-0.0353	-0.0334
PRO	-0.0513	-0.0792	-0.0772	-0.1247	-0.1097	0.2242	0.6057	0.0315	1	-0.1282	-0.1590	0.3516	0.2527	-0.1038	0.0891	0.0828
UW	0.0230	-0.0655	-0.0801	0.3095	0.4528	-0.0003	-0.3359	0.0814	-0.1282	1	0.0858	-0.1153	-0.1860	0.1663	0.0459	0.0485
OWNER	0.0893	0.1246	0.1280	0.0693	0.0691	0.0334	-0.2016	0.0774	-0.1590	0.0858	1	-0.1452	-0.1078	0.1053	-0.0477	-0.0556
TOTA	0.0915	-0.0099	0.0042	-0.1366	-0.1581	0.4660	0.5554	0.0675	0.3516	-0.1153	-0.1452	1	0.2494	-0.2556	0.2708	0.2609
LEVERAGE	0.1209	-0.0693	-0.0585	-0.1357	-0.1292	0.2051	0.3638	-0.1429	0.2527	-0.1860	-0.1078	0.2494	1	-0.1542	0.1133	0.1088
D^{SECTOR}	-0.2341	0.3052	0.2993	0.0247	0.0862	-0.2954	-0.1876	0.0769	-0.1038	0.1663	0.1053	-0.2556	-0.1542	1	-0.1693	-0.1661
MC5YCAAR	0.3258	-0.0058	-	0.0342	0.0638	0.3360	0.1248	-0.0353	0.0891	0.0459	-0.0477	0.2708	0.1133	-0.1693	1	-
MC5YBHAR	0.3252	-	0.0403	0.0315	0.0612	0.3247	0.1217	-0.0334	0.0828	0.0485	-0.0556	0.2609	0.1088	-0.1661	-	1

Note: Models 7, 8, 9, and 10 independent variable is total of ESG score. OTO and OTC will not be regressed in the same model. CAAR and BHAR will also not be regressed in the same model.

VARIABLES	SURVIVE	CAAR	BHAR	OTO	OTC	ESCORE	SSCORE	GSCORE
SURVIVE	1	-0.0439	-0.0273	0.2201	0.1832	0.0308	-0.0660	0.0626
CAAR	-0.0439	1	-	-0.1959	-0.1296	-0.1087	0.0151	0.0600
BHAR	-0.0273	-	1	-0.1975	-0.1336	-0.1309	0.0007	0.0758
OTO	0.2201	-0.1959	-0.1975	1	-	-0.0054	-0.1250	-0.0915
OTC	0.1832	-0.1296	-0.1336	-	1	0.0129	-0.1219	0.0118
ESCORE	0.0308	-0.1087	-0.1309	-0.0054	0.0129	1	0.2054	0.1005
SSCORE	-0.0660	0.0151	0.0007	-0.1250	-0.1219	0.2054	1	0.1202
GSCORE	0.0626	0.0600	0.0758	-0.0915	0.0118	0.1005	0.1202	1

continued….

VARIABLES	SIZE	AGE3Y	PRO	UW	OWNER	TOTA	LEVERAGE	D^{SECTOR}	MC5YCAAR	MC5YBHAR
SURVIVE	0.0659	-0.1709	-0.0513	0.0230	0.0893	0.0915	0.1209	-0.2341	0.3258	0.3252
CAAR	-0.0601	0.1601	-0.0792	-0.0655	0.1246	-0.0099	-0.0693	0.3052	-0.0058	-
BHAR	-0.0462	0.1492	-0.0772	-0.0801	0.1280	0.0042	-0.0585	0.2993	-	0.0403
OTO	-0.2231	-0.1850	-0.1247	0.3095	0.0693	-0.1366	-0.1357	0.0247	0.0342	0.0315
OTC	-0.2354	-0.1475	-0.1097	0.4528	0.0691	-0.1581	-0.1292	0.0862	0.0638	0.0612
ESCORE	0.1452	0.0963	0.2025	0.0469	0.0324	0.2992	-0.0064	-0.2606	-0.0547	-0.0618
SSCORE	0.2138	0.1621	0.1134	-0.0172	-0.0287	0.2956	0.1559	-0.1474	0.0855	0.0859
GSCORE	0.2127	0.1065	0.2013	0.0776	-0.0305	0.1813	0.1579	-0.0094	0.3152	0.3032
SIZE	1	-0.0149	0.6057	-0.3359	-0.2016	0.5554	0.3638	-0.1876	0.1248	0.1217
AGE3Y	-0.0149	1	0.0315	0.0814	0.0774	0.0675	-0.1429	0.0769	-0.0353	-0.0334
PRO	0.6057	0.0315	1	-0.1282	-0.1590	0.3516	0.2527	-0.1038	0.0891	0.0828
UW	-0.3359	0.0814	-0.1282	1	0.0858	-0.1153	-0.1860	0.1663	0.0459	0.0485
OWNER	-0.2016	0.0774	-0.1590	0.0858	1	-0.1452	-0.1078	0.1053	-0.0477	-0.0556
TOTA	0.5554	0.0675	0.3516	-0.1153	-0.1452	1	0.2494	-0.2556	0.2708	0.2609
LEVERAGE	0.3638	-0.1429	0.2527	-0.1860	-0.1078	0.2494	1	-0.1542	0.1133	0.1088
D^{SECTOR}	-0.1876	0.0769	-0.1038	0.1663	0.1053	-0.2556	-0.1542	1	-0.1693	-0.1661
MC5YCAAR	0.1248	-0.0353	0.0891	0.0459	-0.0477	0.2708	0.1133	-0.1693	1	-
MC5YBHAR	0.1217	-0.0334	0.0828	0.0485	-0.0556	0.2609	0.1088	-0.1661	-	1

Note: Models 11, 12, 13, 14 independent variable is total of ESG score. OTO and OTC will not be regressed in the same model. CAAR and BHAR will also not be regressed in the same model.

APPENDIX 6

Variance Inflation Factor of Initial Performance Models

VARIABLE	VIF (MODEL 1 – OTO)	1/VIF (MODEL 1 – OTC)	VIF (MODEL 2 – OTO)	1/VIF (MODEL 2 – OTC)
TOTESG	1.43	0.70	-	-
ESCORE	-	-	1.32	0.76
SSCORE	-	-	1.2	0.83
GSCORE	-	-	1.15	0.87
SIZE	1.81	0.55	1.82	0.55
AGE	1.06	0.94	1.11	0.90
PRO	1.07	0.93	1.12	0.89
UW	1.19	0.84	1.21	0.83
OWNER	1.09	0.92	1.08	0.93
TOTA	1.73	0.58	1.72	0.58
LEVERAGE	1.24	0.81	1.28	0.78
D^{SECTOR}	1.2	0.84	1.23	0.81
MCD1	1.08	0.92	1.18	0.85
MEAN VIF	1.29	-	1.28	-

APPENDIX 7

Variance Inflation Factor of Long-term Performance Models

VARIABLE	VIF (MODEL 3-CAAR)	1/VIF (MODEL 3-CAAR)	VIF (MODEL 3-BHAR)	1/VIF (MODEL 3-BHAR)	VIF (MODEL 4-CAAR)	1/VIF (MODEL 4-CAAR)	VIF (MODEL 4-BHAR)	1/VIF (MODEL 4-BHAR)	VIF (MODEL 5-CAAR)	1/VIF (MODEL 5-CAAR)	VIF (MODEL 5-BHAR)	1/VIF (MODEL 5-BHAR)	VIF (MODEL 6-CAAR)	1/VIF (MODEL 6-CAAR)	VIF (MODEL 6-BHAR)	1/VIF (MODEL 6-BHAR)
OTO	1.25	0.80	1.24	0.80	-	-	-	-	1.28	0.78	1.28	0.78	-	-	-	-
OTC	-	-	-	-	1.24	0.81	1.23	0.81	-	-	-	-	1.25	0.80	1.25	0.80
TOTESG	1.47	0.68	1.47	0.68	1.47	0.68	1.47	0.68	-	-	-	-	-	-	-	-
ESCORE	-	-	-	-	-	-	-	-	1.27	0.79	1.27	0.79	1.26	0.79	1.26	0.79
SSCORE	-	-	-	-	-	-	-	-	1.2	0.83	1.21	0.83	1.2	0.83	1.2	0.83
GSCORE	-	-	-	-	-	-	-	-	1.23	0.81	1.23	0.81	1.22	0.82	1.22	0.82
SIZE	1.83	0.55	1.83	0.55	1.81	0.55	1.81	0.55	1.84	0.54	1.84	0.54	1.82	0.55	1.82	0.55
AGE3Y	1.19	0.84	1.19	0.84	1.19	0.84	1.19	0.84	1.23	0.82	1.23	0.81	1.23	0.81	1.23	0.81
PRO	1.14	0.88	1.13	0.88	1.1	0.91	1.09	0.91	1.21	0.83	1.21	0.83	1.16	0.86	1.16	0.86
UW	1.19	0.84	1.19	0.84	1.2	0.83	1.2	0.83	1.21	0.83	1.21	0.83	1.22	0.82	1.22	0.82
OWNER	1.11	0.90	1.12	0.90	1.12	0.90	1.12	0.89	1.12	0.90	1.12	0.89	1.12	0.89	1.12	0.89
TOTA	1.74	0.57	1.74	0.57	1.74	0.57	1.74	0.57	1.75	0.57	1.75	0.57	1.74	0.57	1.74	0.57
LEVERAGE	1.25	0.80	1.25	0.80	1.25	0.80	1.25	0.80	1.28	0.78	1.28	0.78	1.29	0.78	1.29	0.78
D^{SECTOR}	1.18	0.85	1.18	0.85	1.21	0.83	1.21	0.82	1.21	0.83	1.21	0.82	1.25	0.80	1.25	0.80
MC3YCAAR	1.24	0.81	-	-	1.23	0.81	-	-	1.31	0.76	-	-	1.31	0.77	-	-
MC3YBHAR	-	-	1.24	0.81	-	-	1.23	0.81	-	-	1.31	0.77	-	-	1.31	0.77
MEAN VIF	1.33	-	1.33	-	1.32	-	1.32	.	1.32	-	1.32	-	1.31	-	1.31	-

APPENDIX 8

Variance Inflation Factor of SURVIVAL Models

VARIABLE	VIF (Model 7)	1/VIF (Model 7)	VIF (Model 8)	1/VIF (Model 8)	VIF (Model 9)	1/VIF (Model 9)	VIF (Model 10)	1/VIF (Model 10)	VIF (Model 11)	1/VIF (Model 11)	VIF (Model 12)	1/VIF (Model 12)	VIF (Model 13)	1/VIF (Model 13)	VIF (Model 14)	1/VIF (Model 14)
CAAR	1.21	0.82	1.19	0.84	-	-	-	-	1.22	0.82	1.2	0.83	-	-	-	-
BHAR	-	-	-	-	1.22	0.82	1.20	0.83	-	-	-	-	1.23	0.81	1.21	0.83
OTO	1.23	0.81	1.24	0.81	1.25	0.80	1.23	0.81	1.22	0.82	1.23	0.81	1.22	0.82	1.25	0.80
OTC	1.25	0.80	1.25	0.80	1.25	0.80	1.25	0.80	1.25	0.80	1.25	0.80	1.25	0.80	1.25	0.80
TOTESG	1.47	0.68	1.47	0.68	1.47	0.68	1.47	0.68	-	-	-	-	-	-	-	-
ESCORE	-	-	-	-	-	-	-	-	1.27	0.79	1.26	0.79	1.27	0.79	1.26	0.79
SSCORE	-	-	-	-	-	-	-	-	1.21	0.83	1.22	0.82	1.21	0.83	1.22	0.82
GSCORE	-	-	-	-	-	-	-	-	1.22	0.82	1.23	0.81	1.22	0.82	1.23	0.81
SIZE	1.81	0.55	1.83	0.55	1.81	0.55	1.83	0.55	1.82	0.55	1.84	0.54	1.82	0.55	1.84	0.54
AGE3Y	1.19	0.84	1.19	0.84	1.19	0.84	1.19	0.84	1.23	0.81	1.23	0.81	1.23	0.81	1.23	0.81
PRO	1.14	0.88	1.10	0.91	1.13	0.88	1.10	0.91	1.21	0.83	1.16	0.86	1.21	0.83	1.16	0.86
UW	1.19	0.84	1.20	0.83	1.19	0.84	1.20	0.83	1.21	0.83	1.22	0.82	1.21	0.83	1.22	0.82
OWNER	1.11	0.90	1.12	0.89	1.12	0.89	1.12	0.89	1.12	0.90	1.12	0.89	1.12	0.89	1.12	0.89
TOTA	1.74	0.57	1.74	0.57	1.74	0.57	1.74	0.57	1.75	0.57	1.74	0.57	1.75	0.57	1.74	0.57
LEVERAGE	1.25	0.80	1.25	0.80	1.25	0.80	1.25	0.80	1.28	0.78	1.29	0.78	1.28	0.78	1.29	0.78
D^{SECTOR}	1.15	0.85	1.21	0.83	1.15	0.85	1.21	0.83	1.21	0.83	1.25	0.80	1.21	0.83	1.25	0.80
MC5YCAAR	1.24	0.81	1.23	0.81	1.24	0.81	1.23	0.81	1.31	0.76	1.31	0.77	1.31	0.77	1.31	0.77
MC5YBHAR	1.24	0.80	1.24	0.80	1.24	0.80	1.24	0.80	1.31	0.77	1.31	0.77	1.31	0.77	1.31	0.77
MEAN VIF	1.41	-	1.43	-	1.41	-	1.43	-	1.39	-	1.41	-	1.39	-	1.41	-

APPENDIX 9

White Heteroskedasticity Test Results for Initial Performance

Model 1 - OTC

HETEROSKEDASTICITY TEST: WHITE			
F-statistic	0.851093	Prob. F(55,44)	0.7166
Obs*R-squared	51.54724	Prob. Chi-Square(55)	0.6073
Scaled explained SS	82.19169	Prob. Chi-Square(55)	0.0102

Test Equation:
Dependent Variable: Resid^2
Method: Least Squares
Sample: 1 100
Included Observations: 100

VARIABLES	COEFFICIENT	STD. ERROR	T-STATISTIC	PROB.
C	78.7521	3022.8130	0.0261	0.9793
TOTESG^2	1.6020	0.7774	2.0606	0.0453

Model 4 - OTC

HETEROSKEDASTICITY TEST: WHITE			
F-statistic	1.115291	Prob. F(78,21)	0.4045
Obs*R-squared	80.55425	Prob. Chi-Square(78)	0.3991
Scaled explained SS	112.8626	Prob. Chi-Square(78)	0.0060

Test Equation:
Dependent Variable: Resid^2
Method: Least Squares
Sample: 1 100
Included Observations: 100

VARIABLES	COEFFICIENT	STD. ERROR	T-STATISTIC	PROB.
C	-1460.1220	3008.4310	-0.4853	0.6325
ESCORE^2	2766.7630	8075.1760	0.3426	0.7353
SSCORE^2	5508.1280	6168.2250	0.8930	0.3820

GSCORE^2	-9217.1380	9593.2220	-0.9608	0.3476

Model 1 - OTO

HETEROSKEDASTICITY TEST: WHITE			
F-statistic	1.0078	Prob. F(55,44)	0.4935
Obs*R-squared	55.7465	Prob. Chi-Square(55)	0.4465
Scaled explained SS	55.6994	Prob. Chi-Square(55)	0.4483

Test Equation:
Dependent Variable: Resid^2
Method: Least Squares
Sample: 1 100
Included Observations: 100

VARIABLES	COEFFICIENT	STD. ERROR	T-STATISTIC	PROB.
C	-212.6127	2031.6350	-0.1047	0.9171
TOTESG^2	0.6447	0.5225	1.2339	0.2238

Model 2 - OTO

HETEROSKEDASTICITY TEST: WHITE			
F-statistic	1.314698	Prob. F(78,21)	0.2437
Obs*R-squared	83.00234	Prob. Chi-Square(78)	0.3280
Scaled explained SS	74.63776	Prob. Chi-Square(78)	0.5869

Test Equation:
Dependent Variable: Resid^2
Method: Least Squares
Sample: 1 100
Included Observations: 100

VARIABLES	COEFFICIENT	STD. ERROR	T-STATISTIC	PROB.
C	154.9918	1966.6070	0.0788	0.9379
ESCORE^2	-812.6240	5278.7310	-0.1539	0.8791
SSCORE^2	-1551.3720	4032.1590	-0.3848	0.7043
GSCORE^2	-5222.4470	6271.0750	-0.8328	0.4143

APPENDIX 10

White Heteroskedasticity Test Results for Long-term Performance

Model 3 - CAAR

HETEROSKEDASTICITY TEST: WHITE			
F-statistic	2.321675	Prob. F(55,44)	0.0023
Obs*R-squared	74.37273	Prob. Chi-Square(55)	0.0420
Scaled explained SS	82.62168	Prob. Chi-Square(55)	0.0094

Test Equation:
Dependent Variable: Resid^2
Method: Least Squares
Sample: 1 100
Included Observations: 100

VARIABLES	COEFFICIENT	STD. ERROR	T-STATISTIC	PROB.
C	3689.2680	6355.6920	0.5805	0.5655
OTO^2	0.3613	0.6635	0.5445	0.5897
TOTESG^2	1.5659	1.8206	0.8601	0.3959

Model 4- CAAR

HETEROSKEDASTICITY TEST: WHITE			
F-statistic	2.5289	Prob. F(66,33)	0.0023
Obs*R-squared	83.4921	Prob. Chi-Square(66)	0.0718
Scaled explained SS	89.0272	Prob. Chi-Square(66)	0.0310

Test Equation:
Dependent Variable: Resid^2
Method: Least Squares
Sample: 1 100
Included Observations: 100

VARIABLES	COEFFICIENT	STD. ERROR	T-STATISTIC	PROB.
C	5580.6270	6846.8260	0.8151	0.4209
OTC^2	-0.2496	0.6184	-0.4037	0.6891
TOTESG^2	1.9266	1.8430	1.0453	0.3035

Model 5 - CAAR

HETEROSKEDASTICITY TEST: WHITE			
F-statistic	5.1312	Prob. F(90,9)	0.0058
Obs*R-squared	98.0884	Prob. Chi-Square(90)	0.2627
Scaled explained SS	110.2279	Prob. Chi-Square(90)	0.0726

Test Equation:
Dependent Variable: Resid^2
Method: Least Squares
Sample: 1 100
Included Observations: 100

VARIABLES	COEFFICIENT	STD. ERROR	T-STATISTIC	PROB.
C	11626.9100	6614.7680	1.7577	0.1127
OTO ^2	3.6801	1.2422	2.9627	0.0159
ESCORE^2	-51108.3400	24050.7800	-2.1250	0.0625
SSCORE^2	15176.5900	27570.4300	0.5505	0.5954
GSCORE^2	18380.9100	22561.1000	0.8147	0.4363

Model 6 - CAAR

HETEROSKEDASTICITY TEST: WHITE			
F-statistic	3.1448	Prob. F(90,9)	0.0328
Obs*R-squared	96.9182	Prob. Chi-Square(90)	0.2903
Scaled explained SS	104.2676	Prob. Chi-Square(90)	0.1443

Test Equation:
Dependent Variable: Resid^2
Method: Least Squares
Sample: 1 100
Included Observations: 100

VARIABLES	COEFFICIENT	STD. ERROR	T-STATISTIC	PROB.
C	9639.1000	8055.7960	1.1965	0.2621
OTC ^2	-0.0294	1.4326	-0.0206	0.9841
ESCORE^2	-111888.7	32006.6	-3.4958	0.0068
SSCORE^2	-30193.5800	26295.97	-1.1482	0.2805
GSCORE^2	2152.3990	26793.4400	0.0803	0.9377

Model 3 - BHAR

HETEROSKEDASTICITY TEST: WHITE			
F-statistic	1.8902	Prob. F(66,33)	0.0238
Obs*R-squared	79.0815	Prob. Chi-Square(66)	0.1296
Scaled explained SS	78.1890	Prob. Chi-Square(66)	0.1448

Test Equation:
Dependent Variable: Resid^2
Method: Least Squares
Sample: 1 100
Included Observations: 100

VARIABLES	COEFFICIENT	STD. ERROR	T-STATISTIC	PROB.
C	-2576.5360	6649.1480	-0.3875	0.7009
OTO^2	-0.0074	0.2554	-0.0291	0.9770
TOTESG^2	0.6480	1.6839	0.3848	0.7028

Model 4 - BHAR

HETEROSKEDASTICITY TEST: WHITE			
F-statistic	2.0333	Prob. F(66,33)	0.0139
Obs*R-squared	80.2632	Prob. Chi-Square(66)	0.1114
Scaled explained SS	83.1714	Prob. Chi-Square(66)	0.0751

Test Equation:
Dependent Variable: Resid^2
Method: Least Squares
Sample: 1 100
Included Observations: 100

VARIABLES	COEFFICIENT	STD. ERROR	T-STATISTIC	PROB.
C	-2579.2250	7046.6660	-0.3660	0.7167
OTC^2	-0.1626	0.4154	-0.3914	0.6980
TOTESG^2	1.1408	1.8221	0.6261	0.5356

Model 5 - BHAR

HETEROSKEDASTICITY TEST: WHITE			
F-statistic	4.7149	Prob. F(90,9)	0.0079
Obs*R-squared	97.9231	Prob. Chi-Square(90)	0.2665
Scaled explained SS	787.8442	Prob. Chi-Square(90)	0.0000

Test Equation:

Dependent Variable: Resid^2
Method: Least Squares
Sample: 1 100
Included Observations: 100

VARIABLES	COEFFICIENT	STD. ERROR	T-STATISTIC	PROB.
C	57576.52	217544.30	0.2647	0.7972
OTO ^2	1.3797	26.4552	0.0522	0.9595
ESCORE^2	-133903.2	260694.70	-0.5136	0.6199
SSCORE^2	-516872.2	385729.10	-1.3400	0.2131
GSCORE^2	-1922738	1718058	-1.1191	0.2921

Model 6 - BHAR

HETEROSKEDASTICITY TEST: WHITE			
F-statistic	11.8208	Prob. F(90,9)	0.0002
Obs*R-squared	99.1611	Prob. Chi-Square(90)	0.2388
Scaled explained SS	824.5646	Prob. Chi-Square(90)	0.0000

Test Equation:
Dependent Variable: Resid^2
Method: Least Squares
Sample: 1 100
Included Observations: 100

VARIABLES	COEFFICIENT	STD. ERROR	T-STATISTIC	PROB.
C	105599.5	118026.50	0.8947	0.3942
OTC^2	-8.7237	12.7048	-0.6866	0.5096
ESCORE^2	-214694.5	305808.90	-0.7021	0.5004
SSCORE^2	29120.68	238659.50	0.1220	0.9056
GSCORE^2	-125204.7	1369814	-0.0914	0.9292

APPENDIX 11

Autocorrelation Test Results for Initial Performance

Model 1 - OTC

Dependent Variable: OTC
Method: Least Squares
Date: 05/13/25 Time: 10:43
Sample (adjusted): 1 100
Included observations: 100 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TOTESG	0.001762	0.000993	1.775252	0.0793
SIZE	0.010226	0.009330	1.096095	0.2760
AGE	-0.002363	0.001165	-2.029331	0.0454
PRO	-0.001881	0.002499	-0.752647	0.4536
UW	0.016664	0.017304	0.963029	0.3381
OWNER	-0.001795	0.022423	-0.080040	0.9364
TOTA	-2.61E-08	4.02E-08	-0.649223	0.5179
LEVERAGE	-0.008102	0.003738	-2.167825	0.0328
D^{SECTOR}	0.091930	0.039125	2.349650	0.0210
MCD1	0.000265	0.000151	1.747671	0.0840
C	-0.149205	0.211767	-0.704574	0.4829

R-squared	0.193439	Mean dependent var	0.029545
Adjusted R-squared	0.102814	S.D. dependent var	0.121590
S.E. of regression	0.115170	Akaike info criterion	-1.381356
Sum squared resid	1.180498	Schwarz criterion	-1.094788
Log likelihood	80.06782	Hannan-Quinn criter.	-1.265377
F-statistic	2.134501	**Durbin-Watson stat**	**1.841239**
Prob(F-statistic)	0.029556		

Model 2 - OTC

Dependent Variable: OTC
Method: Least Squares
Date: 05/13/25 Time: 10:44
Sample (adjusted): 1 100
Included observations: 100 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ESCORE	0.731456	0.395971	1.847246	0.0681
SSCORE	-0.120559	0.306855	-0.392885	0.6954
GSCORE	-0.335004	0.472023	-0.709720	0.4798
SIZE	-0.028830	0.048481	-0.594664	0.5536
AGE	-0.009963	0.005561	-1.791827	0.0766
PRO	-0.004323	0.011939	-0.362128	0.7181
UW	1.342350	0.303517	4.422650	0.0000
OWNER	0.000526	0.003341	0.157420	0.8753
TOTA	-0.076617	0.080116	-0.956322	0.3416
LEVERAGE	-0.004349	0.017511	-0.248336	0.8045
D^{SECTOR}	0.150837	0.185818	0.811748	0.4192
MCD1	0.002288	0.000756	3.027127	0.0032
C	1.022073	0.975211	1.048053	0.2975

R-squared	0.337374	Mean dependent var	0.230079
Adjusted R-squared	0.245977	S.D. dependent var	0.622797
S.E. of regression	0.540803	Akaike info criterion	1.729214
Sum squared resid	25.44470	Schwarz criterion	2.067886
Log likelihood	-73.46071	Hannan-Quinn criter.	1.866281
F-statistic	3.691311	**Durbin-Watson stat**	**1.484508**

Prob(F-statistic)	0.000168

Model 1 - OTO

Dependent Variable: OTO
Method: Least Squares
Date: 05/13/25 Time: 10:36
Sample (adjusted): 1 100
Included observations: 100 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TOTESG	0.008145	0.004908	1.659740	0.1005
SIZE	-0.177228	0.087923	-2.015712	0.0468
AGE	-0.008938	0.004469	-1.999745	0.0486
PRO	-0.024251	0.051686	-0.469200	0.6401
UW	-8.95E-05	0.008789	-0.010181	0.9919
OWNER	-0.036153	0.319506	-0.113152	0.9102
TOTA	-0.019801	0.027073	-0.731419	0.4664
LEVERAGE	-0.011967	0.015512	-0.771488	0.4425
D^{SECTOR}	0.073122	0.148018	0.494011	0.6225
MCD1	0.001439	0.000576	2.496954	0.0144
C	4.076274	2.047437	1.990916	0.0496

R-squared	0.214550	Mean dependent var	0.204143
Adjusted R-squared	0.126298	S.D. dependent var	0.470979
S.E. of regression	0.440234	Akaike info criterion	1.300446
Sum squared resid	17.24874	Schwarz criterion	1.587015
Log likelihood	-54.02231	Hannan-Quinn criter.	1.416426
F-statistic	2.431088	**Durbin-Watson stat**	**1.623110**
Prob(F-statistic)	0.013060		

Model 2 - OTO

Dependent Variable: OTO
Method: Least Squares
Date: 05/13/25 Time: 10:42
Sample (adjusted): 1 100
Included observations: 100 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ESCORE	0.426667	0.225852	1.889147	0.0622
SSCORE	-0.236621	0.176070	-1.343902	0.1825
GSCORE	-0.636693	0.271959	-2.341137	0.0215
SIZE	-0.034220	0.028256	-1.211043	0.2292
AGE	-0.006778	0.003616	-1.874472	0.0642
PRO	-0.012050	0.006940	-1.736342	0.0860
UW	0.221504	0.175435	1.262601	0.2101
OWNER	0.002946	0.060848	0.048423	0.9615
TOTA	-0.008484	0.017622	-0.481464	0.6314
LEVERAGE	-0.007076	0.011867	-0.596241	0.5526
D^{SECTOR}	0.073918	0.107292	0.688940	0.4927
MCD1	0.000943	0.000433	2.176680	0.0322
C	1.549730	0.608721	2.545879	0.0127

R-squared	0.262185	Mean dependent var	0.180792
Adjusted R-squared	0.160418	S.D. dependent var	0.340147
S.E. of regression	0.311672	Akaike info criterion	0.627009
Sum squared resid	8.451143	Schwarz criterion	0.965681
Log likelihood	-18.35043	Hannan-Quinn criter.	0.764075
F-statistic	2.576315	**Durbin-Watson stat**	**1.600072**
Prob(F-statistic)	0.005691		

APPENDIX 12

Autocorrelation Test Results for Long-term Performance

Model 3 - CAAR

Dependent Variable: CAAR
Method: Least Squares
Sample: 1 100
Included observations: 100
HAC standard errors & covariance (Bartlett kernel, Newey-West fixed bandwidth = 5.0000)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
OTO	-0.4949	0.1570	-3.1545	0.0022
TOTESG	-0.0065	0.0034	-1.9000	0.0606
SIZE	-0.1063	0.0465	-2.2863	0.0246
AGE3Y	-0.0042	0.0054	-0.7829	0.4358
PRO	-0.0147	0.0080	-1.8250	0.0714
UW	-0.3853	0.5175	-0.7445	0.4586
OWNER	0.0029	0.0043	0.6925	0.4905
TOTA	0.7910	0.0500	1.5840	0.1168
LEVERAGE	-0.0082	0.0281	-0.2924	0.7707
D^{SECTOR}	0.1075	0.1990	0.5401	0.5905
MC3YCAAR	-1.0149	0.4883	-2.0786	0.0406
C	2.0138	0.8679	2.3204	0.0226

R-squared	0.1787	Mean dependent var	0.1362
Adjusted R-squared	0.0760	S.D. dependent var	0.4722
S.E. of regression	0.4539	Akaike info criterion	1.3703
Sum squared resid	18.1307	Schwarz criterion	1.6829
Log likelihood	-56.5158	Hannan-Quinn criter.	1.4968
F-statistic	1.7405	**Durbin-Watson stat**	**2.3849**
Prob(F-statistic)	0.0774	Wald F-statistic	4.8585
Prob(Wald F-statistic)	0.0000		

Model 4 - CAAR

Dependent Variable: CAAR
Method: Least Squares
Sample: 1 100
Included observations: 100
HAC standard errors & covariance (Bartlett kernel, Newey-West fixed bandwidth = 5.0000)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
OTC	-0.0039	0.0013	-2.9227	0.0044
TOTESG	-0.0056	0.0033	-1.7047	0.0918
SIZE	-0.0974	0.0462	-2.1071	0.0380
AGE3Y	-0.0052	0.0048	-1.1007	0.2740
PRO	-0.0098	0.0070	-1.3825	0.1703
UW	-0.0395	0.0647	-0.6106	0.5431
OWNER	0.0019	0.0025	0.7685	0.4442
TOTA	0.0911	0.0488	1.8668	0.0653
LEVERAGE	-0.0081	0.0096	-0.8345	0.4063
D^{SECTOR}	0.1788	0.2058	0.8689	0.3873
MC3YCAAR	-1.5636	0.6447	-2.4252	0.0173
C	1.5277	0.8732	1.7494	0.0837

R-squared	0.1712	Mean dependent var	0.1362
Adjusted R-squared	0.0677	S.D. dependent var	0.4722
S.E. of regression	0.4559	Akaike info criterion	1.3793
Sum squared resid	18.294	Schwarz criterion	1.6919
Log likelihood	-56.963	Hannan-Quinn criter.	1.5058
F-statistic	1.6536	**Durbin-Watson stat**	**2.3554**

Prob(F-statistic)	0.0978	Wald F-statistic	4.6499
Prob(Wald F-statistic)	0.0000		

Model 5 - CAAR

Dependent Variable: CAAR
Method: Least Squares
Sample: 1 100
Included observations: 100
HAC standard errors & covariance (Bartlett kernel, Newey-West fixed bandwidth = 5.0000)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
OTO	-0.5265	0.1648	-3.1928	0.0020
ESCORE	-0.0800	0.3508	-0.2281	0.8201
SSCORE	-0.3684	0.2134	-1.7253	0.0881
GSCORE	0.1227	0.2997	0.4096	0.6831
SIZE	-0.0007	0.0017	-0.4071	0.6850
AGE3Y	-0.5986	0.0034	-1.7396	0.0855
PRO	-0.0008	0.0005	-1.7417	0.0851
UW	-0.1240	0.2178	-0.5718	0.5690
OWNER	0.0020	0.0024	0.8248	0.4118
TOTA	0.0704	0.0476	1.4798	0.1426
LEVERAGE	0.0043	0.0180	0.2360	0.8140
D^{SECTOR}	0.1283	0.1837	0.6985	0.4867
MC3YCAAR	-1.9582	0.7335	-2.6697	0.0091
C	-0.3333	0.5054	-0.6601	0.5110

R-squared	0.1920	Mean dependent var	0.1362
Adjusted R-squared	0.0699	S.D. dependent var	0.4722
S.E. of regression	0.4554	Akaike info criterion	1.3939
Sum squared resid	17.8354	Schwarz criterion	1.7586
Log likelihood	-55.6946	Hannan-Quinn criter.	1.5415
F-statistic	1.5726	**Durbin-Watson stat**	**2.1700**
Prob(F-statistic)	0.1091	Wald F-statistic	3.2892

Model 6 - CAAR

Dependent Variable: CAAR
Method: Least Squares
Sample: 1 100
Included observations: 100
HAC standard errors & covariance (Bartlett kernel, Newey-West fixed bandwidth = 5.0000)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
OTC	-0.0054	0.1704	-3.1883	0.0020
ESCORE	-0.1456	0.3728	-0.3906	0.6971
SSCORE	-0.2980	0.2610	-1.1420	0.2566
GSCORE	0.1201	0.5504	0.2182	0.8278
SIZE	-0.0871	0.0606	-1.4384	0.1540
AGE3Y	-0.0049	0.0053	-0.9214	0.3594
PRO	-0.0007	0.0004	-1.9581	0.0535
UW	-0.2082	0.2916	-0.7140	0.4772
OWNER	0.0023	0.0032	0.6962	0.4882
TOTA	0.1141	0.0575	1.9836	0.0505
LEVERAGE	0.0022	0.0155	0.1442	0.8857
D^{SECTOR}	0.2857	0.2488	1.1482	0.2541
MC3YCAAR	-2.3101	0.8930	-2.5868	0.0114
C	0.9637	0.9592	1.0047	0.3178

R-squared	0.1950	Mean dependent var	0.1648
Adjusted R-squared	0.0734	S.D. dependent var	0.5646
S.E. of regression	0.5435	Akaike info criterion	1.7475
Sum squared resid	25.402	Schwarz criterion	2.1123
Log likelihood	-73.377	Hannan-Quinn criter.	1.8952

F-statistic	1.6029	**Durbin-Watson stat**	**2.2452**
Prob(F-statistic)	0.0999	Wald F-statistic	3.2455
Prob(Wald F-statistic)	0.0005		

Model 3 - BHAR

Dependent Variable: BHAR
Method: Least Squares
Sample: 1 100
Included observations: 100
HAC standard errors & covariance (Bartlett kernel, Newey-West fixed bandwidth = 5.0000)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
OTO	-0.4374	0.1523	-2.8739	0.0051
TOTESG	-0.0054	0.0026	-2.0874	0.0396
SIZE	-0.0732	0.0390	-1.8759	0.0640
AGE3Y	-0.0044	0.0028	-1.5982	0.1136
PRO	-0.0007	0.0003	-2.3758	0.0197
UW	-0.2378	0.1778	-1.3373	0.1846
OWNER	0.0011	0.0024	0.4505	0.6537
TOTA	0.0970	0.0345	2.8151	0.0060
LEVERAGE	0.0088	0.0113	0.7745	0.4407
D^{SECTOR}	0.1185	0.1590	0.7451	0.4582
MC3YBHAR	-4.4900	18.751	-0.2395	0.8113
C	1.0315	0.6780	1.5214	0.1318

R-squared	0.2017	Mean dependent var	0.0362
Adjusted R-squared	0.1019	S.D. dependent var	0.4126
S.E. of regression	0.3910	Akaike info criterion	1.0718
Sum squared resid	13.451	Schwarz criterion	1.3844
Log likelihood	-41.588	Hannan-Quinn criter.	1.1983
F-statistic	2.0215	**Durbin-Watson stat**	**2.1763**
Prob(F-statistic)	0.0354	Wald F-statistic	6.4652
Prob(Wald F-statistic)	0.0000		

Model 4 - BHAR

Dependent Variable: BHAR
Method: Least Squares
Sample: 1 100
Included observations: 100
HAC standard errors & covariance (Bartlett kernel, Newey-West fixed bandwidth = 5.0000)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
OTC	-0.0034	0.0013	-2.6498	0.0095
TOTESG	-0.0063	0.0027	-2.3168	0.0228
SIZE	-0.0921	0.0382	-2.4090	0.0181
AGE3Y	-0.0043	0.0032	-1.3768	0.1721
PRO	-0.0124	0.0061	-2.0170	0.0467
UW	-0.0496	0.0537	-0.9215	0.3593
OWNER	0.0016	0.0022	0.7119	0.4784
TOTA	0.0901	0.0386	2.3313	0.0220
LEVERAGE	-0.0039	0.0088	-0.4450	0.6574
D^{SECTOR}	0.1540	0.1774	0.8678	0.3878
MC3YBHAR	-13.216	21.668	-0.6109	0.5428
C	1.4360	0.7539	1.9042	0.0602

R-squared	0.1722	Mean dependent var	0.036230
Adjusted R-squared	0.0687	S.D. dependent var	0.412556
S.E. of regression	0.3981	Akaike info criterion	1.108117
Sum squared resid	13.949	Schwarz criterion	1.420738
Log likelihood	-43.406	Hannan-Quinn criter.	1.234640
F-statistic	1.6638	**Durbin-Watson stat**	**2.313351**
Prob(F-statistic)	0.0951	Wald F-statistic	5.683854

Prob(Wald F-statistic)	0.0000

Model 5 - BHAR

Dependent Variable: BHAR
Method: Least Squares
Sample: 1 100
Included observations: 100
HAC standard errors & covariance (Bartlett kernel, Newey-West fixed bandwidth = 5.0000)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
OTO	-0.4549	0.1396	-3.2600	0.0016
ESCORE	-0.2081	0.2189	-0.9501	0.3447
SSCORE	-0.3349	0.1856	-1.8044	0.0747
GSCORE	0.0471	0.3645	0.1294	0.8974
SIZE	-0.0545	0.0418	-1.3046	0.1955
AGE3Y	-0.0050	0.0044	-1.1519	0.2526
PRO	-0.0007	0.0004	-1.9345	0.0563
UW	-0.4828	0.4356	-1.1096	0.2703
OWNER	0.0017	0.0024	0.7364	0.4635
TOTA	0.0979	0.0441	2.2187	0.0291
LEVERAGE	0.0062	0.0146	0.4241	0.6725
D^{SECTOR}	0.1168	0.1652	0.7072	0.4814
MC3YBHAR	-0.0023	0.0023	-1.0048	0.3178
C	0.5431	0.5850	0.9281	0.3560

R-squared	0.1993	Mean dependent var	0.0362
Adjusted R-squared	0.0782	S.D. dependent var	0.4126
S.E. of regression	0.3961	Akaike info criterion	1.1148
Sum squared resid	13.492	Schwarz criterion	1.4795
Log likelihood	-41.741	Hannan-Quinn criter.	1.2624
F-statistic	1.6464	**Durbin-Watson stat**	**2.2207**
Prob(F-statistic)	0.0881	Wald F-statistic	5.0082
Prob(Wald F-statistic)	0.1993		

Model 6 - BHAR

Dependent Variable: BHAR
Method: Least Squares
Sample: 1 100
Included observations: 100
HAC standard errors & covariance (Bartlett kernel, Newey-West fixed bandwidth = 5.0000)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
OTC	1.0827	0.6528	1.6585	0.1009
ESCORE	-0.3420	0.4405	-0.7764	0.4396
SSCORE	-0.0772	0.4315	-0.1790	0.8584
GSCORE	0.9793	1.0809	0.9059	0.3675
SIZE	-0.1818	0.0908	-2.0024	0.0484
AGE3Y	0.0077	0.0111	0.6961	0.4882
PRO	0.0043	0.0141	0.3060	0.7603
UW	-0.3407	0.2001	-1.7021	0.0924
OWNER	0.0077	0.0063	1.2181	0.2265
TOTA	0.2454	0.1062	2.3120	0.0232
LEVERAGE	-0.0173	0.0197	-0.8789	0.3819
D^{SECTOR}	1.0518	0.8072	1.3030	0.1960
MC3YBHAR	-0.0125	0.0066	-1.8886	0.0623
C	-0.4247	1.8528	-0.2292	0.8193

R-squared	0.2303	Mean dependent var	0.2196
Adjusted R-squared	0.1140	S.D. dependent var	1.2349
S.E. of regression	1.1624	Akaike info criterion	3.2680
Sum squared resid	116.19	Schwarz criterion	3.6327
Log likelihood	-149.40	Hannan-Quinn criter.	3.4156
F-statistic	1.9796	**Durbin-Watson stat**	**2.2120**
Prob(F-statistic)	0.0320	Wald F-statistic	1.1738
Prob(Wald F-statistic)	0.3123		

APPENDIX 13

Residual Test Results for Initial Performance

Model 1 - OTC

Dependent Variable: OTC
Method: Least Squares
Sample: 1 100
Included observations: 100

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RESIDUAL_TOTESG	0.0134	0.2098	0.0640	0.9491
RESIDUAL_SIZE	-3.6199	2.4037	-1.5060	0.1356
RESIDUAL_AGE	-4.0378	2.5431	-1.5877	0.1159
RESIDUAL _PRO	-0.1604	0.6296	-0.2548	0.7995
RESIDUAL _UW	15.5465	16.2436	0.9571	0.3411
RESIDUAL_OWNER	0.0781	0.1809	0.4315	0.6672
RESIDUAL _TOTA	-0.0843	1.5177	-0.0555	0.9558
RESIDUAL _LEVERAGE	-1.2960	0.9471	-1.3684	0.1746
RESIDUAL _D^{SECTOR}	11.9343	18.6801	0.6389	0.5245
RESIDUAL _MCD1	0.0401	0.0259	1.5450	0.1259

Model 2 - OTC

Dependent Variable: OTC
Method: Least Squares
Sample: 1 100
Included observations: 100

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RESIDUAL _ESCORE	13.4555	16.5777	0.8117	0.4192
RESIDUAL _SSCORE	-9.8913	14.8365	-0.6667	0.5067
RESIDUAL_GSCORE	-21.9823	19.1646	-1.1470	0.2545
RESIDUAL_SIZE	-3.2615	2.3839	-1.3682	0.1748
RESIDUAL_AGE	-3.6032	2.6022	-1.3847	0.1697
RESIDUAL_PRO	-0.3038	0.6399	-0.4747	0.6362
RESIDUAL_UW	17.5825	16.3315	1.0766	0.2846
RESIDUAL_OWNER	0.0662	0.1802	0.3676	0.7140
RESIDUAL _TOTA	-0.0843	1.5177	-1.1488	0.2538
RESIDUAL_LEVERAGE	-1.0167	0.9475	-1.0730	0.2862
RESIDUAL _D^{SECTOR}	11.4216	18.5561	0.6155	0.5398
RESIDUAL _MCD1	0.0418	0.0257	1.6241	0.1080

Model 1 - OTO

Dependent Variable: OTO
Method: Least Squares
Sample: 1 100
Included observations: 100

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RESIDUAL_TOTESG	-0.0835	0.1980	-0.4218	0.6742
RESIDUAL_SIZE	-0.0004	0.0008	-0.4410	0.6603
RESIDUAL_AGE	-4.1828	2.3455	-1.7833	0.0779
RESIDUAL _PRO	-0.8520	0.5908	-1.4422	0.1528
RESIDUAL _UW	5.9489	15.1976	0.3914	0.6964
RESIDUAL_OWNER	0.0521	0.1695	0.3072	0.7594
RESIDUAL _TOTA	-0.3389	1.4186	-0.2389	0.8118
RESIDUAL _LEVERAGE	-1.2203	0.8771	-1.3914	0.1676
RESIDUAL _D^{SECTOR}	4.3482	9.1694	0.4742	0.6365
RESIDUAL _MCD1	0.0488	0.0362	1.3495	0.1806

Model 2 - OTO

Dependent Variable: OTO
Method: Least Squares
Sample: 1 100
Included observations: 100

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RESIDUAL _ESCORE	16.8605	15.1102	1.1158	0.2676
RESIDUAL _SSCORE	-12.6188	13.5231	-0.9331	0.3533
RESIDUAL_GSCORE	-30.5632	17.4680	-1.7497	0.0837
RESIDUAL_SIZE	-3.9611	2.1728	-1.8230	0.0717
RESIDUAL_AGE	-3.6744	2.3645	-1.5540	0.1238
RESIDUAL_PRO	-1.0728	0.5833	-1.8392	0.0693
RESIDUAL_UW	9.2996	14.8857	0.6247	0.5338
RESIDUAL_OWNER	0.0183	0.1642	0.1116	0.9114
RESIDUAL _TOTA	-0.6770	1.3869	-0.4881	0.6267
RESIDUAL_LEVERAGE	-0.8095	0.8636	-0.9374	0.3512
RESIDUAL _D^{SECTOR}	6.9288	9.0632	0.7645	0.4466
RESIDUAL _MCD1	0.0587	0.0365	1.6061	0.1119

APPENDIX 14

Residual Test Results for Long-term Performance

Model 3 - CAAR

Dependent Variable: CAAR
Method: Least Squares
Sample: 1 100
Included observations: 100

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RESIDUAL_OTO	-0.5874	0.3451	-1.7018	0.0923
RESIDUAL_TOTESG	0.2846	1.1035	0.2579	0.7971
RESIDUAL_SIZE	-11.6355	13.1809	-0.8828	0.3798
RESIDUAL_AGE3Y	0.9116	1.5544	0.5865	0.5590
RESIDUAL _PRO	-0.9669	3.2271	-0.2996	0.7652
RESIDUAL _UW	-82.7665	84.9156	-0.9747	0.3324
RESIDUAL_OWNER	1.1068	0.9244	1.1974	0.2344
RESIDUAL _TOTA	9.6247	9.6399	0.9984	0.3208
RESIDUAL _LEVERAGE	-1.0795	4.7171	-0.2289	0.8195
RESIDUAL _D^{SECTOR}	17.2600	18.8120	0.9175	0.3614
RESIDUAL _MC3YCAAR	-3.1527	2.0354	-1.5490	0.1250

Model 4 - CAAR

Dependent Variable: CAAR
Method: Least Squares
Sample: 1 100
Included observations: 100

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RESIDUAL_OTC	-0.2714	0.2783	-0.9749	0.3323
RESIDUAL_TOTESG	0.2881	1.1177	0.2578	0.7972
RESIDUAL_SIZE	-10.3011	13.2891	-0.7752	0.4403
RESIDUAL_AGE3Y	1.1815	1.5665	0.7542	0.4527
RESIDUAL _PRO	-0.5328	3.2497	-0.1640	0.8701
RESIDUAL _UW	-85.1319	90.8612	-0.9369	0.3514
RESIDUAL_OWNER	1.0777	0.9342	1.1536	0.2518
RESIDUAL _TOTA	9.5656	9.7640	0.9797	0.3299
RESIDUAL _LEVERAGE	-0.7701	4.7635	-0.1617	0.8719
RESIDUAL _D^{SECTOR}	19.0717	18.9085	1.0086	0.3159
RESIDUAL _MC3YCAAR	-3.0737	2.0568	-1.4944	0.1386

Model 5- CAAR

Dependent Variable: CAAR
Method: Least Squares
Sample: 1 100
Included observations: 100

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RESIDUAL_OTO	-0.5498	0.3471	-1.5841	0.1168
RESIDUAL _ESCORE	-60.8099	83.0179	-0.7325	0.4659
RESIDUAL _SSCORE	14.4914	75.4027	0.1922	0.8480
RESIDUAL_GSCORE	113.6256	99.5416	1.1415	0.2568
RESIDUAL_SIZE	-13.2508	13.2598	-0.9993	0.3204
RESIDUAL_AGE3Y	0.6926	1.5851	0.4369	0.6633
RESIDUAL_PRO	-0.6247	3.3243	-0.1879	0.8514
RESIDUAL_UW	-91.3826	85.9739	-1.0629	0.2908
RESIDUAL_OWNER	1.2506	0.9271	1.3489	0.1809
RESIDUAL _TOTA	11.7350	9.6620	1.2145	0.2279

RESIDUAL_LEVERAGE	-2.0121	4.7986	-0.4193	0.6760
RESIDUAL _D^{SECTOR}	16.3893	19.2782	0.8501	0.3976
RESIDUAL _MC3YCAAR	-3.7781	2.1006	-1.7986	0.0756

Model 6 - CAAR

Dependent Variable: CAAR
Method: Least Squares
Sample: 1 100
Included observations: 100

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RESIDUAL_OTC	-0.2648	0.2788	-0.9497	0.3449
RESIDUAL _ESCORE	-62.0981	83.8222	-0.7408	0.4608
RESIDUAL _SSCORE	17.9684	76.0995	0.2361	0.8139
RESIDUAL_GSCORE	125.5800	100.3758	1.2511	0.2143
RESIDUAL_SIZE	-12.2972	13.3603	-0.9204	0.3599
RESIDUAL_AGE3Y	0.8913	1.5990	0.5574	0.5787
RESIDUAL_PRO	-0.2118	3.3398	-0.0634	0.9496
RESIDUAL_UW	-93.6346	91.5484	-1.0228	0.3093
RESIDUAL_OWNER	1.2309	0.9356	1.3156	0.1918
RESIDUAL _TOTA	11.6261	9.7621	1.1909	0.2370
RESIDUAL_LEVERAGE	-1.8235	4.8405	-0.3767	0.7073
RESIDUAL _D^{SECTOR}	17.9041	19.3636	0.9246	0.3577
RESIDUAL _MC3YCAAR	-3.7741	2.1204	-1.7800	0.0786

Model 3 - BHAR

Dependent Variable: BHAR
Method: Least Squares
Sample: 1 100
Included observations: 100

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RESIDUAL_OTO	-0.5265	0.3193	-1.6489	0.1027
RESIDUAL_TOTESG	0.0315	1.0192	0.0309	0.9754
RESIDUAL_SIZE	-9.7937	12.1891	-0.8035	0.4239
RESIDUAL_AGE3Y	0.8671	1.4397	0.6023	0.5485
RESIDUAL _PRO	-1.0149	2.9800	-0.3406	0.7343
RESIDUAL _UW	-83.3067	78.5601	-1.0604	0.2919
RESIDUAL_OWNER	1.0174	0.8554	1.1893	0.2375
RESIDUAL _TOTA	9.3550	8.9170	1.0491	0.2970
RESIDUAL _LEVERAGE	-0.8157	4.3628	-0.1870	0.8521
RESIDUAL _D^{SECTOR}	19.4897	17.8730	1.0905	0.2785
RESIDUAL _MC3YBHAR	-0.6566	0.6556	-1.0015	0.3193

Model 4 - BHAR

Dependent Variable: BHAR
Method: Least Squares
Sample: 1 100
Included observations: 100

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RESIDUAL_OTC	-0.2364	0.2574	-0.9186	0.3608
RESIDUAL_TOTESG	0.0327	1.0318	0.0317	0.9748
RESIDUAL_SIZE	-8.5866	12.2847	-0.6990	0.4864
RESIDUAL_AGE3Y	1.1179	1.4502	0.7709	0.4429
RESIDUAL _PRO	-0.6248	2.9998	-0.2083	0.8355
RESIDUAL _UW	-86.3627	84.0277	-1.0278	0.3069
RESIDUAL_OWNER	0.9904	0.8642	1.1461	0.2549
RESIDUAL _TOTA	9.3182	9.0285	1.0321	0.3049
RESIDUAL _LEVERAGE	-0.5309	4.4039	-0.1206	0.9043

RESIDUAL _D^{SECTOR}	21.1116	17.9849	1.1739	0.2436
RESIDUAL _MC3YBHAR	-0.6300	0.6622	-0.9514	0.3440

Model 5- BHAR

Dependent Variable: BHAR
Method: Least Squares
Sample: 1 100
Included observations: 100

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RESIDUAL_OTO	-0.4964	0.3203	-1.5500	0.1248
RESIDUAL _ESCORE	-72.8522	76.6024	-0.9510	0.3442
RESIDUAL _SSCORE	1.4034	69.6353	0.0202	0.9840
RESIDUAL_GSCORE	107.3678	91.8402	1.1691	0.2456
RESIDUAL_SIZE	-11.4812	12.2296	-0.9388	0.3505
RESIDUAL_AGE3Y	0.6801	1.4642	0.4645	0.6435
RESIDUAL_PRO	-0.6018	3.0622	-0.1965	0.8447
RESIDUAL_UW	-91.1142	79.3315	-1.1485	0.2539
RESIDUAL_OWNER	1.1536	0.8557	1.3480	0.1812
RESIDUAL _TOTA	11.4647	8.9130	1.2863	0.2018
RESIDUAL_LEVERAGE	-1.8162	4.4276	-0.4102	0.6827
RESIDUAL _D^{SECTOR}	16.9909	18.2492	0.9311	0.3544
RESIDUAL _MC3YBHAR	-0.9005	0.6764	-1.3313	0.1866

Model 6 - BHAR

Dependent Variable: BHAR
Method: Least Squares
Sample: 1 100
Included observations: 100

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RESIDUAL_OTC	-0.2352	0.2572	-0.9145	0.3630
RESIDUAL _ESCORE	-74.0660	77.3274	-0.9578	0.3408
RESIDUAL _SSCORE	4.6373	70.2627	0.0660	0.9475
RESIDUAL_GSCORE	118.0343	92.5901	1.2748	0.2058
RESIDUAL_SIZE	-10.6115	12.3194	-0.8614	0.3914
RESIDUAL_AGE3Y	0.8648	1.4766	0.5856	0.5596
RESIDUAL_PRO	-0.2258	3.0757	-0.0734	0.9416
RESIDUAL_UW	-93.6743	84.4582	-1.1091	0.2705
RESIDUAL_OWNER	1.1349	0.8633	1.3145	0.1922
RESIDUAL _TOTA	11.3697	9.0034	1.2628	0.2101
RESIDUAL_LEVERAGE	-1.6437	4.4653	-0.3681	0.7137
RESIDUAL _D^{SECTOR}	18.3773	18.3492	1.0015	0.3194
RESIDUAL _MC3YBHAR	-0.8971	0.6826	-1.3142	0.1923

APPENDIX 15

Ramsey RESET Test Results for Initial Performance

Model 1 - OTC

Ramsey RESET Test

Equation: OTC
Specification: OTC TOTESG SIZE AGE PRO UW OWNER TOTA LEVERAGE D^{SECTOR} MCD1
Omitted Variables: Squares of fitted values

	Value	df	Probability
t-statistic	1.4965	88	0.1381
F-statistic	2.2394	(1, 88)	0.1381
Likelihood ratio	2.5130	1	0.1129

F-test summary:

	Sum of Sq.	df	Mean Squares
Test SSR	1915.245	1	1915.245
Restricted SSR	77175.73	89	867.1430
Unrestricted SSR	75260.48	88	855.2328

LR test summary:

	Value	df
Restricted LogL	-474.3274	89
Unrestricted LogL	-473.0709	88

Model 2 - OTC

Ramsey RESET Test

Equation: OTC
Specification: OTC ESCORE SSCORE GSCORE SIZE AGE PRO UW OWNER TOTA LEVERAGE D^{SECTOR} MCD1
Omitted Variables: Squares of fitted values

	Value	df	Probability
t-statistic	1.0663	86	0.2893
F-statistic	1.1370	(1, 86)	0.2893
Likelihood ratio	1.3135	1	0.2518

F-test summary:

	Sum of Sq.	df	Mean Squares
Test SSR	983.8440	1	983.8440
Restricted SSR	75397.29	87	866.6355
Unrestricted SSR	74413.45	86	865.2726

LR test summary:

	Value	df
Restricted LogL	-473.1617	87
Unrestricted LogL	-472.5049	86

Model 1 - OTO

Ramsey RESET Test

Equation: OTO
Specification: OTO TOTESG SIZE AGE PRO UW OWNER TOTA LEVERAGE D^{SECTOR} MCD1
Omitted Variables: Squares of fitted values

	Value	df	Probability
t-statistic	1.2947	88	0.1988
F-statistic	1.6763	(1, 88)	0.1988
Likelihood ratio	1.8870	1	0.1695

F-test summary:

	Sum of Sq.	df	Mean Squares
Test SSR	1227.384	1	1227.384
Restricted SSR	65660.42	89	737.7575
Unrestricted SSR	64433.03	88	732.1935

LR test summary:

	Value	df
Restricted LogL	-466.2479	89
Unrestricted LogL	-465.3044	88

Model 2 - OTO

Ramsey RESET Test

Equation: OTO

Specification: OTO ESCORE SSCORE GSCORE SIZE AGE PRO UW OWNER TOTA LEVERAGE D^{SECTOR} MCD1

Omitted Variables: Squares of fitted values

	Value	df	Probability
t-statistic	0.2118	86	0.8328
F-statistic	0.0449	(1, 86)	0.8328
Likelihood ratio	0.0522	1	0.8194

F-test summary:

	Sum of Sq.	df	Mean Squares
Test SSR	32.5073	1	32.5072
Restricted SSR	62347.75	87	716.6408
Unrestricted SSR	62315.24	86	724.5958

LR test summary:

	Value	df
Restricted LogL	-463.6595	87
Unrestricted LogL	-463.6334	86

APPENDIX 16

Ramsey RESET Test Results for Long-term Performance

Model 3 - CAAR

Ramsey RESET Test

Equation: CAAR

Specification: CAAR OTO TOTESG SIZE AGE3Y PRO UW OWNER TOTA LEVERAGE D^{SECTOR} MC3YCAAR

Omitted Variables: Squares of fitted values

	Value	df	Probability
t-statistic	1.6698	87	0.0986
F-statistic	2.7881	(1, 87)	0.0986
Likelihood ratio	3.1545	1	0.0757

F-test summary:

	Sum of Sq.	df	Mean Squares
Test SSR	8244.395	1	8244.395
Restricted SSR	265500.8	88	3017.055
Unrestricted SSR	257256.4	87	2956.971

LR test summary:

	Value	df
Restricted LogL	-536.1040	88
Unrestricted LogL	-534.5268	87

Model 4 - CAAR

Ramsey RESET Test

Equation: CAAR

Specification: CAAR OTC TOTESG SIZE AGE3Y PRO UW OWNER TOTA LEVERAGE D^{SECTOR} MC3YCAAR

Omitted Variables: Squares of fitted values

	Value	df	Probability
t-statistic	1.3915	87	0.1676
F-statistic	1.9362	(1, 87)	0.1676
Likelihood ratio	2.2011	1	0.1379

F-test summary:

	Sum of Sq.	df	Mean Squares
Test SSR	5943.267	1	5943.267
Restricted SSR	273001.1	88	3102.285
Unrestricted SSR	267057.8	87	3069.630

LR test summary:

	Value	df
Restricted LogL	-537.4969	88
Unrestricted LogL	-536.3964	87

Model 5 - CAAR

Ramsey RESET Test

Equation: CAAR

Specification: CAAR OTO ESCORE SSCORE GSCORE SIZE AGE PRO UW OWNER TOTA LEVERAGE D^{SECTOR} MC3YCAAR

Omitted Variables: Squares of fitted values

	Value	df	Probability
t-statistic	1.6740	85	0.0978
F-statistic	2.8021	(1, 85)	0.0978
Likelihood ratio	3.2435	1	0.0717

F-test summary:

	Sum of Sq.	df	Mean Squares

Test SSR	8463.345	1	8463.345
Restricted SSR	265190.4	86	3083.609
Unrestricted SSR	256727.0	85	3020.318

LR test summary:

	Value	df
Restricted LogL	-536.0455	86
Unrestricted LogL	-534.4238	85

Model 6 - CAAR

Ramsey RESET Test

Equation: CAAR

Specification: CAAR OTC ESCORE SSCORE GSCORE SIZE AGE3Y PRO UW OWNER TOTA LEVERAGE D^{SECTOR} MC3YCAAR

Omitted Variables: Squares of fitted values

	Value	df	Probability
t-statistic	1.4115	85	0.1617
F-statistic	1.9924	(1, 85)	0.1617
Likelihood ratio	2.3170	1	0.1280

F-test summary:

	Sum of Sq.	df	Mean Squares
Test SSR	6243.053	1	6243.053
Restricted SSR	272583.5	86	3169.575
Unrestricted SSR	266340.4	85	3133.417

LR test summary:

	Value	df
Restricted LogL	-537.4203	86
Unrestricted LogL	-536.2619	85

Model 3 - BHAR

Ramsey RESET Test

Equation: BHAR

Specification: BHAR OTO TOTESG SIZE AGE3Y PRO UW OWNER TOTA LEVERAGE D^{SECTOR} MC3YBHAR

Omitted Variables: Squares of fitted values

	Value	df	Probability
t-statistic	0.920542	87	0.3598
F-statistic	0.847398	(1, 87)	0.3598
Likelihood ratio	0.969307	1	0.3249

F-test summary:

	Sum of Sq.	df	Mean Squares
Test SSR	1379.373	1	1379.373
Restricted SSR	142995.8	88	1624.952
Unrestricted SSR	141616.4	87	1627.775

LR test summary:

	Value	df
Restricted LogL	-505.1639	88
Unrestricted LogL	-504.6792	87

Model 4 - BHAR

Ramsey RESET Test

Equation: BHAR

Specification: BHAR OTC TOTESG SIZE AGE3Y PRO UW OWNER TOTA LEVERAGE D^{SECTOR} MC3YBHAR

Omitted Variables: Squares of fitted values

	Value	df	Probability
t-statistic	1.8305	87	0.0706
F-statistic	3.3508	(1, 87)	0.0706
Likelihood ratio	3.7792	1	0.0519

F-test summary:

	Sum of Sq.	df	Mean Squares
Test SSR	9059.781	1	9059.781
Restricted SSR	244285.2	88	2775.968
Unrestricted SSR	235225.4	87	2703.741

LR test summary:

	Value	df
Restricted LogL	-531.9399	88
Unrestricted LogL	-530.0503	87

Model 5- BHAR

Ramsey RESET Test

Equation: BHAR

Specification: BHAR OTO ESCORE SSCORE GSCORE SIZE AGE3Y PRO UW OWNER TOTA LEVERAGE D^{SECTOR} MC3YBHAR

Omitted Variables: Squares of fitted values

	Value	df	Probability
t-statistic	1.204759	85	0.2316
F-statistic	1.451444	(1, 85)	0.2316
Likelihood ratio	1.693166	1	0.1932

F-test summary:

	Sum of Sq.	df	Mean Squares
Test SSR	2376.128	1	2376.128
Restricted SSR	141527.8	86	1645.672
Unrestricted SSR	139151.7	85	1637.079

LR test summary:

	Value	df
Restricted LogL	-504.6479	86
Unrestricted LogL	-503.8013	85

Model 6 - BHAR

Ramsey RESET Test

Equation: BHAR

Specification: BHAR OTC ESCORE SSCORE GSCORE SIZE AGE3Y PRO UW OWNER TOTA LEVERAGE D^{SECTOR} MC3YBHAR

Omitted Variables: Squares of fitted values

	Value	df	Probability
t-statistic	1.287669	85	0.2014
F-statistic	1.658092	(1, 85)	0.2014
Likelihood ratio	1.931915	1	0.1645

F-test summary:

	Sum of Sq.	df	Mean Squares
Test SSR	2759.065	1	2759.065
Restricted SSR	144199.0	86	1676.733
Unrestricted SSR	141440.0	85	1664.000

LR test summary:

	Value	df
Restricted LogL	-505.5828	86
Unrestricted LogL	-504.6169	85

APPENDIX 17

Akaike Information Criterion for AFT Models

Model 7

Model	N	ll(null)	ll(model)	df	AIC	BIC
Exponential	**100**	**-83.78896**	**-71.66809**	**13**	**169.3362**	**203.2034**
Log-logistics	100	-84.40949	-73.35918	14	174.7184	211.1907
Weibull	100	-83.75621	-71.65964	14	171.3193	207.7917
Log-normal	100	-87.34678	-75.16296	14	178.3259	214.7983

Model 8

Model	N	ll(null)	ll(model)	df	AIC	BIC
Exponential	**100**	**-83.789**	**-75.1827**	**13**	**176.3654**	**210.2326**
Log-logistics	100	-84.4095	-76.411	14	180.822	217.2944
Weibull	100	-83.7562	-75.1522	14	178.3044	214.7768
Log-normal	100	-87.3468	-78.4186	14	184.8372	221.3096

Model 9

Model	N	ll(null)	ll(model)	df	AIC	BIC
Exponential	**100**	**-83.789**	**-72.1081**	**13**	**170.2163**	**204.0835**
Log-logistics	100	-84.4095	-73.8680	14	175.736	212.2084
Weibull	100	-83.7562	-72.1023	14	172.2047	208.6771
Log-normal	100	-87.3468	-75.7893	14	179.5787	216.051

Model 10

Model	N	ll(null)	ll(model)	df	AIC	BIC
Exponential	**100**	**-83.789**	**-74.9974**	**13**	**175.9947**	**209.862**
Log-logistics	100	-84.4095	-76.6056	14	181.2113	217.6837
Weibull	100	-83.7562	-74.9737	14	177.9473	214.4197
Log-normal	100	-87.3468	-78.8014	14	185.6028	222.0751

Model 11

Model	N	ll(null)	ll(model)	df	AIC	BIC
Exponential	**100**	**-83.78896**	**-72.80207**	**15**	**175.6041**	**214.6817**
Log-logistics	100	-84.40949	-74.16778	16	180.3356	222.0183
Weibull	100	-83.75621	-72.79696	16	177.5939	219.2766
Log-normal	100	-87.34678	-76.66503	16	185.3301	227.0128

Model 12

Model	N	ll(null)	ll(model)	df	AIC	BIC
Exponential	**100**	**-83.789**	**-70.7192**	**15**	**171.4384**	**210.516**
Log-logistics	100	-84.4095	-72.6039	16	177.2077	218.8904
Weibull	100	-83.7562	-70.7147	16	173.4293	215.1121
Log-normal	100	-87.3468	-74.8263	16	181.6526	223.3353

Model 13

Model	N	ll(null)	ll(model)	df	AIC	BIC
Exponential	**100**	**-83.789**	**-71.3123**	**15**	**172.6246**	**211.7021**
Log-logistics	100	-84.4095	-72.8125	16	177.625	219.3077
Weibull	100	-83.7562	-71.3056	16	174.6113	216.294
Log-normal	100	-87.3468	-75.0707	16	182.1414	223.8241

Model 14

Model	N	ll(null)	ll(model)	df	AIC	BIC
Exponential	**100**	**-83.789**	**-71.1119**	**15**	**172.2236**	**211.3012**
Log-logistics	100	-84.4095	-72.5927	16	177.1854	218.8681
Weibull	100	-83.7562	-71.1089	16	174.2178	215.9005
Log-normal	100	-87.3468	-74.7085	16	181.4171	223.0998

APPENDIX 18

Schoenfeld Residual Test Results for COX Models (Models 21 to 28)

Model	Chi-square	df	Prob>chi2
7	15.77	12	0.2020
8	9.08	12	0.6963
9	15.49	12	0.2158
10	13.76	12	0.3160
11	11.20	14	0.6700
12	18.19	14	0.1985
13	10.12	14	0.7533
14	9.68	14	0.7852

APPENDIX 19

Complete Results for Robustness Analysis of Initial Performance Models (Offer-to-open)

Variables	Exp. Sign	Model 1: OTO - TOTESG		Model 2: OTO – E,S,G	
		Coefficient	t-stats	Coefficient	t-stats
Main Independent Variable					
TOTESG	+ve	0.0081	1.66*		
ESCORE	+ve			0.4267	1.89*
SSCORE	+ve			-0.2366	-1.34
GSCORE	+ve			-0.6367	-2.34**
Other Independent Variables					
SIZE	+ve	-0.1772	-2.02**	-0.0342	-1.21
AGE	+ve	-0.0089	-2.00**	-0.0068	-1.87*
PRO	+ve	-0.0243	-0.47	-0.0120	-1.74*
UW	+ve	-0.0001	-0.01	0.2215	1.26
OWNER	+ve	-0.0362	-0.11	0.0029	0.05
TOTA	+ve	-0.0198	-0.73	-0.0085	-0.48
LEVERAGE	-ve	-0.0120	-0.77	-0.0071	-0.60
D^{SECTOR}	-ve	0.0731	0.49	0.0739	0.69
MCD1	+ve	0.0014	2.50**	0.0009	2.18**
R^2		0.2146		0.2622	
Adjusted R^2		0.1263		0.1604	
F-statistics		2.43		2.58	
p-value F-statistics		0.0131		0.0057	

APPENDIX 20

Complete Results for Robustness Analysis of Long-term Performance Models (BHAR)

Variables	Exp. Sign	Model 3: BHAR – TOTESG		Model 4: BHAR – TOTESG		Model 5: BHAR – E,S,G		Model 6: BHAR – E,S,G	
		Coefficient	t-stats	Coefficient	t-stats	Coefficient	t-stats	Coefficient	t-stats
Main Independent Variables									
TOTESG	+ve	-0.0054	-2.0874**	-0.0063	2.3168**				
ESCORE	+ve					-0.2081	-0.9501	-0.3420	-0.7764
SSCORE	+ve					-0.3349	-1.8044*	-0.0772	-0.1790
GSCORE	+ve					0.0471	0.1294	0.9793	0.9059
Other Independent Variables									
OTO	+ve	-0.4374	-2.8739***	-	-	-0.4549	-3.2600***	-	-
OTC	+ve	-	-	-0.0034	-2.6498***	-	-	1.0827	1.6585*
SIZE	+ve	-0.0732	-1.8759*	-0.0921	-2.4090**	-0.0545	-1.3046	-0.1818	-2.0024**
AGE	+ve	-0.0044	-1.5982	-0.0043	-1.3768	-0.0050	-1.1519	0.0077	0.6961
PRO	+ve	-0.0007	-2.3758**	-0.0124	-2.0170**	-0.0007	-1.9345*	0.0043	0.3060
UW	+ve	-0.2378	-1.3373	-0.0496	-0.9215	-0.4828	-1.1096	-0.3407	-1.7021*
OWNER	+ve	0.0011	0.4505	0.0016	0.7119	0.0017	0.7364	0.0077	1.2181
TOTA	+ve	0.0970	2.8151***	0.0901	2.3313**	0.0979	2.2187**	0.2454	2.3120**
LEVERAGE	-ve	0.0088	0.7745	-0.0039	-0.4450	0.0062	0.4241	-0.0173	-0.8789
D^{SECTOR}	-ve	0.1185	0.7451	0.1540	0.8678	0.1168	0.7072	1.0518	1.3030
MC3YBHAR	+ve	-4.4900	-0.2395	-13.216	-0.6109	-0.0023	-1.0048	-0.0125	-1.8886*
R^2		0.2017		0.1722		0.1993		0.2303	
Adjusted R^2		0.1019		0.0687		0.0782		0.1140	
F-statistics		2.0215		1.6638		1.6464		1.9796	
p-value F-statistics		0.0354		0.0951		0.0881		0.0320	

APPENDIX 21

Complete Results for Robustness Analysis of Long-term Performance Models (Robust Standard Error)

Variables	Exp. Sign	Model 3: CAAR – TOTESG		Model 4: CAAR – TOTESG		Model 5: CAAR – E,S,G		Model 6: CAAR – E,S,G	
		Coefficient	t-stats	Coefficient	t-stats	Coefficient	t-stats	Coefficient	t-stats
Main Independent Variables									
TOTESG	+ve	-0.0076	-1.74*	-.0065	-1.73*	-	-	-	-
ESCORE	+ve	-	-	-	-	0.0550	0.62	-0.1456	-0.41
SSCORE	+ve	-	-	-	-	-0.2395	-2.40**	-0.2980	-0.93
GSCORE	+ve	-	-	-	-	0.0840	0.57	0.1201	0.24
Other Independent Variables									
OTO	+ve	-0.4943	-2.71***	-	-	-0.5787	-3.22***	-	-
OTC	+ve	-	-	-0.0035	-2.23**	-	-	-0.0054	-2.81
SIZE	+ve	-0.1030	-2.12**	-0.0187	-1.23	-0.0100	-0.99	-0.0871	-1.34
AGE	+ve	-0.0044	-0.63	-0.0034	-0.48	0-.0048	-1.06	-0.0049	-0.76
PRO	+ve	-0.0147	-1.75*	-0.0078	-0.93	-0.0009	-2.91***	-0.0007	-2.15**
UW	+ve	-0.3763	-0.72	-0.0249	-0.37	-0.1476	-0.68	-0.2082	-0.74
OWNER	+ve	0.0032	0.78	0.0024	0.92	0.0024	0.85	0.0023	0.70
TOTA	+ve	0.0780	1.59	0.0562	1.31	0.0704	1.90*	0.1141	1.82*
LEVERAGE	-ve	-0.0074	-0.24	-0.0139	-1.06	0.0065	0.45	0.0022	0.14
D^{SECTOR}	-ve	0.0994	0.54	0.1634	0.87	0.1225	0.69	0.2857	1.27
MC3YCAAR	+ve	-1.0226	-2.03**	-0.8959	-1.66*	-1.9826	-2.62***	-2.3101	-2.61***
MC3YBHAR	+ve	-	-	-	-	-	-	-	-
R^2		0.1822		0.1346		0.2253		0.1950	
Adjusted R^2		-		-		-		-	
F-statistics		2.01		1.33		2.16		1.79	
p-value F-statistics		0.0365		0.0208		0.0180		0.0577	

APPENDIX 22

Multiple Regression Analysis of Survival Models (COX Analysis) - TOTESG

Variables	Exp. Sign	Model 7: COX - TOTESG		Model 8: COX – TOTESG		Model 9: COX - TOTESG		Model 10: COX – TOTESG	
		Hazard Ratio	z-stats	Hazard Ratio	z-stats	Hazard Ratio	z-stats	Hazard Ratio	z-stats
Main Independent Variable									
TOTESG	+ve	1.0232	1.66*	1.0147	0.92	1.0249	1.68*	1.0244	1.70*
Other Independent Variables									
CAAR	+ve	0.995	-1.74*	0.5592	-2.18***	-	-	-	-
BHAR	+ve	-	-	-	-	0.9952	-1.68*	0.997	-1.13
OTO	+ve	0.9703	-2.12**	-	-	0.9696	-2.14**	-	-
OTC	+ve	-	-	0.9867	-1.06	-	-	0.3771	-0.51
SIZE	+ve	0.8944	-0.78	0.75	-1.75*	0.8881	-0.84	0.9472	-1.71*
AGE5Y	+ve	0.9701	-1.55	0.9642	-1.35	0.9686	-1.67*	0.6849	-0.81
PRO	+ve	1.0962	1.30	1.0003	1.27	1.0945	1.32	1.1168	2.37**
UW	+ve	0.1223	-0.98	0.111	-0.79	0.0096	-1.42	0.565	-1.34
OWNER	+ve	0.935	-0.20	0.9922	-0.42	1.0006	0.06	0.84	-0.46
TOTA	+ve	1.0824	0.89	1.3186	1.66*	1.1093	1.09	1.1737	1.68*
LEVERAGE	-ve	0.997	-0.05	1.0033	0.07	0.9844	-0.22	1.0015	0.03
D^{SECTOR}	-ve	3.0897	1.35	3.1128	1.34	3.0478	1.30	3.3114	1.42
MC5YCAAR	+ve	0.9953	-0.18	1.0006	0.02	-	-	-	-
MC5YBHAR	+ve	-	-	-	-	0.9937	-0.35	0.9957	-0.26
Observation		100		100		100		100	
Time at Risk		9,349.66		9,349.66		9,349.66		9,349.66	
LR(Prob>chi)^2		27.58***		28.27***		29.96***		31.15***	

APPENDIX 23

Multiple Regression Analysis of Survival Models (COX Analysis) – E,S,G

Variables	Exp. Sign	Model 11: COX – E,S,G		Model 12: COX – E,S,G		Model 13: COX – E,S,G		Model 14: COX – E,S,G	
		Hazard Ratio	z-stats	Hazard Ratio	z-stats	Hazard Ratio	z-stats	Hazard Ratio	z-stats
Main Independent Variables									
ESCORE	+ve	2.5030	0.70	0.983	-0.02	0.7904	-0.16	0.5257	-0.47
SSCORE	+ve	1.2672	0.23	2.0011	0.74	1.892	0.54	1.808	0.56
GSCORE	+ve	11.5499	1.65*	75.9766	2.17**	21.9354	1.84*	86.6407	2.26**
Other Independent Variables									
CAAR	+ve	0.9938	-1.63*	0.9949	-1.68*	-	-	-	-
BHAR	+ve	-	-	-	-	0.9948	-1.82*	0.6541	-1.80*
OTO	+ve	0.9781	-2.10**	-	-	0.9779	-1.87*	-	-
OTC	+ve	-	-	0.9945	-0.77	-	-	0.9955	-0.62
SIZE	+ve	0.7215	-1.99**	0.9999	-2.09**	0.9998	-2.96***	0.9997	-2.94***
AGE5Y	+ve	0.9613	-1.81*	0.9612	-1.60	0.9656	-1.58	0.9591	-1.63*
PRO	+ve	1.0003	1.18	1.152	2.38**	1.0009	2.64***	1.0012	3.19***
UW	+ve	0.5996	-1.35	0.0073	-1.40	0.0949	-0.99	0.6108	-1.25
OWNER	+ve	0.9959	-0.47	1.0055	0.56	1.0036	0.32	1.0069	0.66
TOTA	+ve	1.4341	2.08**	1.7997	2.90	1.2184	1.99**	1.8459	2.64***
LEVERAGE	-ve	0.9945	-0.11	0.959	-0.73	0.9908	-0.22	0.9436	-1.20
D^{SECTOR}	-ve	3.0327	1.22	4.6448	1.72*	3.3098	1.40	3.6931	1.35
MC5YCAAR	+ve	0.9750	-0.92	0.9813	-0.67	-	-	-	-
MC5YBHAR	+ve	-	-	-	-	0.9897	-0.63	0.9807	-0.91
Observation		100		100		100		100	
Time at Risk		9,349.66		9,349.66		9,349.66		9,349.66	
LR(Prob>chi)^2		30.42***		29.99***		34.78***		29.22***	

APPENDIX 24

Multiple Regression Analysis of Survival Models (AFT Analysis) – Survival Redefined

Variables	Exp. Sign	Model 7: AFT - TOTESG		Model 8: AFT – TOTESG		Model 9: AFT - TOTESG		Model 10: AFT – TOTESG	
		Time Ratio	z-stats	Time Ratio	z-stats	Time Ratio	z-stats	Time Ratio	z-stats
Main Independent Variable									
TOTESG	+ve	1.0276	0.74	1.0064	0.25	1.0241	0.57	1.0257	0.74
Other Independent Variables									
CAAR	+ve	1.0047	1.04	2.5567	1.46	-	-	-	-
BHAR	+ve	-	-	-	-	1.0072	1.03	1.4003	0.97
OTO	+ve	1.0079	0.53	-	-	1.0129	0.59		
OTC	+ve	-	-	2.5009	1.11	-	-	2.6146	1.32
SIZE	+ve	1.1250	2.31**	1.1831	0.35	1.4565	0.92	1.1206	1.62
AGE5Y	+ve	1.7403	4.49***	2.3209	2.26**	1.9170	3.99***	1.6343	3.74***
PRO	+ve	0.7822	-2.78***	0.5745	-0.97	0.6558	-1.88*	0.7329	-2.12**
UW	+ve	0.0522	-0.78	0.0026	-2.29**	0.5737	-0.65	0.4445	-1.38
OWNER	+ve	0.950	-0.96	0.0519	-0.95	0.9486	-1.06	0.0332	-0.79
TOTA	+ve	0.6027	-1.96**	0.5526	-1.26	0.5904	-1.76*	0.6522	-1.61
LEVERAGE	-ve	0.9640	-0.50	1.0389	0.48	0.9675	-0.31	0.9472	-0.57
D^{SECTOR}	-ve	0.3835	-0.79	0.3098	-1.18	0.4007	-0.56	0.5964	-0.34
MC5YCAAR	+ve	1.0519	0.54	1.0749	0.82	-	-	-	-
MC5YBHAR	+ve	-	-	-	-	1.0251	0.46	1.0198	0.38
Observation		100		100		100		100	
Time at Risk		10,123		10,123		10,123		10,123	
LR(Prob>chi)^2		68.28***		14.32		39.44***		81.94***	

APPENDIX 25

Multiple Regression Analysis of Survival Models (AFT Analysis) – Survival Redefined

Variables	Exp. Sign	Model 7: AFT – E,S,G		Model 8: AFT – E,S,G		Model 9: AFT – E,S,G		Model 10: AFT – E,S,G	
		Time Ratio	z-stats	Time Ratio	z-stats	Time Ratio	z-stats	Time Ratio	z-stats
Main Independent Variable									
ESCORE	+ve	0.0592	-1.76*	0.2908	-0.57	0.1423	-0.48	0.0858	-0.72
SSCORE	+ve	0.0141	-0.90	0.9464	-0.03	0.0766	-0.59	0.0737	-0.52
GSCORE	+ve	247.6002	0.71	2.3072	0.15	15.2972	0.50	22.2035	0.50
Other Independent Variables									
CAAR	+ve	1.0195	1.43	2.4983	2.02**	-	-	-	-
BHAR	+ve	-	-	-	-	1.0134	1.89*	1.0070	1.66*
OTO	+ve	1.0134	1.79*	-	-	1.0083	1.95**	-	-
OTC	+ve	-	-	1.0050	0.97	-	-	0.9706	-2.61***
SIZE	+ve	1.9097	1.03	1.0006	2.16	1.0005	1.09	1.0006	1.63
AGE5Y	+ve	3.7168	1.26	2.3300	1.76*	2.7341	1.43	3.3882	1.31
PRO	+ve	0.2890	-1.52	0.9978	-1.48	0.9974	-0.95	0.9969	-1.45
UW	+ve	0.0132	-1.76*	0.0099	-1.61	0.0161	-1.37	0.3273	-1.38
OWNER	+ve	0.9457	-1.67*	0.9630	-1.16	0.9415	-0.92	0.9360	-1.30
TOTA	+ve	0.5353	-1.05	0.3154	-1.88*	0.5034	-1.65*	0.4290	-1.18
LEVERAGE	-ve	1.0511	0.65	1.0592	0.72	0.9726	-0.30	0.9642	-0.26
D^{SECTOR}	-ve	0.1362	-1.00	0.3213	-1.24	0.2892	-1.15	0.2745	-0.81
MC5YCAAR	+ve	1.0192	0.14	1.0875	1.05	-	-	-	-
MC5YBHAR	+ve	-	-	-	-	1.0530	1.04	1.0504	1.03
Observation		100		100		100		100	
Time at Risk		10,123		10,123		10,123		10,123	
LR(Prob>chi)^2		15.36		49.25***		42.94***		54.08***	

APPENDIX 26

Durbin-Watson Statistic: 1 Per Cent Significance Points of dL and dU

	k'*=1		k'=2		k'=3		k'=4		k'=5		k'=6		k'=7		k'=8		k'=9		k'=10	
n	dL	dU	dL	dU	dL	dU	dL	dU	dL	dU	dL	dU	dL	dU	dL	dU	dL	dU	dL	dU
6	0.390	1.142	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
7	0.435	1.036	0.294	1.676	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
8	0.497	1.003	0.345	1.489	0.229	2.102	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
9	0.554	0.998	0.408	1.389	0.279	1.875	0.183	2.433	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
10	0.604	1.001	0.466	1.333	0.340	1.733	0.230	2.193	0.150	2.690	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
11	0.653	1.010	0.519	1.297	0.396	1.640	0.286	2.030	0.193	2.453	0.124	2.892	-----	-----	-----	-----	-----	-----	-----	-----
12	0.697	1.023	0.569	1.274	0.449	1.575	0.339	1.913	0.244	2.280	0.164	2.665	0.105	3.053	-----	-----	-----	-----	-----	-----
13	0.738	1.038	0.616	1.261	0.499	1.526	0.391	1.826	0.294	2.150	0.211	2.490	0.140	2.838	0.090	3.182	-----	-----	-----	-----
14	0.776	1.054	0.660	1.254	0.547	1.490	0.441	1.757	0.343	2.049	0.257	2.354	0.183	2.667	0.122	2.981	0.078	3.287	-----	-----
15	0.811	1.070	0.700	1.252	0.591	1.465	0.487	1.705	0.390	1.967	0.303	2.244	0.226	2.530	0.161	2.817	0.107	3.101	0.068	3.374
16	0.844	1.086	0.738	1.253	0.633	1.447	0.532	1.664	0.437	1.901	0.349	2.153	0.269	2.416	0.200	2.681	0.142	2.944	0.094	3.201
17	0.873	1.102	0.773	1.255	0.672	1.432	0.574	1.631	0.481	1.847	0.393	2.078	0.313	2.319	0.241	2.566	0.179	2.811	0.127	3.053
18	0.902	1.118	0.805	1.259	0.708	1.422	0.614	1.604	0.522	1.803	0.435	2.015	0.355	2.238	0.282	2.467	0.216	2.697	0.160	2.925
19	0.928	1.133	0.835	1.264	0.742	1.416	0.650	1.583	0.561	1.767	0.476	1.963	0.396	2.169	0.322	2.381	0.255	2.597	0.196	2.813
20	0.952	1.147	0.862	1.270	0.774	1.410	0.684	1.567	0.598	1.736	0.515	1.918	0.436	2.110	0.362	2.308	0.294	2.510	0.232	2.174
21	0.975	1.161	0.889	1.276	0.803	1.408	0.718	1.554	0.634	1.712	0.552	1.881	0.474	2.059	0.400	2.244	0.331	2.434	0.268	2.625
22	0.997	1.174	0.915	1.284	0.832	1.407	0.748	1.543	0.666	1.691	0.587	1.849	0.510	2.015	0.437	2.188	0.368	2.367	0.304	2.548
23	1.017	1.186	0.938	1.290	0.858	1.407	0.777	1.535	0.699	1.674	0.620	1.821	0.545	1.977	0.473	2.140	0.404	2.308	0.340	2.479
24	1.037	1.199	0.959	1.298	0.881	1.407	0.805	1.527	0.728	1.659	0.652	1.797	0.578	1.944	0.507	2.097	0.439	2.255	0.375	2.417
25	1.055	1.210	0.981	1.305	0.906	1.408	0.832	1.521	0.756	1.645	0.682	1.776	0.610	1.915	0.540	2.059	0.473	2.209	0.409	2.362
26	1.072	1.222	1.000	1.311	0.928	1.410	0.855	1.517	0.782	1.635	0.711	1.759	0.640	1.889	0.572	2.026	0.505	2.168	0.441	2.313
27	1.088	1.232	1.019	1.318	0.948	1.413	0.878	1.514	0.808	1.625	0.738	1.743	0.669	1.867	0.602	1.997	0.536	2.131	0.473	2.269
28	1.104	1.244	1.036	1.325	0.969	1.414	0.901	1.512	0.832	1.618	0.764	1.729	0.696	1.847	0.630	1.970	0.566	2.098	0.504	2.229
29	1.119	1.254	1.053	1.332	0.988	1.418	0.921	1.511	0.855	1.611	0.788	1.718	0.723	1.830	0.658	1.947	0.595	2.068	0.533	2.193
30	1.134	1.264	1.070	1.339	1.006	1.421	0.941	1.510	0.877	1.606	0.812	1.707	0.748	1.814	0.684	1.925	0.622	2.041	0.562	2.160
31	1.147	1.274	1.085	1.345	1.022	1.425	0.960	1.509	0.897	1.601	0.834	1.698	0.772	1.800	0.710	1.906	0.649	2.017	0.589	2.131
32	1.160	1.283	1.100	1.351	1.039	1.428	0.978	1.509	0.917	1.597	0.856	1.690	0.794	1.788	0.734	1.889	0.674	1.995	0.615	2.104
33	1.171	1.291	1.114	1.358	1.055	1.432	0.995	1.510	0.935	1.594	0.876	1.683	0.816	1.776	0.757	1.874	0.698	1.975	0.641	2.080
34	1.184	1.298	1.128	1.364	1.070	1.436	1.012	1.511	0.954	1.591	0.896	1.677	0.837	1.766	0.779	1.860	0.722	1.957	0.665	2.057
35	1.195	1.307	1.141	1.370	1.085	1.439	1.028	1.512	0.971	1.589	0.914	1.671	0.857	1.757	0.800	1.847	0.744	1.940	0.689	2.037
36	1.205	1.315	1.153	1.376	1.098	1.442	1.043	1.513	0.987	1.587	0.932	1.666	0.877	1.749	0.821	1.836	0.766	1.925	0.711	2.018
37	1.217	1.322	1.164	1.383	1.112	1.446	1.058	1.514	1.004	1.585	0.950	1.662	0.895	1.742	0.841	1.825	0.787	1.911	0.733	2.001
38	1.227	1.330	1.176	1.388	1.124	1.449	1.072	1.515	1.019	1.584	0.966	1.658	0.913	1.735	0.860	1.816	0.807	1.899	0.754	1.985
39	1.237	1.337	1.187	1.392	1.137	1.452	1.085	1.517	1.033	1.583	0.982	1.655	0.930	1.729	0.878	1.807	0.826	1.887	0.774	1.970
40	1.246	1.344	1.197	1.398	1.149	1.456	1.098	1.518	1.047	1.583	0.997	1.652	0.946	1.724	0.895	1.799	0.844	1.876	0.749	1.956
45	1.288	1.376	1.245	1.424	1.201	1.474	1.156	1.528	1.111	1.583	1.065	1.643	1.019	1.704	0.974	1.768	0.927	1.834	0.881	1.902
50	1.324	1.403	1.285	1.445	1.245	1.491	1.206	1.537	1.164	1.587	1.123	1.639	1.081	1.692	1.039	1.748	0.997	1.805	0.955	1.864
55	1.356	1.428	1.320	1.466	1.284	1.505	1.246	1.548	1.209	1.592	1.172	1.638	1.134	1.685	1.095	1.734	1.057	1.785	1.018	1.837
60	1.382	1.449	1.351	1.484	1.317	1.520	1.283	1.559	1.248	1.598	1.214	1.639	1.179	1.682	1.144	1.726	1.108	1.771	1.072	1.817
65	1.407	1.467	1.377	1.500	1.346	1.534	1.314	1.568	1.283	1.604	1.251	1.642	1.218	1.680	1.186	1.720	1.153	1.761	1.120	1.802
70	1.429	1.485	1.400	1.514	1.372	1.546	1.343	1.577	1.313	1.611	1.283	1.645	1.253	1.680	1.223	1.716	1.192	1.754	1.162	1.792
75	1.448	1.501	1.422	1.529	1.395	1.557	1.368	1.586	1.340	1.617	1.313	1.649	1.284	1.682	1.256	1.714	1.227	1.748	1.199	1.783
80	1.465	1.514	1.440	1.541	1.416	1.568	1.390	1.595	1.364	1.624	1.338	1.653	1.312	1.683	1.285	1.714	1.259	1.745	1.232	1.777
85	1.481	1.529	1.458	1.553	1.434	1.577	1.411	1.603	1.386	1.630	1.362	1.657	1.337	1.685	1.312	1.714	1.287	1.743	1.262	1.773
90	1.496	1.541	1.474	1.563	1.452	1.587	1.429	1.611	1.406	1.636	1.383	1.661	1.360	1.687	1.336	1.714	1.312	1.741	1.288	1.769
95	1.510	1.552	1.489	1.573	1.468	1.596	1.446	1.618	1.425	1.641	1.403	1.666	1.381	1.690	1.358	1.715	1.336	1.741	1.313	1.767
100	1.522	1.562	1.502	1.582	1.482	1.604	1.461	1.625	1.441	1.647	1.421	1.670	1.400	1.693	1.378	1.717	1.357	1.741	1.335	1.765
150	1.611	1.637	1.598	1.651	1.584	1.665	1.571	1.679	1.557	1.693	1.543	1.708	1.530	1.722	1.515	1.737	1.501	1.752	1.486	1.767
200	1.664	1.684	1.653	1.693	1.643	1.704	1.633	1.715	1.623	1.725	1.613	1.735	1.603	1.746	1.592	1.757	1.582	1.768	1.571	1.779

Note: *k is the number of regressors excluding the intercept, n is the number of observations.

APPENDIX 27

Durbin-Watson Statistic: 5 Per Cent Significance Points of dL and dU

	k'*=1		k'=2		k'=3		k'=4		k'=5		k'=6		k'=7		k'=8		k'=9		k'=10	
n	dL	dU	dL	dU	dL	dU	dL	dU	dL	dU	dL	dU	dL	dU	dL	dU	dL	dU	dL	dU
6	0.610	1.400	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
7	0.700	1.356	0.467	1.896	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
8	0.763	1.332	0.559	1.777	0.367	2.287	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
9	0.824	1.320	0.629	1.699	0.455	2.128	0.296	2.588	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
10	0.879	1.320	0.697	1.641	0.525	2.016	0.376	2.414	0.243	2.822	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
11	0.927	1.324	0.758	1.604	0.595	1.928	0.444	2.283	0.315	2.645	0.203	3.004	-----	-----	-----	-----	-----	-----	-----	-----
12	0.971	1.331	0.812	1.579	0.658	1.864	0.512	2.177	0.380	2.506	0.268	2.832	0.171	3.149	-----	-----	-----	-----	-----	-----
13	1.010	1.340	0.861	1.562	0.715	1.816	0.574	2.094	0.444	2.390	0.328	2.692	0.230	2.985	0.147	3.266	-----	-----	-----	-----
14	1.045	1.350	0.905	1.551	0.767	1.779	0.632	2.030	0.505	2.296	0.389	2.572	0.286	2.848	0.200	3.111	0.127	3.360	-----	-----
15	1.077	1.361	0.946	1.543	0.814	1.750	0.685	1.977	0.562	2.220	0.447	2.471	0.343	2.727	0.251	2.979	0.175	3.216	0.111	3.438
16	1.106	1.371	0.982	1.539	0.857	1.728	0.734	1.935	0.615	2.157	0.502	2.388	0.398	2.624	0.304	2.860	0.222	3.090	0.155	3.304
17	1.133	1.381	1.015	1.536	0.897	1.710	0.779	1.900	0.664	2.104	0.554	2.318	0.451	2.537	0.356	2.757	0.272	2.975	0.198	3.184
18	1.158	1.391	1.046	1.535	0.933	1.696	0.820	1.872	0.710	2.060	0.603	2.258	0.502	2.461	0.407	2.668	0.321	2.873	0.244	3.073
19	1.180	1.401	1.074	1.536	0.967	1.685	0.859	1.848	0.752	2.023	0.649	2.206	0.549	2.396	0.456	2.589	0.369	2.783	0.290	2.974
20	1.201	1.411	1.100	1.537	0.998	1.676	0.894	1.828	0.792	1.991	0.691	2.162	0.595	2.339	0.502	2.521	0.416	2.704	0.336	2.885
21	1.221	1.420	1.125	1.538	1.026	1.669	0.927	1.812	0.829	1.964	0.731	2.124	0.637	2.290	0.546	2.461	0.461	2.633	0.380	2.806
22	1.239	1.429	1.147	1.541	1.053	1.664	0.958	1.797	0.863	1.940	0.769	2.090	0.677	2.246	0.588	2.407	0.504	2.571	0.424	2.735
23	1.257	1.437	1.168	1.543	1.078	1.660	0.986	1.785	0.895	1.920	0.804	2.061	0.715	2.208	0.628	2.360	0.545	2.514	0.465	2.670
24	1.273	1.446	1.188	1.546	1.101	1.656	1.013	1.775	0.925	1.902	0.837	2.035	0.750	2.174	0.666	2.318	0.584	2.464	0.506	2.613
25	1.288	1.454	1.206	1.550	1.123	1.654	1.038	1.767	0.953	1.886	0.868	2.013	0.784	2.144	0.702	2.280	0.621	2.419	0.544	2.560
26	1.302	1.461	1.224	1.553	1.143	1.652	1.062	1.759	0.979	1.873	0.897	1.992	0.816	2.117	0.735	2.246	0.657	2.379	0.581	2.513
27	1.316	1.469	1.240	1.556	1.162	1.651	1.084	1.753	1.004	1.861	0.925	1.974	0.845	2.093	0.767	2.216	0.691	2.342	0.616	2.470
28	1.328	1.476	1.255	1.560	1.181	1.650	1.104	1.747	1.028	1.850	0.951	1.959	0.874	2.071	0.798	2.188	0.723	2.309	0.649	2.431
29	1.341	1.483	1.270	1.563	1.198	1.650	1.124	1.743	1.050	1.841	0.975	1.944	0.900	2.052	0.826	2.164	0.753	2.278	0.681	2.396
30	1.352	1.489	1.284	1.567	1.214	1.650	1.143	1.739	1.071	1.833	0.998	1.931	0.926	2.034	0.854	2.141	0.782	2.251	0.712	2.363
31	1.363	1.496	1.297	1.570	1.229	1.650	1.160	1.735	1.090	1.825	1.020	1.920	0.950	2.018	0.879	2.120	0.810	2.226	0.741	2.333
32	1.373	1.502	1.309	1.574	1.244	1.650	1.177	1.732	1.109	1.819	1.041	1.909	0.972	2.004	0.904	2.102	0.836	2.203	0.769	2.306
33	1.383	1.508	1.321	1.577	1.258	1.651	1.193	1.730	1.127	1.813	1.061	1.900	0.994	1.991	0.927	2.085	0.861	2.181	0.796	2.281
34	1.393	1.514	1.333	1.580	1.271	1.652	1.208	1.728	1.144	1.808	1.079	1.891	1.015	1.978	0.950	2.069	0.885	2.162	0.821	2.257
35	1.402	1.519	1.343	1.584	1.283	1.653	1.222	1.726	1.160	1.803	1.097	1.884	1.034	1.967	0.971	2.054	0.908	2.144	0.845	2.236
36	1.411	1.525	1.354	1.587	1.295	1.654	1.236	1.724	1.175	1.799	1.114	1.876	1.053	1.957	0.991	2.041	0.930	2.127	0.868	2.216
37	1.419	1.530	1.364	1.590	1.307	1.655	1.249	1.723	1.190	1.795	1.131	1.870	1.071	1.948	1.011	2.029	0.951	2.112	0.891	2.197
38	1.427	1.535	1.373	1.594	1.318	1.656	1.261	1.722	1.204	1.792	1.146	1.864	1.088	1.939	1.029	2.017	0.970	2.098	0.912	2.180
39	1.435	1.540	1.382	1.597	1.328	1.658	1.273	1.722	1.218	1.789	1.161	1.859	1.104	1.932	1.047	2.007	0.990	2.085	0.932	2.164
40	1.442	1.544	1.391	1.600	1.338	1.659	1.285	1.721	1.230	1.786	1.175	1.854	1.120	1.924	1.064	1.997	1.008	2.072	0.952	2.149
45	1.475	1.566	1.430	1.615	1.383	1.666	1.336	1.720	1.287	1.776	1.238	1.835	1.189	1.895	1.139	1.958	1.089	2.022	1.038	2.088
50	1.503	1.585	1.462	1.628	1.421	1.674	1.378	1.721	1.335	1.771	1.291	1.822	1.246	1.875	1.201	1.930	1.156	1.986	1.110	2.044
55	1.528	1.601	1.490	1.641	1.452	1.681	1.414	1.724	1.374	1.768	1.334	1.814	1.294	1.861	1.253	1.909	1.212	1.959	1.170	2.010
60	1.549	1.616	1.514	1.652	1.480	1.689	1.444	1.727	1.408	1.767	1.372	1.808	1.335	1.850	1.298	1.894	1.260	1.939	1.222	1.984
65	1.567	1.629	1.536	1.662	1.503	1.696	1.471	1.731	1.438	1.767	1.404	1.805	1.370	1.843	1.336	1.882	1.301	1.923	1.266	1.964
70	1.583	1.641	1.554	1.672	1.525	1.703	1.494	1.735	1.464	1.768	1.433	1.802	1.401	1.838	1.369	1.874	1.337	1.910	1.305	1.948
75	1.598	1.652	1.571	1.680	1.543	1.709	1.515	1.739	1.487	1.770	1.458	1.801	1.428	1.834	1.399	1.867	1.369	1.901	1.339	1.935
80	1.611	1.662	1.586	1.688	1.560	1.715	1.534	1.743	1.507	1.772	1.480	1.801	1.453	1.831	1.425	1.861	1.397	1.893	1.369	1.925
85	1.624	1.671	1.600	1.696	1.575	1.721	1.550	1.747	1.525	1.774	1.500	1.801	1.474	1.829	1.448	1.857	1.422	1.886	1.396	1.916
90	1.635	1.679	1.612	1.703	1.589	1.726	1.566	1.751	1.542	1.776	1.518	1.801	1.494	1.827	1.469	1.854	1.445	1.881	1.420	1.909
95	1.645	1.687	1.623	1.709	1.602	1.732	1.579	1.755	1.557	1.778	1.535	1.802	1.512	1.827	1.489	1.852	1.465	1.877	1.442	1.903
100	1.654	1.694	1.634	1.715	1.613	1.736	1.592	1.758	1.571	1.780	1.550	1.803	1.528	1.826	1.506	1.850	1.484	1.874	1.462	1.898
150	1.720	1.747	1.706	1.760	1.693	1.774	1.679	1.788	1.665	1.802	1.651	1.817	1.637	1.832	1.622	1.846	1.608	1.862	1.593	1.877
200	1.758	1.779	1.748	1.789	1.738	1.799	1.728	1.809	1.718	1.820	1.707	1.831	1.697	1.841	1.686	1.852	1.675	1.863	1.665	1.874

AUTHOR'S PROFILE



Siti Sarah Alyasa Gan holds a Master of Science (Finance) from Universiti Teknologi MARA (UiTM) and currently serves as a lecturer at the Faculty of Business Management and Professional Studies, Management and Science University (MSU), Shah Alam. Her research interests encompass corporate finance, initial public offerings (IPOs), ESG practices reporting, survival analysis, capital structure, banking risk, and financial literacy. Over the years, she has produced a growing body of scholarly work, contributing to both academic discourse and industry-relevant insights. Her publications include studies on ESG practices disclosure and initial performance of Malaysian IPOs; IPO proceeds and companies' survival; capital structure determinants among Shariah-compliant companies; youth unemployment in Malaysia; non-performing loans in the commercial banking sector; predictors of personal bankruptcy; comparative performance of Shariah and non-Shariah companies; and classroom engagement using financial games. She has also explored topics such as enterprise risk management sophistication in IPO performance, time utilisation of IPO proceeds, and dividend payout behaviour among blue-chip companies. Through her ongoing research and publications, Siti Sarah Alyasa Gan demonstrates a sustained commitment to advancing knowledge in the areas of financial markets, sustainability reporting, and corporate resilience, particularly within the context of emerging economies.

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