



The Role of Overconfidence, Social Mood and Media Tone
in IPO Valuations:
Insights from the ASEAN Member States

Nurwahida Mohd Yaakub

*Submitted for the degree of
Doctor of Philosophy in Finance*

Department of Accounting, Economics & Finance
School of Social Sciences
Heriot-Watt University

8th March, 2019

The copyright in this thesis is owned by the author. Any quotation from the thesis or use of any of the information contained in it must acknowledge this thesis as the source of the quotation or information.

Declaration of Authorship



ACADEMIC REGISTRY Research Thesis Submission

Name:			
School:			
Version: <i>(i.e. First, Resubmission, Final)</i>		Degree Sought:	

Declaration

In accordance with the appropriate regulations I hereby submit my thesis and I declare that:

- 1) the thesis embodies the results of my own work and has been composed by myself
- 2) where appropriate, I have made acknowledgement of the work of others and have made reference to work carried out in collaboration with other persons
- 3) the thesis is the correct version of the thesis for submission and is the same version as any electronic versions submitted*.
- 4) my thesis for the award referred to, deposited in the Heriot-Watt University Library, should be made available for loan or photocopying and be available via the Institutional Repository, subject to such conditions as the Librarian may require
- 5) I understand that as a student of the University I am required to abide by the Regulations of the University and to conform to its discipline.
- 6) I confirm that the thesis has been verified against plagiarism via an approved plagiarism detection application e.g. Turnitin.

* Please note that it is the responsibility of the candidate to ensure that the correct version of the thesis is submitted.

Signature of Candidate:		Date:	
-------------------------	--	-------	--

Submission

Submitted By <i>(name in capitals)</i> :	
Signature of Individual Submitting:	
Date Submitted:	

For Completion in the Student Service Centre (SSC)

Received in the SSC by <i>(name in capitals)</i> :			
<i>Method of Submission</i> <i>(Handed in to SSC; posted through internal/external mail):</i>			
<i>E-thesis Submitted (mandatory for final theses)</i>			
Signature:		Date:	

Abstract

This thesis takes a comparative approach in studying the IPO performances in the largest four markets in the Southeast Asian region, namely Singapore, Malaysia, Thailand and Indonesia (collectively known as the ASEAN-4), which are still under-researched. In particular, this thesis focuses on the role of overconfidence, social mood and media tones in IPO performances in the four markets, using IPOs listed from January 2000 to December 2013. Using robust event study methodology, the first empirical chapter identifies whether the investors in ASEAN suffer from overconfidence and self-attribution biases. The findings provide further support to the literature that overconfidence, a salient behavioural bias, exists in the ASEAN-4 region. Importantly, this thesis identifies that investors in Thailand and Indonesia are not only overconfident, but also suffer from self-attribution bias - a persistent overconfidence.

In the second chapter, this thesis investigates the role of social moods in determining IPO initial returns and 3-year performance. Uniquely, this study is the first to employ three proxies of moods to represent various degrees of emotional intensities. Using the ordinary least squares (OLS) regressions, it was found that in general, positive (negative) moods surrounding a holiday is positively (negatively) linked to IPO underpricing. This suggests that positive social mood increases stock valuations around pre-holiday times. Interestingly, this thesis discovers that instead of turning into low mood following a long holiday, the positive mood can linger post-holiday, thus having positive impact on IPO initial valuations. The evidence of influence of social moods on long-run IPO performance is not conclusive for ASEAN-4.

Finally, the third empirical chapter examines the influence of media tone in short-term IPO valuations using IPO-related news published in the English language. This study is one the first to test the applicability of the Loughran & McDonald (2011) in IPO contexts outside of an English speaking domain. In addition, a new IPO context-specific dictionary was constructed. Using the OLS regressions, it is evident that investors in Singapore and Malaysia are sensitive towards pessimistic tone in IPO-related news. The findings suggest that investors view pessimistic news as carrying higher ex ante uncertainty, hence requiring higher return to compensate their investment in the IPO with such a characteristic. Importantly, the findings suggest that context is crucial in shaping investors' perceptions of

meanings of words, that can vary depending on the contexts in which they are used. Collectively, the findings of this thesis suggest that human behaviour plays role in shaping investors' valuation on IPO stocks, in particular in the aspects of overconfidence, emotion and mood, as well language interpretation.

Acknowledgements

إلهي أنت مقصودي ورضاك مطلوبتي

Alhamdulillah! All praise to Allah for granting me the blessings. I am deeply grateful to be blessed with the guidance, strengths and patience. It is indeed only due to His blessings that I could complete this journey. *La quwwata illa billah.*

I pay sincere gratitude and profound appreciation to my supervisor Dr Mohamed Sherif who never stopped believing in me. Throughout the years, he trained me not merely to be a PhD graduate, but also prepared a firm leadership foundation for me. I am also deeply indebted to my second supervisor, Professor Roszaini Haniffa, whose inquisitive mind I truly admire and respect. I am deeply grateful to have a mentor who always reminded me to always rely on Allah the Almighty.

No words could explain how much I am grateful to have the supports from my parents, Khodijah Aziz and Mohd. Yaakub Abdul Karim. Thank you for your continuous prayers, without which I may have not even get here. Thank you for shaping me into the person I am today. To Mohd Khairi Mahmud, I can't thank you more for your immense supports and sacrifices. My son Adam Khairy, thank you for being my *Strongest Reason*. To my uncle, Othman Aziz, thank you for being such a great inspiration. My aunt, Wijdan Aziz, thank you for all the supports. To Dr Halim Mann, thank you for your guidance and encouragements. To my extended family, I could not thank you more for all the loves and supports.

I would also like to thank Dr Audrey Paterson, the Head of Postgraduate Research Programmes, for her kindness and continuous moral supports in my journey. Thank you to the School of Social Sciences for the opportunity to develop my research skills. I thank Caroline Murray for all her supports for us throughout the years.

I treasure the friendship with Dr Adilah Rahman, Ilyana Bazlin and Dr Razali Ismail, who made the PhD journey meaningful. Also to Arnida Jahya, who made this journey even more beautiful. To my PhD fellows, Dr Jiaqi Chen (Jenny),

Dr Kulabutr Komenkul (Tam), Dr Ahmed Salhin, Dr Abdelrhman Yusuf, Dr Sering Touray, Dr Kehinde Olowookere (Kenny), Dr Olufisayo Alabi, Mohamed Elsharkawy and Rilwan Sakariyahu, thank you for all the stimulating discussions and constant encouragements. Also to my long-time friends, Liyana Noor Azmi, Tengku Sharmizi Tengku Shariff and Tengku Sazali Tengku Muzani for supporting me morally.

I am grateful for the financial sponsorship received from the Majlis Amanah Rakyat (MARA), without which this journey would have been impossible.

A paper partly related to the first empirical chapter of this thesis titled ‘The Post-issue Market Performance of Initial Public Offerings: Empirical Evidence from the Malaysian Stock Market’ (co-authored with Dr Mohamed Sherif and Professor Roszaini Haniffa) is published in the Journal of Emerging Market Finance. I would like to thank the editors and referees of this journal for their insightful comments on the study.

Indeed, this journey is not merely a professional journey for me, but also truly a spiritual one. The PhD journey coincided with the hardest few years of my life. I fell a lot, and there were times when I fell hard. Nevertheless, I kept my faith, and I would not trade all the life lessons I learnt with anything else. Alhamdulillah, I am so blessed that along the way, I crossed paths with people who directly or indirectly set me on the right path. I pray that each and every one of you is in Allah’s blessings, always. *La quwwata illa billah.*

Contents

1	Introduction	1
1.1	Research Background	1
1.2	Aims, Motivations and Contributions	8
1.3	The Context of ASEAN	10
1.3.1	The ASEAN Economy	10
1.3.2	The ASEAN Capital Market	11
1.3.3	ASEAN Cultural Profiles	18
1.4	Outline of the Thesis	22
2	Overconfidence and IPO Performances	23
2.1	Introduction	23
2.2	Literature review	26
2.2.1	Theoretical Framework	26
2.2.2	Overconfidence and Cultural Differences	29
2.2.3	Long-run Underperformance of IPOs	30
2.2.4	Reflections on the Literature Review	35
2.3	Models, Methodology and Data	38
2.3.1	Empirical Models	38
2.3.2	Methodology	39
2.3.2.1	Event Time Approach	40
	A. Cumulative Abnormal Returns	40
	B. Buy-and-Hold Abnormal Returns (BHAR)	42
	C. Wealth Relative (WR)	44
2.3.2.2	Calendar-Time Approach	45
2.3.3	Data	46
2.4	Empirical Findings	49
2.4.1	Distribution of IPO Samples	49
2.4.2	Descriptive Analysis	55
2.4.3	Initial Returns of ASEAN-4 IPOs	57
2.4.4	Long-Run IPO Performances of ASEAN-4 IPOs	60
2.4.4.1	Event-Time Approach	60
	A. Cumulative Abnormal Returns	60

B. Buy-and-Hold Abnormal Returns	65
2.4.4.2 Calendar-Time Approach	72
2.4.4.3 Cross-Sectional Patterns of ASEAN-4 Long-Run IPO Performance	73
A. Long-Run Performance Categorised by Listing Year	73
B. Long-Run Performance Categorised by Firm Char- acteristics	75
C. Long-Run Performance Categorised by IPO Char- acteristics	76
D. Long-Run Performance Categorised by Sector Group- ings	78
2.5 Summary	80
Appendices	83
A 3-year Cumulative Abnormal Returns for ASEAN-4 IPOs	83
A.1 Singapore	84
A.2 Malaysia	85
A.3 Thailand	86
A.4 Indonesia	87
B 3-year Buy-and-Hold Abnormal Returns for ASEAN-4 IPOs	88
B.1 Singapore	89
B.2 Malaysia	90
B.3 Thailand	91
B.4 Indonesia	92
3 Social Mood and IPO Performances	93
3.1 Introduction for the Chapter	93
3.2 Literature Review	96
3.2.1 Theoretical Framework	96
3.2.2 Social Moods and Stock Returns	98
3.2.3 Reflections on the Literature Review	101
3.3 Models, Methodology and Data	105
3.3.1 Empirical Model	105
3.3.2 Method of Estimation	110
3.3.3 Data	111
3.4 Empirical Findings	112
3.4.1 Distribution of IPO Samples	112
3.4.2 Descriptive Statistics	114
3.4.3 Social Moods and IPO Underpricing	119
3.4.4 Social Moods and IPO Underperformance	128
3.5 Summary	130
Appendices	132

C	Cultural and Public Holidays in ASEAN-4 Countries	132
C.1	List of Public Holidays in ASEAN-4 Countries	132
4	Media Tones and IPO Underpricing	134
4.1	Introduction for the Chapter	134
4.2	Literature Review	137
4.2.1	Theoretical Framework	137
4.2.1.1	Investor Sentiment vs Ex-Ante Uncertainty	138
4.2.1.2	Intercultural Linguistic	139
4.2.2	Media Tone and the Stock Market	140
4.2.3	Reflections on the Literature	147
4.3	Models, Methodology and Data	150
4.3.1	Empirical Model	150
4.3.2	Method of Estimation	151
4.3.3	Data	152
4.3.4	Methodological Concerns	153
	Stage 1: Document Mining	156
	Stage 2: Document Parsing	156
	Stage 3: Document Scoring	158
	Stage 4: IPO Scoring	158
4.3.5	Construction of ASEAN IPO Word List	158
4.4	Empirical Findings	161
4.4.1	Usage of Tonal Words in IPO-related News	161
4.4.2	Characteristics of News Tones in Singapore and Malaysia	163
4.4.3	Descriptive Statistics	167
4.4.4	Media Tones and IPO Underpricing	170
4.4.4.1	Main Explanatory Variables: Tone Captured Using the Loughran & McDonald (2011) Dictionary	173
4.4.4.2	Main Explanatory Variables: Tone Captured Using the New ASEAN IPO Dictionary	175
4.4.4.3	Discussions on the Findings	176
4.4.5	Robustness Test	179
4.4.5.1	News Tone Captured Using the Brau et al. (2016) Strategic Word Lists and Harvard General Inquirer Dictionary	179
4.4.6	Principal Component Analysis on the Loughran & McDonald (2011) Word Lists	180
4.5	Summary	182
	Appendices	184
D	ASEAN IPO News Dictionary	184
D.1	Positive Word List	185
D.2	Negative Word List	186
D.3	Example of <i>R</i> Codes Used for Document Parsing	187

1. Installing Packages and Loading Corpora	187
2. Pre-Processing (e.g.: removing punctuation, numbers and stop words)	187
3. Creating Term-Document Matrix	188
4. Mapping Words in Corpus to Dictionary Words . .	188
5 Conclusion	189
5.1 Introduction	189
5.2 Summary of the Main Findings	189
5.2.1 Overconfidence and IPO Performances	190
5.2.2 Social Moods and IPO Performances	191
5.2.3 Media Tones and IPO Underpricing	191
5.3 Implications of the Study	192
5.4 Limitations of the Study	193
5.5 Directions for Future Research	195
Bibliography	197

List of Figures

1.1	Global Phenomena of IPO Return Anomalies.	3
1.2	Asymmetric Information Models	5
1.3	ASEAN-4 Stock Market Capitalisations	15
1.4	Number of New Listing in ASEAN-4 Markets	16
1.5	Values of New Listing in ASEAN-4 Markets	17
1.6	ASEAN-4 Cultural Profiles	19
1.7	Hofstede (1980, 2001) Cultural Dimensions for ASEAN-4 Countries	20
2.1	Stock Price Movement Stages in the Presence of Overconfidence . .	28
2.2	Distribution of ASEAN-4 IPO Samples by Listing Markets	49
2.3	Distribution of ASEAN-4 IPO Samples by Listing Year	50
2.4	Distribution of ASEAN-4 IPO Samples by Offer Size	51
2.5	Distribution of ASEAN-4 IPO Samples by Firm Size	52
2.6	Distribution of ASEAN-4 IPO Samples by Firm Age	53
2.7	Distribution of ASEAN-4 IPOs by Sector Groupings	54
2.8	3-year Cumulative Abnormal Returns (CAR) of ASEAN-4 IPOs . .	64
2.9	3-year Buy-and-Hold Abnormal Returns (BHAR) of ASEAN-4 IPOs	69
3.1	Social Mood Cycle and Phases	98
3.2	Summary of Literature Findings on Social Mood and Stock Prices .	99
3.3	Classifications of IPOs According to Cultural or Religious Holiday Mood Settings	107
3.4	IPO Sample Distributions by Social Mood Categories	113
3.5	Underpricing of ASEAN IPOs by Social Mood Categories	117
3.6	3-year Abnormal Return of ASEAN-4 IPOs by Social Mood Categories	118
4.1	Role of Media Tone in Stock Market and Related Theories	139
4.2	Procedures to Construct Tone Variables.	157
4.3	Steps in Constructing the ASEAN IPO Dictionary	160
4.4	Most Commonly Used Words Captured by the Loughran & McDon- ald (2011) Dictionary	162
4.5	Most Commonly Used Words Captured by the ASEAN IPO News Wordlist	164
4.6	Distribution of IPOs by Net Tone Score	166
4.7	IPO Underpricing by Net Tone Score	167

List of Tables

1.1	Vital Information on the ASEAN-4 Capital Markets.	13
2.1	Selected Comparative Studies on IPO Underperformance.	34
2.2	Descriptive Statistics of IPO Samples.	56
2.3	Initial Returns of ASEAN-4 IPOs.	59
2.4	3-year Cumulative Abnormal Returns for ASEAN-4 IPOs.	61
2.5	3-year Buy-and-Hold Abnormal Returns for ASEAN-4 IPOs.	66
2.6	Calendar-Time Abnormal Returns for ASEAN IPOs.	72
2.7	Long-Run Performance of ASEAN-4 IPOs Categorised by Listing Year.	74
2.8	Long-Run Performance of ASEAN-4 IPOs Categorised by Firm Characteristics.	76
2.9	Long-Run Performance of ASEAN-4 IPOs Categorised by IPO Characteristics.	77
2.10	Long-Run Performance of ASEAN-4 IPOs Categorised by Sector Groupings.	79
A.1	3-year Cumulative Abnormal Returns for IPOs listed on the Singapore Exchange.	84
A.2	3-year Cumulative Abnormal Returns for IPOs Listed on Bursa Malaysia.	85
A.3	3-year Cumulative Abnormal Returns for IPOs Listed on the Stock Exchange of Thailand.	86
A.4	3-year Cumulative Abnormal Returns for IPOs Listed on Bursa Efek Indonesia.	87
B.1	3-year Buy-and-Hold Abnormal Returns for IPOs listed on the Singapore Exchange.	89
B.2	3-year Buy-and-Hold Abnormal Returns for IPOs Listed on Bursa Malaysia.	90
B.3	3-year Buy-and-Hold Abnormal Returns for IPOs Listed on the Stock Exchange of Thailand.	91
B.4	3-year Buy-and-Hold Abnormal Returns for IPOs Listed on Bursa Efek Indonesia.	92
3.1	Dummy Variables for Social Mood Setting Categories.	108
3.2	Control Variables.	110

3.3	Descriptive Statistics of IPOs Listed in Singapore and Malaysia. . .	115
3.4	Correlations between Underpricing and Continuous Explanatory Variables.	120
3.5	Correlations between 3-year Cumulative Abnormal Return and Continuous Explanatory Variables.	121
3.6	Social Mood Around Weekend and IPO Underpricing in ASEAN-4 .	123
3.7	Social Mood Around Short Cultural or Religious Holidays and IPO Underpricing in ASEAN-4	124
3.8	Social Mood Around Long Cultural or Religious Holidays and IPO Underpricing in ASEAN-4	125
3.9	Social Moods and IPO Underpricing in ASEAN-4	128
3.10	Social Moods and IPO Underperformance in ASEAN-4	129
C.1	Cultural and Public Holidays in ASEAN-4 Countries.	133
4.1	Impact of Positive Sentiment Carried by Positive Media Tone on Stock Market Activities (Excluding IPOs).	141
4.2	Impact of Negative Sentiment Carried by Negative Media Tone on Stock Market Activities (Excluding IPOs).	143
4.3	Impact of Sentiment Carried by Media Tone on IPO Activities. . .	146
4.4	Definitions of Main Independent Variables used in Determining the Relationship of News Tone and Underpricing in ASEAN	151
4.5	Characteristics of News Tones for IPOs Listed in Singapore and Malaysia During 2000 to 2013.	165
4.6	Descriptive Statistics of IPOs Listed in Singapore and Malaysia During 2000-2013.	169
4.7	Correlations between Underpricing and Tone Variables.	170
4.8	Determinants of Initial Returns for IPOs Listed in Singapore and Malaysia.	172
4.9	Determinants of Initial Returns for IPOs Listed in Singapore and Malaysia Using the Loughran & McDonald (2011) Dictionary as Main Explanatory Variables	174
4.10	Determinants of Initial Returns for IPOs Listed in Singapore and Malaysia Using ASEAN IPO News Dictionary as Main Explanatory Variables	176
4.11	Determinants of Initial Returns for IPOs Listed in Singapore and Malaysia Using Brau, et al (2016) and Harvard-IV 4 Dictionary as Main Independent Variables	181
4.12	Robustness Test: Principal Component Analysis	182
D.1	ASEAN IPO Dictionary - Positive Word List.	185
D.2	ASEAN IPO Dictionary - Negative Word List.	186
5.1	Summary of Empirical Studies.	196

Abbreviations

ACE Market	A ccess, C ertainty and E fficiency Market
ACIA	A SEAN C omprehensive I vestment A greement
AEC	A SEAN E conomic C ommunity
AFTA	A SEAN F ree T rade A rea
ANOVA	A nalysis of V ariance
AR	A bnormal R eturn
ASEAN	A ssociation of S outh E ast A sian N ations
BCM2016	B rau, C icon and M cQueen (2016)
BTM	B ook-to- M arket
CAR	C umulative A bnormal R eturn
EWBHAR	E qually-weighted B uy-and- H old A bnormal R eturn
EWCAR	E qually-weighted C umulative A bnormal R eturn
FBM KLCI	F TSE B ursa M alaysia K uala L umpur C omposite I ndex
FF3F	F ama and F rench (1003) 3 - F actor
GDP	G ross D omestic P roducts
GNI	G ross N ational I ncome
HIV4	H arvard I V- 4 D ictionary
HML	H igh- m inus- L ow
IND	I ndividualism
IPO	I nitial P ublic O ffering
JCI	J akarta C omposite I ndex
LEAP Market	L eading E ntrepreneur A ccelerator P latform M arket
LM2011	L oughran and M cDonald (2011) D ictionary
OECD	O rganisation of E conomic C o-operation and D evelopment

OLS	Ordinary Least Squares
PCA	Principal Component Analysis
PDI	Power Distance
SET	Stock Exchange of Thailand
SMB	Small-minus-Big
STI	Straits Times Index
TDM	Term-Document Matrix
UAI	Uncertainty Avoidance
UK	United Kingdom
US	United States of America
VWBHAR	Value-weighted Buy-and-Hold Abnormal Return
VWCAR	Value-weighted Cumulative Abnormal Return
WLS	Weighted Least Squares
WR	Wealth Relative

*This is for Allahyarham Tok Wan
Haji Aziz bin Haji Ahmad
who inspired it all,*

*Mak - Khodijah Aziz,
Ayah - Mohd. Ya'akub Abdul Karim,*

*and my dearest son
Adam Khairy.*

*My dear, life is full of ups and downs.
But always count on your blessings,
and never give up.*

*Be honest and be brave,
even if it hurts.*

Chapter 1

Introduction

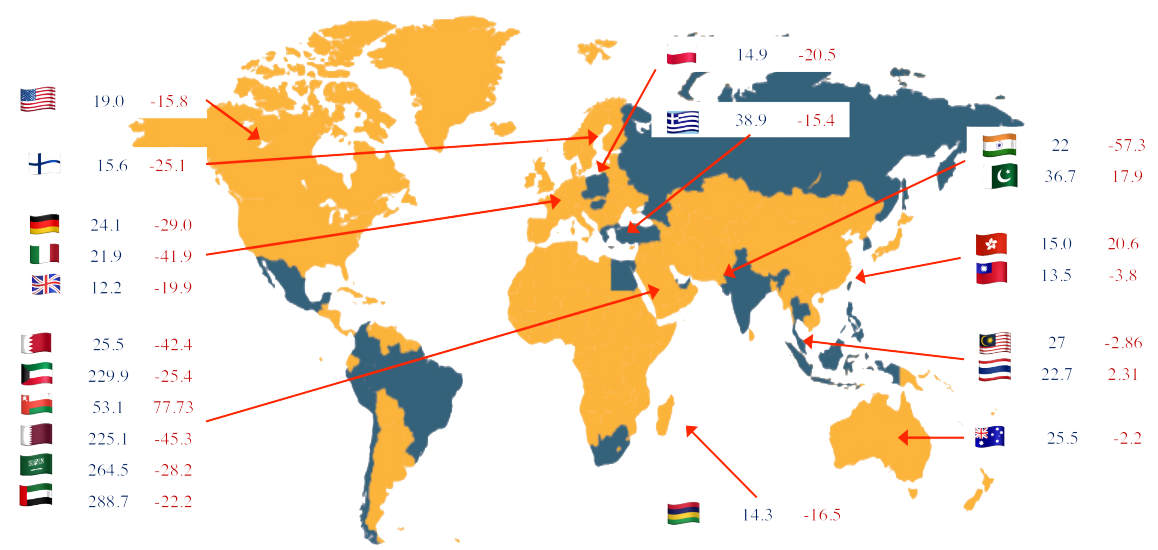
1.1. Research Background

Initial public offerings (IPO) is an avenue for firms to raise capital through the issuance of new equities, thus stimulating growths for those firms. Listing enhances the visibility and credibility of a firm, as publicly listed firms are deemed to be highly reputable. Listing also enhances liquidity for existing shareholders, as well as serving as an exit strategy for current shareholders where they can divest their holdings by selling shares to new investors. To some firms, going public serves as a restructuring strategy where it allows ownership diversification. As ownerships can be diluted through the listing, the increased public ownership reduces the possibility of the management being challenged by unscrupulous shareholders, thus enable them to maintain their credibility.

The IPO stock market has now been studied in the financial economics literature for over three decades (Costa et al. 2013). The literature suggests three common and persistent anomalies of IPO stocks. The first two anomalies are related to IPO performances; namely, the first-day *underpricing* and long-run *underperformance*. The former reflects the abnormally high return at the end of the first day of going public and is a global phenomenon that occurs in all time periods (Loughran et al. 1994, Boulton et al. 2010). The level of underpricing varies between the markets and times of offering, where higher underpricing is observed more frequently in emerging markets than in more advanced markets (Ritter & Welch 2002, Lyn & Zychowicz 2003, Kirkulak & Davis 2005, Chi & Padgett 2006, Gao 2010, Guo et al. 2010).

The second return anomaly, underperformance, refers to the negative abnormal returns, commonly measured three-years aftermarket. The stylised fact is that IPOs tend to exhibit lower abnormal returns, or underperform, their benchmarks in the long run. The third anomaly, the *hot-* and *cold-issue* market phenomenon, is concerned with high IPO activities which tend to be concentrated around the time when initial returns are high. For example, Ibbotson et al. (1994) and Lowry & Schwert (2002) report a positive association between IPO underpricing and future IPO activity, where periods of high volume tend to follow periods of high initial returns. Hot or cold issue markets are when IPO activities exhibit significant, and to some extent, predictable variations over time (Ritter 1991, Ljungqvist et al. 2000).

Studies on IPO return anomalies have been conducted globally, as shown in Figure 1.1. Noticeably, evidence of underpricing exists in all market studies. Extremely high underpricing is seen in some countries in the Gulf Region, namely Qatar (225.1%), Kuwait (229.9%), Saudi Arabia (264.5%) and United Arab Emirates (288.7%) (Alanazi & Al-Zoubi 2015). The authors attribute the phenomena to institutional factors. In general, IPOs in the frontier and emerging markets are more highly underpriced than IPOs in advanced markets. Interestingly, the evidence of IPO underperformance is not as consistent as that of underpricing. Although the majority of the selected studies report *underperformance*, IPOs in some markets *overperform*. For example, Oman IPOs massively overperform at 77.7% (Alanazi & Al-Zoubi 2015). Pakistan and Thailand IPOs also overperform at 17.9% (Komenkul & Siriwattanakul 2016) and 2.31% (Mumtaz et al. 2016), respectively. In the light of this global phenomenon, the likely questions that arise are *why are IPOs consistently underpriced? What are the common factors that contribute to these anomalies?*



This figure shows examples of underpricing and underperformance phenomena globally. The teal blue areas on the map represent emerging markets. IPO (initial returns (underpricing) are marked in blue fonts, and long-run abnormal returns (under- or overperformance) are shown in red.

Map source:
<https://www.msci.com/msci-emerging-markets-ex-china-index>

Figure 1.1:
Global Phenomena of IPO Return Anomalies.

The pivotal explanation to the IPO underpricing anomaly has revolved around the information asymmetry between parties involved in IPO transactions, namely the issuing firm, underwriter and investors. The underpricing phenomenon has been widely explained by four core theories of asymmetric information, as graphically represented in Figure 1.2. In the *winner's curse* theory, Rock (1986) argues that issuing firms underprice their IPOs to compensate uninformed investors who may suffer from adverse selections where they select IPOs that informed investors are trying to avoid. These 'bad' firms underprice to attract uninformed investors. In contradiction, the *signalling* theory (Ibbotson 1975, Allen & Faulhaber 1989, Grinblatt & Hwang 1989, Welch 1989, 1996) suggests that managers use underpricing to signal the quality of their firms. Only big firms can afford to forego huge amounts of money raised during the initial listing and recover the money during a seasoned offering. This move will be costly to low-value firms. As such, investors are more likely to be convinced to invest in firms with high underpricing as they are more confident with the reputation of high-value firms.

Information asymmetry can also exist between the issuing firm and underwriters. In an IPO deal, underwriters are legally responsible for placing all the issued shares to investors. Thus, the *principal-agent* theory (Baron & Holmström 1980, Baron 1982) posits that underwriters underprice to protect themselves from the risk of failing to allocate all shares to investors. In short, underpricing is used as a mechanism to attract investors to the IPO. In some situations, underwriters believe that some investors are more informed by them. Hence, underpricing serves as a *marketing strategy* (Benveniste & Spindt 1989), where underwriters underprice to entice these investors to reveal more information about their perceptions towards the prospects of the issuing firm during the bookbuilding process.

Another school of thoughts explains underpricing from an institutional, and ownership and control points of view. With regard to the former, Logue (1973), Ibbotson (1975) and Tinic (1988) suggest that underwriters, accountants and auditors underprice to mitigate potential litigations by shareholders, who have the power to sue them on the basis of misstatement or omission of material facts from the IPO prospectus (Jenkinson et al. 2001). From an ownership point of view, underpricing serves as a means of retaining control (Brennan & Franks 1997) and reducing agency costs (Stoughton & Zechner 1998). Importantly, Ritter (1984) and Beatty & Ritter (1986) link high information asymmetry with high ex-ante uncertainty. By investing in IPOs they have little information about, investors

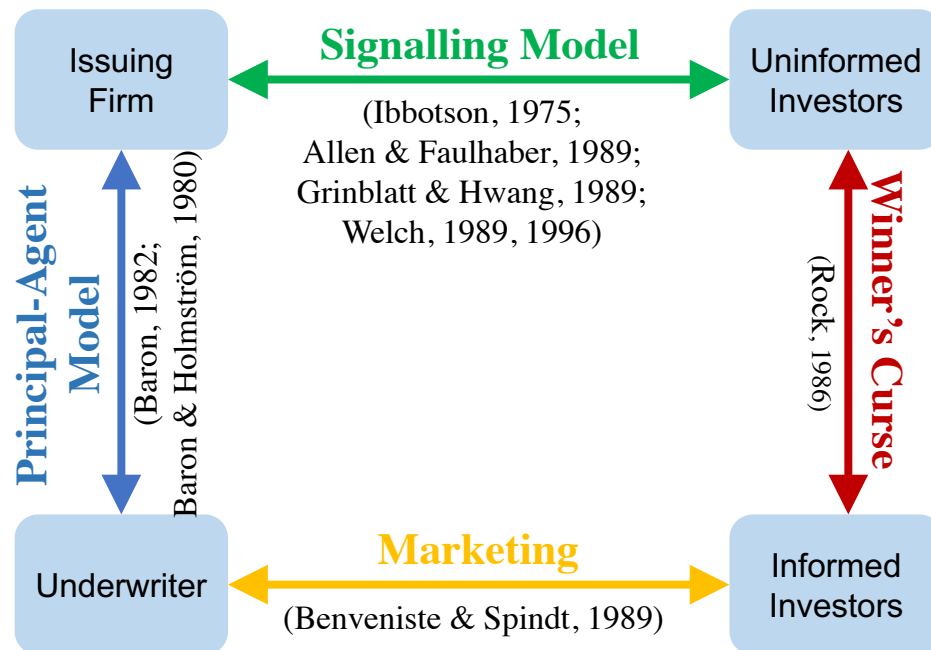


Figure 1.2:
Asymmetric Information Models

are essentially taking risks, hence expecting high returns to compensate for those risks. Overall, managers who are concerned about optimising the capital raised from a listing should aim to reduce information asymmetry between themselves and underwriters and/or investors.

In a seminal paper, Ritter (1991) shows evidence that despite the high underpricing, IPOs tend to underperform in the long-run.¹ This phenomena invalidates the Efficient Market Hypothesis (Malkiel & Fama 1970) that assumes all information is reflected in stock prices, hence defying the notion that investors are fully rational. Thus, researchers attempt to explain underperformance from a behavioural standpoint. Ritter (1991) proposes that investors are initially overoptimistic about the future value of an IPO stock, causing the prices to overreact. In the long-run, price reversal occurs as overoptimistic investors reverse their valuations of the IPO stocks following the arrival of more information. The major takeaway

¹In this study, Ritter (1991) uses a sample of 1,526 US IPOs listed from 1975 to 1984. The results are robust to the event- and calendar- time approaches of event study methodology. The author also conducts a cross-sectional analysis for further robustness. The key findings are that underperformance cannot be generalised like underpricing, and that human behavioural biases drive the underperformance anomaly.

from the literature is that the IPO market is subject to investors' overoptimism (Miller 1977) and *fads* behaviour (Aggarwal & Rivoli 1990).

Since Ritter (1991), more researches focusing on behavioural explanations of underpricing have emerged. Traditional theories, despite being extensively supported by the literature in explaining underpricing; fail to offer a concrete explanation of the underperformance phenomena. Humans are not free from cognitive and behavioural biases as their cognitive evaluations tend to be influenced by emotional reactions that may dominate the decision process (Loewenstein et al. 2001, Nofsinger 2005). Thus, investors are less than rational, and this characteristic is reflected in their financial decision-making process. Białkowski et al. (2012), Saade (2015), Vokrman & Kristoufek (2015) and You et al. (2018), among others, find significant links between investor overoptimism with IPO underpricing and underperformance, lending support to Ritter (1991).

Taking a cue from this development, this thesis continues the debate by examining the role of behavioural and cognitive biases in the process of IPO valuation. Importantly, this thesis concentrates on the Southeast Asian region, where, despite the respectable size of IPO literature focusing on IPOs in this region (Ahmad-Zaluki et al. 2007, Ahmad-Zaluki & Kect 2012, Utamaningsih et al. 2013, Komenkul & Siriwattanakul 2016, Komenkul & Kiranand 2017), the discussions on behavioural aspects still needs further attention. To the best of my knowledge, none of the above-mentioned studies brings forward an in-depth behavioural explanation to IPO return anomalies. Furthermore, these studies only focus on a single market such as Malaysia (Ahmad-Zaluki et al. 2007, Ahmad-Zaluki & Kect 2012), Indonesia (Utamaningsih et al. 2013, Utamaningsih 2017) and Thailand (Komenkul & Siriwattanakul 2016, Komenkul & Kiranand 2017). To the best of my knowledge, Komenkul & Kiranand (2017) is the first and only comparative study that solely focuses on IPOs in Association of Southeast Asian Nation (ASEAN) member states. Such a study allows for more reasonable and meaningful comparisons among the member states, which will be useful to streamline policies and to build optimal investment strategies in the region.

The scarcity of comparative studies on ASEAN capital markets is rather surprising, particularly in the light of the strong economic co-operation in this region through a number of initiatives championed by ASEAN. Focusing on the Healthcare and Pharmaceutical IPOs, Komenkul & Kiranand (2017) only compare the IPO performances, without further discussing the behavioural aspects. Hence, the

patterns of investor behaviours in the broad ASEAN markets are still unknown. This thesis extends the debate by examining and comparing the broad IPO markets among ASEAN member states from the behavioural standpoint. To the best of my knowledge, no similar studies have been conducted, particularly one that focuses on this region.

The ASEAN region makes a suitable setting for such a study as there are variations in market characteristics among the countries in this region. Importantly, this region is diverse in terms of cultural profiles, a crucial element that shapes human perceptions and behaviours (Hofstede 1980, 2001). Cultural values have been found to shape business attitudes (Haniffa & Hudaib 2006, Costa et al. 2013, Ucar 2015). In the IPO domain, Costa et al. (2013) find that cultural profiles affect investors' valuation of IPOs.² Motivated by this finding, this thesis takes advantage of the multicultural setting in this region. Importantly, previous studies focusing on the ASEAN region have not extensively discussed the role of culture in shaping IPO investors' behaviour. Given that IPO return anomalies reflect inefficiency in pricing IPO stocks, which may result in firms 'leaving too much money on the table' (Ritter 1991), firms with high underpricing may not raise an optimal amount of capital from the listings. To mitigate this situation, continuous development in this area of research is essential in order to further investigate other possible explanations to the return anomalies, to enable firms to build more effective strategies for listings in the future.

In light of the ASEAN economic integration, this study is deemed crucial, given the potential challenges to further streamline economic policies among the member states. A comparative study provides an avenue for meaningful comparisons of IPO behaviours between ASEAN member states, hence allowing a better understanding of investor behaviours. While single-market studies answer the question of how an IPO perform in a particular period of time, it does not answer the question of how different can IPOs in a market perform as compared to other markets. As will be further explained in Section 1.3, the ASEAN-4 markets vary in terms of market and cultural characteristics. With regard to the former, ASEAN-4 is a mixed of developed (Singapore), advanced emerging (Malaysia and Thailand) and secondary emerging (Indonesia) markets. In terms of culture, each country consists of a different composition of populations, making them not only rich in

²Using the Hofstede (1980, 2001) cultural dimension matrix, Costa et al. (2013) report that IPOs in countries with high *power distance* and high *long-term orientation* tend to be more underpriced, and significantly lower in the context of high *uncertainty avoidance*.

cultural diversities but also culturally different from each other. The debates in this thesis revolve around these two premises, as market and cultural characteristics may play roles in variations in IPO performances across the markets.

Existing studies, although reporting the IPO performance in some ASEAN markets, only focus on a single market. Thus, they do not answer the question of *can IPOs behave differently in the same time period, given varying market and cultural characteristics. If they do, how different can their behaviours be?* As a comparative study such as this focuses on the same period of times, it allows direct and more meaningful comparisons between all the markets in question. The findings of this thesis are essential for investors, corporate managers and policy makers to assist them in their decision-making process. For the former, this thesis may assist them to build optimal portfolios to better suit their risk-reward preferences. Corporate managers may use this thesis as a guide when deciding the optimal time to list, according to their corporate objectives. For the latter, the economic integration process may be further improvised based on the better understanding of the different market characteristics of the member states.

1.2. Aims, Motivations and Contributions

The direction of this thesis is motivated by the diverse market and cultural characteristics among ASEAN member states. The broad aim of this thesis is to examine and to compare the behaviours of IPO investors in ASEAN and how these behaviours impact IPO valuations. The questions are answered through three separate empirical studies; each has its own literature review, research methodology and empirical findings, to meet their specific objectives. The questions are divided into three streams. The first stream concerns overconfidence, the salient characteristics of human behaviour (Daniel et al. 1998). In particular, the study attempts to answer the following questions: *Do investors in ASEAN market exhibit overconfidence behaviour? If so, are there any variations in the behaviour among investors in the different ASEAN markets? Does any group of investors exhibit higher overconfidence behaviour than the other groups?*

Despite the respectable number of comparative studies on IPO long-run performance, to the best of my knowledge, they do not directly evaluate and compare overconfidence behaviours between the markets studied. Thus, little is known

about whether investors in one country exhibit stronger overconfident behaviour than their counterparts in another country in reacting to new share listings. This thesis contributes to the literature by being one of the earliest studies to provide direct and meaningful comparisons of overconfidence behaviours among countries within the ASEAN region, given varying market and cultural environments. The comparison allows us to understand how human overconfidence behaviours may vary given diverse environments.

The second stream of question this thesis attempts to answer is *whether social mood affects investors' valuation of IPO stocks in ASEAN. If so, would different social mood settings change investors' level of optimism in valuing IPOs?* Further, the thesis aims to understand whether investors exhibit variations in behaviour given particular social mood settings, which may lead to them valuing IPOs differently. *Social mood* is the term used for the collective moods around a specific time period, for example, turn of the week, cultural holidays and religious holidays. This study may provide a further understanding of how cultural elements play a role in inducing behavioural biases such as overoptimism, which have been found to cause stock price overreactions. This stream of literature is positively expanding, but studies focusing on culture-rich Southeast Asia are still limited. In particular, comparative studies of this region are still almost non-existent, thus making this study an important contribution to the growing literature. This study is one of the first to focus on mixed cultural contexts. Furthermore, the majority of the existing studies typically examine moods around a single mood setting, but this study considers different mood settings, allowing readers to understand that humans perceive some calendar events as more important than others, and the intensity of their emotions fluctuate around the various events.

Finally, the third stream of questions revolves around how the media shape investors' IPO valuations through news tone. With regard to this, the main question of interest is *whether media tones shape investors' valuation of IPO stocks. If they do, what kind of tone(s) is (are) influential in shaping investors' perception and investment decision-making? Are there differences in how investors perceive media tone?* This thesis, especially being a comparative study, is novel in researching a setting where English is not the first language. It is one of the earliest to test the applicability of the Loughran & McDonald (2011) Dictionary, the instrument used to measure media tone, in the Southeast Asian setting. The dictionary was built around the English speaking context. Given its comparative nature, this study

further contributes to the knowledge by showing how humans in diverse country contexts interpret the meaning of words differently. This study also contributes to the construction of a new dictionary that may be usable in other ASEAN contexts.

Broadly speaking, the studies in this area are essential for the development of the body of knowledge as one of the earliest to collectively examine unavoidable elements in human lives, namely overconfidence behaviour, moods and language. Importantly, the studies are conducted in a multi-country setting, each of which has its unique cultural characteristics and local variants of English. This allows understanding whether these two elements influence investors' perceptions of the meaning of news.

1.3. The Context of ASEAN

1.3.1 The ASEAN Economy

The Association of Southeast Asian Nations (ASEAN) was formed on the 8 August 1967. Through multilateral co-operation, ASEAN aims to promote economic growth, social progress and cultural development in the Southeast Asian region. Originally, it consisted of five member states, namely Indonesia, Malaysia, the Philippines, Singapore and Thailand. Later when Brunei, Cambodia, Laos, Myanmar and Vietnam joined the co-operation, ASEAN became an establishment consisting of ten member states. The beginning of deeper co-operation between ASEAN member states began in 1992 with the establishment of the ASEAN Free Trade Area (AFTA) to foster the regional economy.

For decades, ASEAN has offered convenient access to a ten-country geo-economic alliance, making the region an attractive place in which to do business. ASEAN attracts foreign direct investments through appealing factors such as positive economic and industrial growths, supported with economic transformations. Political stability, business-friendly governments and conducive tax environments further contribute to the appeal factor. These are supported by good infrastructures, integrated supply chains, competitive cost structures and labour supplies. Given these factors, it comes as no surprise that ASEAN attracted more than 1,000 companies from more than 30 countries to set-up regional headquarters in the region (PriceWaterhouse Coopers, 2008). According to the same report, more

than 80% of Fortune 500 companies operate in the region, taking advantage of the conducive economic environment that ASEAN has to offer.

The ASEAN economy rebounded since the Asian Crisis that adversely affected the region from 1998 to 1999. Since 2000, ASEAN has undergone rapid growth, remained resilient in the aftermath of the 2008 global financial crisis, and is now emerging as one of the world's largest economic zones. In 2013, the value of ASEAN gross domestic products (GDP) was US\$2.4 trillion, making it the seventh largest economy in the world. The average GDP growth rate for ASEAN-4 in the same year was 5.1%, the third largest in the world just behind China and India. The same rate was reported for 2016, and the Organisation for Economic Co-operation and Development (OECD) forecast that the ASEAN GDP will grow at the average annual rate of 5.2%. The global management consultancy firm, McKinsey, predicted that the ASEAN economy would soar to rank as the world's fourth largest by 2050.

ASEAN strives to enhance the regional economic co-operation through the ASEAN Economic Community (AEC), that promotes inclusive and innovation-led economic growth. When fully implemented in 2025³, ASEAN will become an integrated and single investment destination, offering investors a market reach of 600 million people.

1.3.2 The ASEAN Capital Market

The economic integrations among ASEAN member states extend to the capital markets. Through the introduction of the ASEAN Comprehensive Investment Agreement (ACIA) in 2012, the investment opportunities in the region are further enhanced by means of liberalisation, protection, promotion, and facilitation of investments. The effort is further enhanced by the introduction of the ASEAN Exchange, a trading link system that aims to streamline investments on seven exchanges from six Southeast Asian countries, viz Indonesia, Malaysia, the Philippines, Singapore, Thailand and Vietnam. Established in 2012, the ASEAN Exchange promotes the growth of the ASEAN capital market through the introduction of ASEAN-centred investment products and cross-border harmonisation

³In 2017, ASEAN members adopted the AEC 2025 Consolidated Strategic Action Plan to implement the 2025 AEC Blueprint. The Strategic Action Plan aims to foster regional integration by increasing trade and investment; integrating micro, small and medium-sized enterprises into the digital economy; and developing an innovation-driven economy.

that enables investors to trade stocks more conveniently on the seven exchanges. Currently, three stock exchanges have already been connected through the ASEAN Exchange, namely the Singapore Exchange, Bursa Malaysia and the Stock Exchange of Thailand.

In terms of establishment, the stock markets in ASEAN are relatively young compared to the US and the UK stock markets. Singapore, Malaysia and Indonesia are the largest stock markets in the region, with a market capitalisation of more than 100% of the gross domestic products (GDP). The size of the Thailand and Philippines stock markets is more than 80% of their GDPs. Only these five capital markets are well-established and have made significant contributions to the ASEAN economy. The establishment of stock markets in other member states is still in its infancy. Vietnam has two stock exchanges, namely the Ho Chi Minh City and the Hanoi Stock Exchanges. However, market capitalisation is still small and has minimal impact on the economy. In Laos, the securities exchange was established in 2011 and currently lists only four firms. Cambodia has only established a stock exchange in 2012, currently listing only one firm, while the Myanmar Securities Exchange only lists two firms. On the other hand, Brunei does not have a stock market as the economy is highly dependent on the petroleum industry.

Being young and small capital markets, Vietnam, Cambodia, Myanmar and Laos are not suitable for comparisons as the data may be insufficient. For the Philippines market, despite being well established, some important data are not publicly available. For example, the listing price for some IPOs is not accessible on the public domain. This data is required to calculate initial returns. Besides, the government borrowing rate that is commonly used as a proxy for the risk-free rate is also not obtainable on the public domain. This data is required to calculate the excess returns, particularly useful in determining the calendar-time abnormal returns of the IPOs. The lack of data may lead to the elimination of a significant number of samples. Thus, this may be problematic for econometric analyses, as the results may be less concise and not sufficient for meaningful comparisons. For these reasons, this thesis focuses on the largest four capital markets in the region, namely Singapore, Malaysia, Thailand and Indonesia. In this study, the four countries are collectively referred to as the *ASEAN-4*.

Table 1.1

Vital Information on the ASEAN-4 Capital Markets.

The table summarises vital information about the capital markets in Singapore, Malaysia, Thailand and Indonesia, respectively. Information is sourced from the official websites of the respective stock exchange as follows: (1) Singapore Exchange (<https://www.sgx.com>); (2) Bursa Malaysia (<http://www.bursamalaysia.com>); (3) The Stock Exchange of Thailand; (4) Bursa Efek Indonesia (<http://www.idx.co.id>); and the Bloomberg Terminal.

Variables	The Singapore Exchange	Bursa Malaysia	The Stock Exchange of Thailand	Bursa Efek Indonesia
Establishment	1973	1964	1975	1982
Main Market	Singapore Exchange Main Market	Bursa Malaysia Main Market	The SET Market	The <i>Utama</i> Board
Alternative Markets	Catalist Market	Access, Certainty, Efficiency (ACE) Market Leading Entrepreneur Accelerator Platform (LEAP) Market	Market of Alternative Investments	The <i>Pengembangan</i> Board
Number of Listed Security	745	919	538	534
Main Benchmark Index	The Straits Times Index (STI)	FTSE Bursa Malaysia Kuala Lumpur Composite Index (FBM KLCI)	The Stock Exchange of Thailand Index (SET)	The Jakarta Composite Index (JCI)
Market Capitalisation (US\$ billion, 2018)	392.96	270.26	544.30	440.23
Development Stages	Developed	Advanced Emerging	Advanced Emerging	Secondary Emerging

Table 1.1 summarises the vital information about the ASEAN-4 capital markets. The ASEAN-4 markets consist of the Singapore Stock Exchange, Bursa Malaysia, the Stock Exchange of Thailand and the Jakarta Stock Exchange. The exchanges were established between the 1960s and 1980s, making these markets the oldest in ASEAN. The oldest market among the four countries is Malaysia, established in 1964 as the Kuala Lumpur Stock Exchange. The Singapore capital market was established in 1973 following its separation from the Malayan Federation in 1965. Two years later, Thailand established its stock market, followed by Indonesia in 1982.

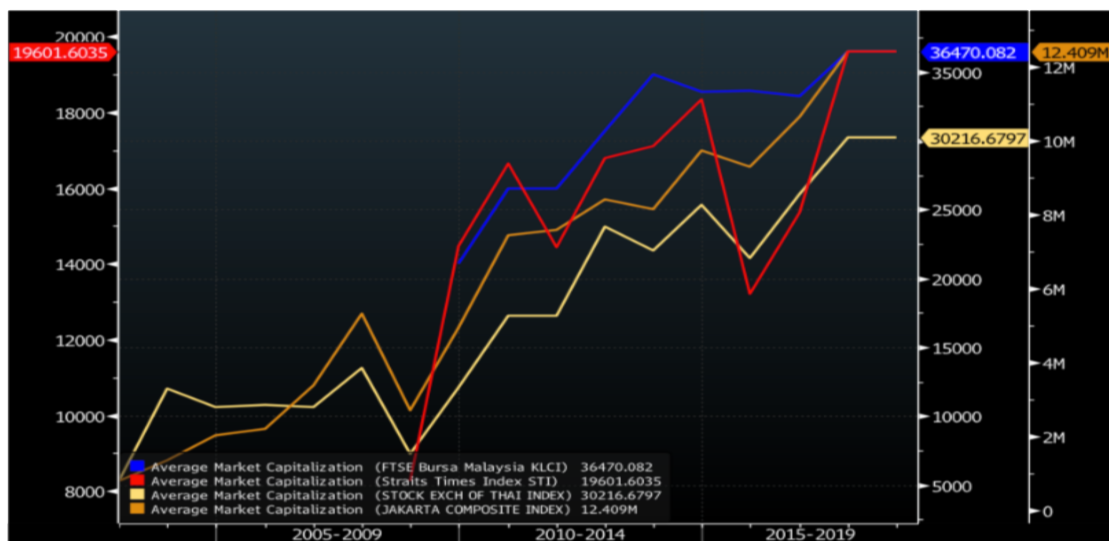
Each market consists of the main and alternative markets. The former typically houses large and better-established firms, with proven track records.⁴ The alternative markets are typically more lenient in terms of listing requirements, where firms are not required to have a financial track record to list, hence providing avenues for younger firms to raise capital through equity shares. The alternative markets mainly consist of technology and growth firms. The Leading Entrepreneur Accelerator Platform (LEAP) Market on Bursa Malaysia caters for small and medium enterprises (SMEs) that aspire to have better access to capital. Due to the characteristics of stocks listed on the alternative markets, IPOs in this market are more prone to ex-ante uncertainties. Accordingly, underpricing tends to be higher on these markets as firms need to compensate investors for the risk borne by them by investing in these riskier firms (Ahmad-Zaluki & Kect 2012, Komenkul et al. 2017).

Among the four stock exchanges, Bursa Malaysia caters for the highest number of listed companies (919), followed by the Singapore Stock Exchange (745). The Stock Exchange of Thailand and Bursa Efek Indonesia each hosts just over 500 listed firms. The Straits Times Index (STI), the FTSE Bursa Malaysia Kuala Lumpur Composite Index (FBM KLCI), the Stock Exchange of Thailand Index (STE) and the Jakarta Composite Index (JCI) serve as the primary barometer to check the market performances in Singapore, Malaysia, Thailand and Indonesia, respectively. In terms of size, the Thai capital market is currently the largest in ASEAN-4, with the market capitalisation of US\$ 544.30 billion in September 2018.

⁴The minimum age requirement for firms to list on ASEAN-4 main markets is three years from the date of incorporation.

This is followed by Indonesia (US\$ 442.23 billion) and Singapore (US\$ 392.96 billion). The Malaysian capital market (US\$ 270.26) is the smallest in ASEAN-4 in terms of market capitalisation.

A very interesting point to note is that the four ASEAN markets belong to various market classification as per Thomson Reuters Lipper Global Classification, obtained from the Datastream database. Singapore is classified as a *developed* market; Malaysia and Thailand are *advanced emerging*; and Indonesia is a *secondary emerging* market. The classification reflects the market accessibility and the efficiency of information dissemination in the respective markets. Importantly, Ritter (1991) argues that asymmetric information ties to ex-ante uncertainty. Higher information asymmetry reflects higher ex-ante uncertainty, which subsequently reflects higher costs of capital. As ASEAN-4 market consists of a mixture of market development stages, it warrants for a comparative study that examines investors' reactions towards IPOs in the short- and long-run.

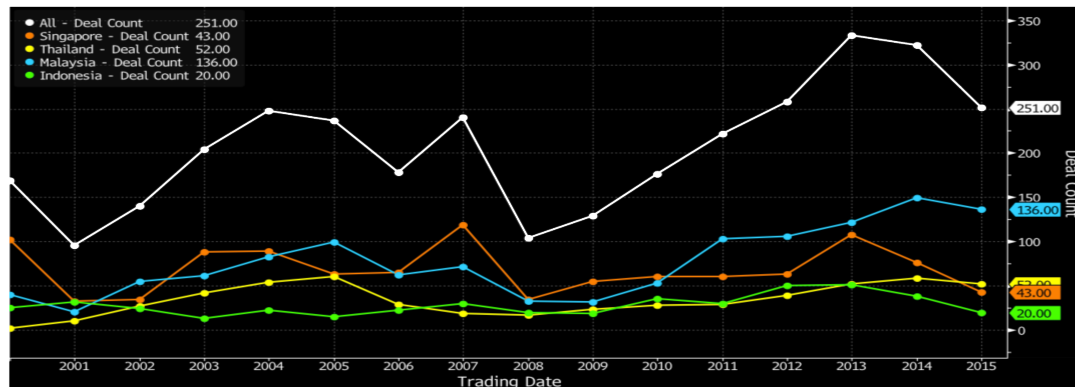


Source: The Bloomberg Terminal

Figure 1.3:
ASEAN-4 Stock Market Capitalisations

As illustrated in Figure 1.3, the ASEAN-4 stock markets have been expanding steadily from 2000 to 2018. They are projected to grow in the coming year, with the exception of the Singapore market that appears to be somewhat volatile. The STI market capitalisation plummeted in 2014 in response to the oil price crisis during that time. Noticeably, the lines for the STI and FBM KLCI only begin midway on the graph. This is due to the market reforms in the two markets that

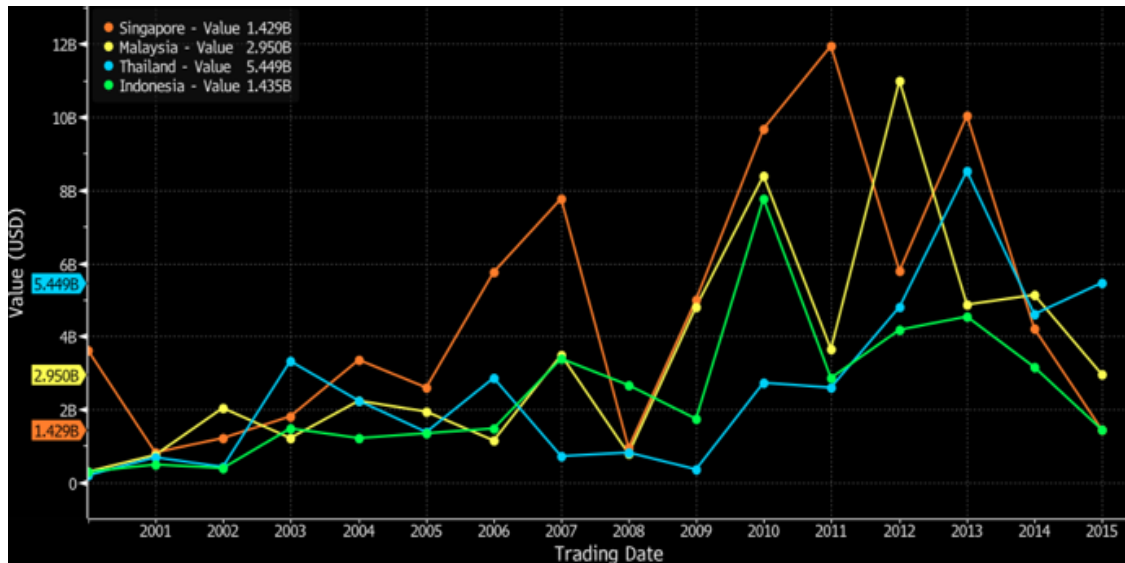
took place in 2008. In line with its market size, Thailand has the most active stock prices, recording 81.5 billion trading volume. The stocks are traded mainly in the home currency of each market. An interesting point to note is that ASEAN-4 markets differ in terms of capital market development stages. Singapore is the only developed market in the region as per the Thomson Reuters' classification. Malaysia and Thailand are advanced emerging markets, while Indonesia is a secondary emerging market.



Source: The Bloomberg Terminal

Figure 1.4:
Number of New Listing in ASEAN-4 Markets

The IPO markets in ASEAN-4 have been growing steadily in recent decades. From 2000 to 2015, the IPO markets have been relatively active and stable (see Figure 1.4). Although Thailand and Indonesia are larger in terms of total stock market capitalisations, Singapore and Malaysia have been more active in terms of listing activities. From 2000 to 2004, there was an uptrend in the ASEAN-4 IPO activities. Unsurprisingly, in 2008 the ASEAN-4 IPO slumped following the US Subprime Crisis. Post-crisis, the IPO activities regained momentum as the ASEAN-4 markets rebounded from 2009 through 2013. The ASEAN-4 IPO activities were at their peak in the same year, with a total of 333 IPO listing collectively in the region. The IPO market eased from 2013 to 2015 but was still more active than the previous three years.



Source: The Bloomberg Terminal

Figure 1.5:
Values of New Listing in ASEAN-4 Markets

With regard to IPO value, there had been mixed trends since 2000 as presented in Figure 1.5. There were steady growth trends from 2000 to 2005, before the IPO markets plummeted from 2007 to 2008. In general, the US Subprime crisis had severely impacted the global markets, including ASEAN. Relatively, amongst the ASEAN-4 markets, the worst impact from the US Subprime Crisis is seen in the Singapore IPO market, as exhibited by the significant drop of 87.8% in new listing value, from US\$ 7.78 billion to US\$ 0.95 billion during the period. The drop in new listing value in the market is consistent with the drop in the number of IPO deals as presented in Figure 1.4. The Singapore IPO market is the largest in the ASEAN-4 region. As the overall stock market capitalisations worldwide plummeted during the US Subprime crisis, naturally the highest relative impact is seen in the most active market.

The ASEAN market shows its resilience when IPO values dramatically jumped from 2009 the trend continued through 2010, in particular for Singapore and Malaysia. The value of new deals jumped four times as much as the previous year for Singapore. For Malaysia, the increase was five times as much as the previous year. From 2011 to 2015, there are mixed trends in the IPO values in ASEAN. Singapore, Malaysia and Indonesia IPO values declined from 2014 to 2015. Only the Thai IPO market exhibits an increase in value during the period.

1.3.3 ASEAN Cultural Profiles

The Southeast Asian region is rich in history and diverse in terms of cultural values and religious practices. Figure 1.6 illustrates the diversity of cultures and religious practices among ASEAN-4 markets. The populations in ASEAN-4 collectively make up more than half of the total of 600,000 populations in the region. Indonesia is the largest and most populated country among the member states. Figure 1.6 shows that the ASEAN population is composed by various ethnic groups such as the Chinese (can be found in Malaysia, Thailand and Singapore), the Malays (Indonesia, Malaysia, Singapore and Thailand), and Indians (Malaysia and Singapore). The Thai population also consists of those from the Khmers and the Cambodian ancestries. Malaysia is a largely multiracial country. While Malay, Chinese and Indian are the main ethnic groups, the country's populations are made of various indigenous ethnic groups such as Kadazan, Iban and Melanau that originated from the island of Borneo.

Rooted in the multi-ethnic populations, religious beliefs in ASEAN are equally diverse. For example, Indonesia is a predominantly Muslim country, practised by 90% of the populations. In fact, this country is one of the largest Muslim countries in the world. Islam is also an official religion in Malaysia, where Buddhism, Hinduism and Christianity are largely practised as well. While the majority of populations in Singapore and Thailand practice Buddhism, other religions are also practised in these countries. With the diverse compositions of ethnics and religious beliefs, ASEAN is rich in cultural practices. Uniquely, this multicultural element is assimilated into people's lives. In ASEAN, major festivals from the main cultural and religious groups are collectively celebrated as national holidays.

Culture is commonly defined as 'a set of shared values, norms, beliefs and expected behaviours that are deeply embedded' (Costa et al. 2013, p. 115), thus may have an impact on the way humans align their beliefs and make decisions (Hofstede 1980, 2001). Interestingly, culture can matter for finance and economic studies as it affects the way human perceive a situation and make decisions, hence affecting institutional and resource allocation (Stulz & Williamson 2003). These authors also posit that the values that are predominant in a country depend on its cultural practice.

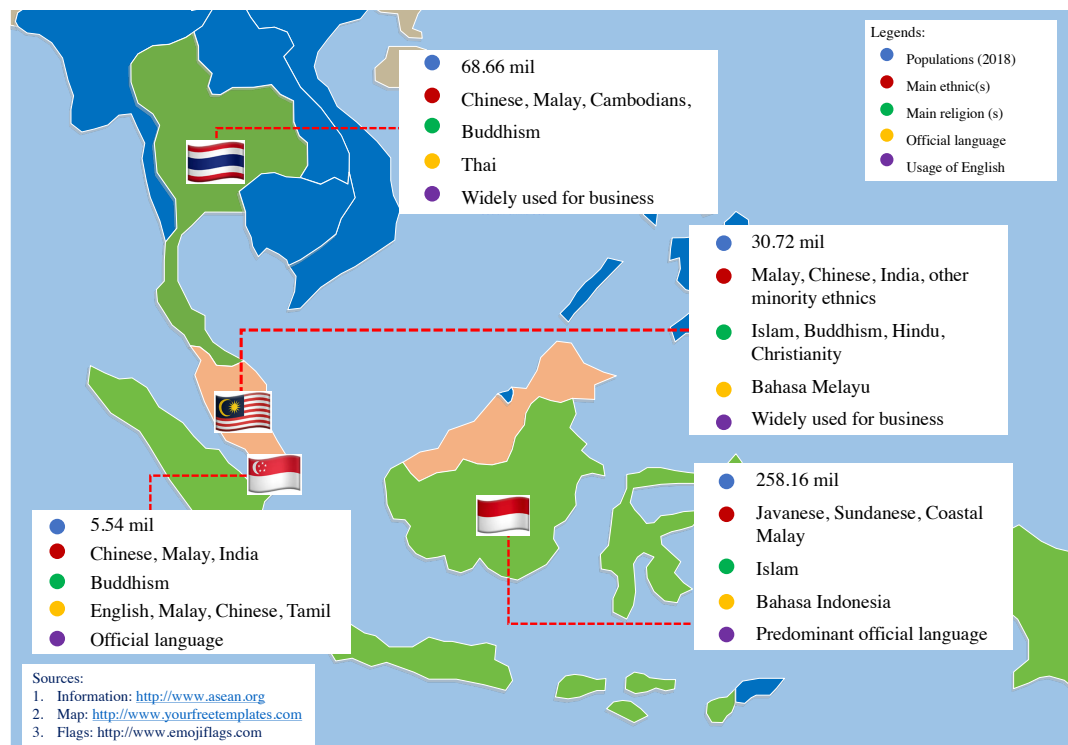


Figure 1.6:
ASEAN-4 Cultural Profiles

For example, in a high-context culture like Asia, communications tend to be more implicit. Verbal messages tend to be indirect, in particular when expressing disagreement. Thus, people in the high-context culture are sensitive towards non-verbal communications such as body languages, silences and pauses, through which people convey meanings. This is different from low-context cultures with Western European roots, such as in the US, UK and Australia, where explicit communications are more valued. People in this culture tend to be more precise with spoken or written words and are more comfortable with direct expressions of disagreements. With regard to IPOs, culture has been shown to have a significant influence on their performances (Costa et al. 2013, Alanazi & Al-Zoubi 2015). Using the Hofstede (1980, 2001) cultural dimensions, Costa et al. (2013) report that countries that score high in the power distance, long term orientation and uncertainty avoidance dimensions are more prone to higher underpricing.

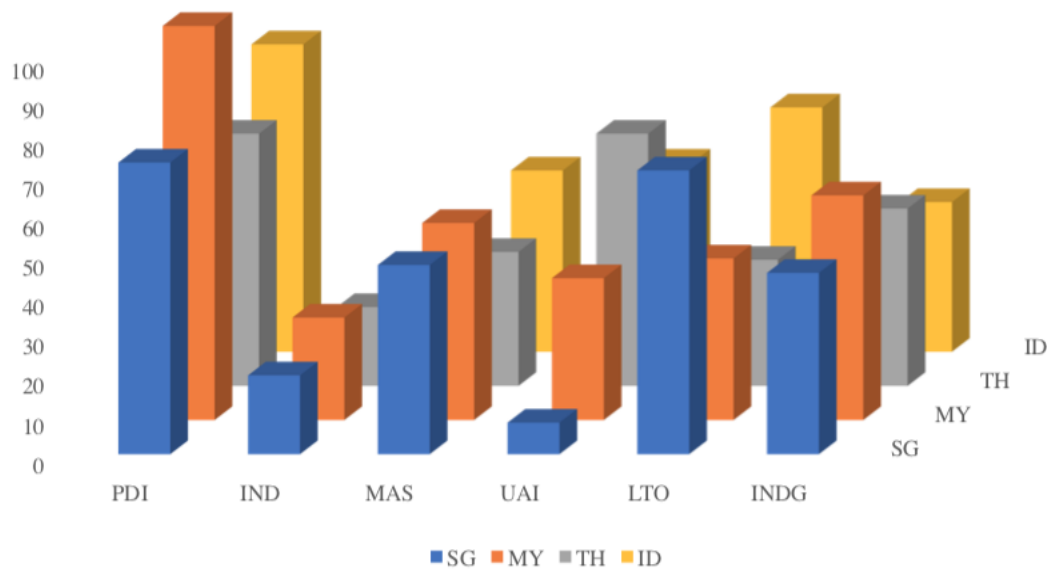


Figure 1.7:
Hofstede (1980, 2001) Cultural Dimensions for ASEAN-4 Countries

ASEAN-4 countries are quite diverse in terms of national cultural profiles, as measured by the Hofstede (1980, 2001)⁵ cultural dimensions, exhibited in Figure 1.7. Noticeably, ASEAN-4 countries are rather high in the *power distance* (PDI) dimension, and very low in *individualism* (IND). Another noticeable characteristic is that Singapore scores very low in *uncertainty avoidance* (UAI) dimension (8), in contrast with Thailand (64). Uncertainty avoidance is related to how comfortable a society is in facing uncertainty and ambiguity (Hofstede 1980). Thus, the high UAI score suggests that the society in Thailand is less tolerant of uncertainties than in Singapore. Drawing from Costa et al. (2013), the heterogeneity in ASEAN-4 cultural profiles warrant for further research to examine how investors in mixed cultural settings respond in an investment environment where asymmetric information is high, such as IPO.

In discussing culture, it is almost impossible to avoid language elements. Studies found dynamic interactions between cultural and linguistic. In the light of the diversity of ASEAN culture, various languages are spoken in this region (refer to Figure 1.6). Language dynamics are unique in the Southeast Asian region.

⁵To date, the Hofstede (1980, 2001) is still widely applied by researchers (for example, Costa et al. (2013), Tekçe & Yılmaz (2015) and Chouliaras (2016)). Tekçe & Yılmaz (2015) argue that the framework still fits the current research environment as culture only evolves slowly.

For example, *Bahasa Melayu*⁶, the Chinese and the Indian languages are widely spoken in Singapore and Malaysia. The official language of Indonesia, *Bahasa Indonesia*, is widely understood by their Malaysian and Singaporean counterparts, as it originates from the same root as the Bahasa Melayu. Although the Thai language is the official language of Thailand, Bahasa Melayu is understood and spoken in some parts of Thailand, particularly in the South. Besides, a multitude of languages and dialects are spoken by minority ethnic groups throughout the region. Interestingly, there is a language that unites the nations, that is, the English language.

Since the 18th century, the usage of the English language spread in this region, in particular for Malaysia and Singapore, through the British influence (Kirkpatrick 2011). Today, English has been gazetted as one of the official languages in Singapore. In Malaysia and Thailand, it is widely spoken and understood. English is also the most prevalent language in Indonesia. As a medium of intercultural communication, English has been adopted as the official business language in the majority of ASEAN countries (Kirkpatrick 2011), thus facilitating business dealings within the region.

Language expressions can be different between cultures. Although widely spoken in the Southeast Asian region, the meaning of some words in English may be interpreted differently between the countries. According to Kirkpatrick (2011) there are noticeable lexical differences between British and American English. In many cases, there are same words that have different meanings, or the same concept is expressed using different words. In the ASEAN context where English is not native, the variability of interpretation of meanings of the English language may be more apparent. In fact, Singapore and Malaysia are known to have their own versions of English. In short, coupled with the cultural diversity in the region, the meaning of words may vary between speakers in one country and another.

Thus far, to the best of my knowledge, previous studies have not discussed how the variability in culture and language may shape investors' behaviour in valuing IPO stocks. Being a non-monolithic market, there is no one-size-fits-all strategy for investors in this region to optimise their portfolio (McKinsey & Co., 2015). Investors' perceptions of IPOs may vary as they are shaped by cultural differences. Thus, a multilingual and multicultural context like ASEAN makes an

⁶*Bahasa Melayu* or the Malay language is the national language of Malaysia, which also spoken in Singapore and have the same roots as the Indonesian language.

ideal environment to investigate how these elements play a role in IPO performance.

1.4. Outline of the Thesis

This thesis is organised into five chapters, including this Chapter 1 that contains the introduction to the thesis. Chapter 2 focuses on investor overconfidence. The influence of social mood and media tones on IPO performances are discussed in Chapters 3 and 4, respectively. Finally, Chapter 5 concludes this thesis.

Chapter 2

Overconfidence and IPO Performances

2.1. Introduction

The anomalies of initial public offering (IPO) returns are well documented in the literature. The short-run return anomaly, commonly known as *underpricing* is associated with a high positive return on the first day of going public. The long-run anomaly, commonly known as *underperformance*, is when an IPO has a negative abnormal aftermarket return.

From a behavioural standpoint, a prevalent explanation of the mean reversal of IPO returns have been heavily attributed to a behavioural bias called *overconfidence* pioneered by De Bondt & Thaler (1995) and Daniel et al. (1998). This study is motivated by the theory of *under- or overreaction in the financial markets* (Daniel et al. 1998), that suggests that overconfidence, a salient characteristic of human beings, is likely to be a critical factor in financial decision making (Daniel & Hirshleifer 2015).

IPO investments are prone to be the subject of overconfidence, as the presence of asymmetric information is very common (Ritter 1991). This is because before listing, investors have little information about the IPO firms. Overconfidence bias is more adverse in a high information asymmetry environment, where investors need to rely rather heavily on their private information. Overconfident investors are optimistic about the accuracy of their private information, resulting in IPO

prices valued upwards, causing IPO prices to overreact (Ritter 1991, Loughran & Ritter 1995, Fama & French 1996). As a result, abnormally high returns are observed on the first listing day. As more public information becomes available aftermarket, investors adjust their beliefs and revalue their valuations on IPO stocks. Consequently, IPO prices are shifted downwards towards their intrinsic values.

The central debate of this study revolves around investor overconfidence behaviour around new listings and three-years aftermarket. The main focus is the potential heterogeneity in overconfidence patterns given the diverse market and social settings in ASEAN. A respectable number of researches have focused on the ASEAN context, and the number is positively developing. However, with the exception of Komenkul & Kiranand (2017)¹, the existing studies mainly focus on a single country. For example, Ahmad-Zaluki et al. (2007) and Ahmad-Zaluki & Kect (2012) study the Malaysian market, while Komenkul & Siri wattanakul (2016), Komenkul & Kiranand (2017) and Komenkul et al. (2017) focus on Thailand. Further, Utamaningsih et al. (2013) and Utamaningsih (2017) study the Indonesian market. Despite the growing number of recent researches, the discussion about investors overconfidence barely takes centre stage. More scarce are comparative studies that allow for direct and meaningful comparison of the overconfidence behaviour across the region.

Motivated by the notion that overconfidence is more prominent in a higher information asymmetry environment, this study selects ASEAN-4 as a region of focus. In this region, the markets consist of *developed* (Singapore), *advanced emerging* (Malaysia and Thailand) and *secondary emerging* (Indonesia) markets, where the degree of information asymmetry vary. As introduced in Chapter 1 (Section 1.3.2), market classification reflects the efficiency of information dissemination in the markets. Information asymmetry tends to be higher in less developed markets, and the more advanced markets suffer less from asymmetric information. Consequently, investing in a higher information asymmetry environment translates to higher ex-ante uncertainty (Ritter 1991). As such, the cost of capital tends to be higher in these markets as investors need to be better compensated.

¹Komenkul & Kiranand (2017) focus on the long-run performance of IPOs in ASEAN, focusing in the Pharmaceutical and Biopharmacy sector. As the main objective of this study is purely to compare the IPO performances between the ASEAN member states, it does not focus on investor overconfident behaviour.

As ASEAN-4 markets consist of a mixture of market development stages, it warrants a comparative study that examines investors' reactions towards IPOs in the short- and long-run. To make it more interesting, the region is multicultural, where each country has its own set of distinctive cultural practices and national cultural profiles, that mould investors' perceptions and decision-making processes. Hence, the ASEAN-4 markets make perfect settings for further exploration of how overconfidence behaviour is manifested in IPO performances.

The variations in market and cultural characteristics among ASEAN-4 markets set an early indication of heterogeneity in investor behaviour across the markets. There is still a scarcity of research concerning this line of debate, warranting for more extensive research in this area. To the best of my knowledge, previous studies do not make direct comparisons of overconfidence behaviour across the ASEAN-4 markets. Thus this study contributes to the body of knowledge by being the first to do so. While acknowledging the stylised facts that IPO returns are prone to underpricing and underperformance, this study attempts to examine the variability of the overconfidence behaviours that may have driven the phenomena in the ASEAN-4 markets.

Thus, the main questions that this study seeks to answer are as follows:

RQ1: Do IPO investors in the ASEAN-4 market exhibit variability in overconfidence behaviours?

RQ2: If the overconfidence behaviours vary among ASEAN-4 investors, in which market is overconfidence most / least prominent?

RQ3: Does the overconfidence behaviour vary given various market conditions, firm and IPO characteristics, and industry settings?

By answering these questions, we can further understand how market and cultural settings may shape overconfidence behaviour among investors. This knowledge is vital for the region, particularly in the light of the economic integration among ASEAN countries, where constant streamlining of policies are required. Thus, understanding investor behaviours is crucial in setting up a harmonised set of policies. The remainder of this chapter is organised as follows. The following section discusses the literature of IPO return anomalies with regard to stock price overreactions from the perspective of investor overconfidence. Section 3 describes

the data and methodology employed in this study. Section 4 presents empirical findings, and the final section concludes the chapter.

2.2. Literature review

From a behavioural point of view, long-run return reversal is partly attributed to investors overconfidence (De Bondt & Thaler 1985, Barberis et al. 1998, Odean 1998), that causes the stock price to overreact, pushing it beyond its intrinsic value. In the long-run, as investors begin to incorporate publicly available information in their stock valuation, price reversal occurs. Consequently, this results in negative abnormal performance. This pattern of return behaviour is closely linked to the *theory of under- and overreaction in the financial stock market* (Daniel et al. 1998). This section discusses the theory and its implication on stock performances.

2.2.1 Theoretical Framework

The literature of cognitive psychology offers extensive evidence of humans' tendency to be overconfident. De Bondt & Thaler (1995) argue that the most robust finding in the psychology of judgement is that people are overconfident. In very concise wording, Thaler (2005) explains overconfidence:

'Overconfidence has two dimensions: overestimating one's own ability, and underestimating others.'

Overconfidence affects human judgement and decision making, tending to overweight 'salient, anecdotal and extreme information' (Grether 1980, Tversky & Kahneman 1980) and their own judgements (Griffin & Tversky 1992), without giving much consideration to the actual facts. Further, the latter report that people tend to overestimate the reliability of their knowledge as described by De Bondt & Thaler (1985). This is a result of the *illusion of validity* (Kahneman & Tversky 1973), whereby people maintain a high degree of confidence of the validity of their facts, even when they know the overall accuracy may be low. Even upon the arrival of more information, overconfidence can still persist. Public information can in fact increase confidence, causing the overreaction to intensify.

This is due to *self-attribution bias* (Langer & Roth 1975), a cognitive process that causes confidence to increase when their initial belief is validated.

When humans are overconfident, they tend to overestimate their own abilities in various contexts, including financial decision making. Although not universal, overconfidence is massively prevalent. As a systematic behaviour, it is hard to eliminate (Kahneman et al. 1982) and highly unavoidable (Odean 1998). Alpert & Raiffa (1982) points out that overconfidence has consistently been observed in the assessment of uncertain quantities. Further, Daniel et al. (1998) show that this behaviour is more prominent for tasks that require judgements rather than more objective tasks, and is more severe in situations where feedbacks are delayed. In the financial domain, forecasting long-term cash flows or asset prices requires an open-ended judgement process and is prone to uncertainties. Thus, unsurprisingly, overconfidence is strongly manifested in financial decision making.

Due to its strong presence in the financial decision-making processes, De Bondt & Thaler (1995) suggest that overconfidence is one of the vital behavioural factors needed to be understood to solve the trading puzzles, leading to the birth of the *theory of under- and overreactions* in the financial stock market (Daniel et al. 1998). Based on a solid economic and psychological background, the theory suggests that ‘investors tend to wrongly believe that they have more ability to value financial securities than they actually do, hence tend to underestimate their errors’ (Daniel et al. 1998, p.98). The central argument of the theory is that overconfident investors overweight their ability to value financial assets based on their own privately available information while underweighting the importance of public information, hence causing an error to valuations.

In the financial domain, overconfident investors tend to overreact to the less relevant, more attention-grabbing information² (Daniel et al. 1998) and their own intuitive judgements (Griffin & Tversky 1992), while underreacting to important abstract information³ (Daniel et al. 1998). Although they tend to make valuation mistakes, they hold a strong belief about their judgements (Daniel & Hirshleifer 2015). As a result, stock prices *overreact*, or inflated beyond their intrinsic values. At a later stage, as investors begin to eventually recognise public information and

²Examples of this type of information include an extreme event, a prominent news article with strong human interest, and a rumour.

³An example includes corporate earnings, annual reports, initial public offerings prospectuses.

incorporate this in their valuation, reversal of price occurs resulting in negative abnormal returns.

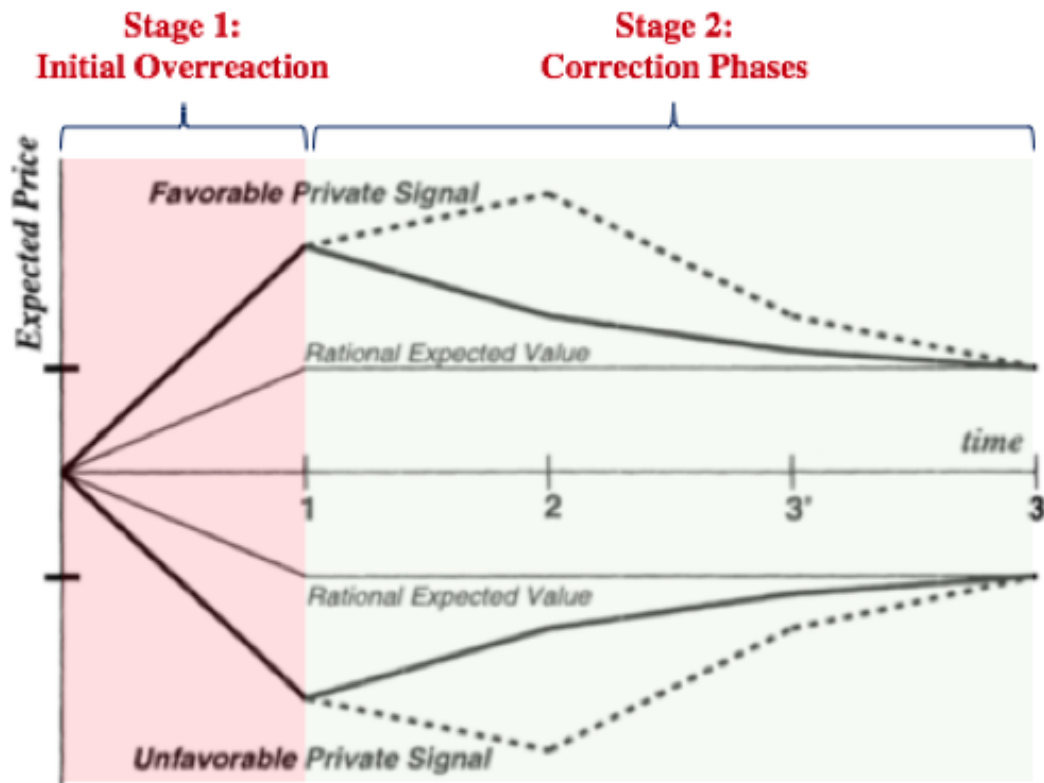


Figure adapted from Hirshleifer et al (1998), p. 1847

Figure 2.1:
Stock Price Movement Stages
in the Presence of Overconfidence

Daniel et al. (1998) propose two stages of stock price movements in the presence of overconfidence (refer to Figure 2.1). The first phase is *initial overreaction phase*, where price diverts from its intrinsic value as overconfident investors overweight their private information. Overreaction phase occurs as a product of impulse responses of investors to their own private information or intuitive judgements. During this stage, overconfident investors tend to disregard publicly available information in their valuation process. Consistent with the process of continuing overreaction, the stock price is pushed further upwards instead of downwards before it eventually reaches the second phase, namely the *correction phase* (Daniel et al. 1998). This phase begins when public information become precise enough, so investors revise their valuation of the stock price. During this phase, stock price reversal occurs. Consequently, the continuing overreaction results in

short-term⁴ return momentum, that is, return continues to move in the same direction. Such momentum will eventually reverse as further public information gradually arrives and pulls the price back towards its true value.

Severe overconfidence occurs in the presence of *self-attribution bias*, defined as the tendency of humans to ‘attribute successful outcomes to one’s own skill, but blaming unsuccessful on bad luck’ (Miller 1977, Thaler 2005). Confidence in humans can increase when the accuracy of their private information seems to be ‘validated’ by public information. In investment, this occurs in particular when their judgments or private information consistently yield positive returns, causing them to believe that public information is conforming to their judgments or private information. Under this situation, price reversal does not occur until at a later stage, thus causing price or return momentum (Jegadeesh & Titman 1993).

2.2.2 Overconfidence and Cultural Differences

Although overconfidence is very common, an early study suggests that cultural differences shape human overconfidence behaviour (Wright & Phillips 1980). In the West, people focus on salient pieces of information and prefer analytic reasoning. In contrast, the Asians are more reliant on contexts and are more intuitive (Nisbett & Masuda 2003). Unsurprisingly, the Asians are found to be more overconfident than those in the West (Wright & Phillips 1980, Fan & Xiao 2005, Acker & Duck 2008, Statman 2008, Jlassi et al. 2014, Czerwonka 2017).⁵

From the Hofstede (1980) cultural dimensions point of view, investors from a high collectivism culture are more overconfident than those from an individualistic culture (Yates et al. 1998, Chui et al. 2010, Tekçe & Yılmaz 2015), as they are more risk tolerant. In a collective culture, social support is very strong. Tekçe & Yılmaz (2015) argue that people from this culture tend to be more overconfident as they know they will receive support from the society for their actions. Overconfidence is also more prevalent in cultures where masculinity and power distance are high. Investors in more masculine cultures are likely to exert overconfidence in their

⁴Short-term price momentum occurs between 6 to 12 months (Jegadeesh & Titman 1993).

⁵Wright & Phillips (1980) examines the accuracy of perception on a prospect of a stock among British and Hong Kong participants. When the British participants are 100% certain they were correct, they are actually only 80% correct. Their Hong Kong counterparts are only 66% correct when they believe that they are 100% correct. The findings imply that the Asians tend to exhibit higher overconfidence than the British.

decision making (Ahmad-Zaluki 2012, Tekçe & Yılmaz 2015). People in high power distance culture are more secretive. Thus information dissemination may be slower and less comprehensive (Zarzeski 1996, Haniffa & Cooke 2002), contributing to higher information asymmetry. In an environment where information asymmetry is higher, overconfidence is more prevalent (Tekçe & Yılmaz 2015).

In the IPO context, culture is reported to have a significant link with underpricing (Costa et al. 2013, Chouliaras 2016). To the best of my knowledge, no studies have linked culture with underperformance, in particular in the ASEAN context. However, the existing findings on underpricing shed light on how culture may shape the long-run behaviour of IPO. High underpricing is found in cultures with high power distance (Costa et al. 2013, Chouliaras 2016), collectivism (Costa et al. 2013, Chouliaras 2016) and masculinity (Costa et al. 2013). These cultures are associated with high overconfidence (Yates et al. 1998, Chui et al. 2010, Tekçe & Yılmaz 2015). Linking the theory of over- and under-reaction in the stock market (Daniel et al. 1998) and Ritter (1991)'s findings that IPO with highest underpricing has the highest underperformance, I postulate that higher underperformance may occur among IPOs in cultures with high power distance, collectivism and masculinity. High underpricing is a manifestation of overreaction, implying investors are strongly confident in their private information or intuitive judgement, thus underreacting or ignoring the publicly available information.

2.2.3 Long-run Underperformance of IPOs

In the long run, underperformance occurs as a result of investors adjusting their initial valuations on IPO, as more public information arrives. When public information is incorporated into the IPO aftermarket prices, they begin to move towards their intrinsic values. Just as underpricing, underperformance is also a strong manifestation of overconfidence behaviour. Where overperformance occurs, it suggests that investors suffer from the self-attribution bias that causes return momentum instead of reversals. The IPO return anomalies lend firm support to Daniel et al. (1998)'s theory of over- and underreaction in the stock markets. A respectable amount of the literature provides evidence that IPOs underperform their benchmarks. The early studies documenting IPO price overreaction include Ritter (1991), Loughran & Ritter (1995) and Fama & French (1996). The former reports that the performance of IPOs with abnormally high initial returns tend to

decline over time and underperform their benchmarks. Since then, the research in this area rapidly developed, not only in the US but worldwide.

For the past three decades, research has consistently shown that IPO underperformance occurs in many markets, such as the US (Eckbo & Norli 2005, Gao & Jain 2011, Brau et al. 2012), and the UK (Khurshed et al. 1999, Espenlaub et al. 2000). Other markets include Germany (Bessler & Thies 2006, Maximilian & Gupta 2018), Japan (Kirkulak 2008), Malaysia (Yaakub et al. 2018), Mauritius (Agathee et al. 2014) and Spain (Álvarez & González 2005). The evidence of underperformance is not as consistent as underpricing that occurs in virtually all markets researched. Evidences of *overperformances* have also been reported, for example in China (Su & Bangassa 2011), India (Sahoo & Rajib 2011), Hong Kong (McGuinness 2016), Malaysia (Ahmad-Zaluki et al. 2007, Ahmad-Zaluki & Kect 2012)⁶ Thailand (Komenkul & Siriwattanakul 2016, Komenkul & Kiranand 2017) and Indonesia (Utamaningsih 2017).

Single-market studies of IPO performance offer insights about the typical behaviour of IPO returns aftermarket. However, this type of study does not allow opportunities to make direct and meaningful comparisons for researchers interested in IPO long-run behaviour in multiple markets, in the same period of time. Fortunately, some studies focus on cross-market comparisons of long-run IPO behaviour, which greatly facilitate the understanding of such anomaly given varying market conditions. Table 2.1 summarises the findings of selected cross-market studies on IPO underperformance. The table suggests that IPOs tend to underperform, regardless of the markets. For instance, European markets such as France, Italy, Spain, Sweden and Switzerland underperform (Schuster 2003). The same findings are found across the Middle East region (Alanazi & Al-Zoubi 2015) and Asia (Moshirian et al. 2010, Komenkul & Siriwattanakul 2016).

Some evidence of overperformance are found, for example in Germany (Schuster 2003), China, India (Locke & Gupta 2009), Oman (Alanazi et al. 2011, Alanazi & Al-Zoubi 2015), Thailand (Komenkul & Kiranand 2017). Noticeably, the majority of overperformances are reported in the less developed markets. When comparing the Central and Eastern Europe (CEE) markets against the developed markets of the European Union (EU), Berk & Peterle (2015) report two important findings:

⁶Although older studies report overperformance in the Malaysian market, a more recent study report significant underperformance in this market (Yaakub et al. 2018). The development may partly be attributed to the development in the Malaysian capital market, where information environment has gradually become more efficient over time.

(1) underpricing is higher in the CEE than in the developed EU markets; and (2) IPOs in the CEE *overperform* while their counterparts in the developed EU markets *underperform*. The findings suggest that overperformance is more common in markets where information environment is less efficient. Although this is not a stylised fact of the IPO abnormal return behaviour, such outcomes are common in the literature. Other than information environment, Fama (1998) attribute the variations of abnormal returns to the sensitivity of the event study methodology that is commonly used to calculate abnormal returns, supported by Ahmad-Zaluki et al. (2007), Komenkul & Kiranand (2017), Yaakub et al. (2018). Clearly, a comparative study is highly beneficial as it provides more streamlined and meaningful comparisons.

IPO returns vary depending on its ex-ante characteristics such as market conditions, IPO offer size, listing board, firm characteristics (usually measured by age and size), and industry characteristics (Ritter 1991, Schuster 2003, Ahmad-Zaluki et al. 2007). With regard to market conditions, there are variations in IPO behaviour across listing years among US (Ritter 1991) and Malaysian IPOs (Ahmad-Zaluki et al. 2007). The former attributes this to the hot- and cold-market conditions. During the hot-market, IPO returns are higher due to the high trade volumes (Ritter 1991, Ljungqvist et al. 2000). Typically, higher underpricing is reported among smaller and younger IPO firms (Ritter 1991, Schuster 2003, Ahmad-Zaluki et al. 2007). Previously, De Bondt & Thaler (1985) presents evidence of market overreaction among firms with low-capitalisation stocks.

Not only that, younger firms are more prone to high underperformance. For example, Ritter (1991) finds high underperformance in relatively young growth companies in the US, supported by Ahmad-Zaluki et al. (2007) for Malaysian IPOs. High underperformance occurs because investors are initially optimistic about the growth prospects of growth firms, which also tend to be young firms. Furthermore, Ritter (1991) reports some tendency for firms with high adjusted initial returns to exhibit the worst aftermarket performance. Accordingly, IPOs listed on the alternative board are prone to higher initial returns (Ahmad-Zaluki & Kect 2012, Komenkul 2015, Yaakub et al. 2018) . These characteristics represent high ex-ante uncertainty, which is linked to higher information asymmetry. As investors tend to be more overconfident in these environments, underperformance also tends to be higher.

With regard to sector groupings, the underpricing characteristics are not easily generalisable, but high underpricing in high-tech industries IPO is highly common (Saade 2015). These characteristics represent high ex-ante uncertainty, in which information asymmetry is higher. As investors tend to be more overconfident in these environments, underperformance also tends to be higher. Importantly, the variations on cross-sectional IPO returns are prevalent regardless of the markets being studied (Schuster 2003).

Overall, the existence of significant underperformance suggests that IPO investors are indeed overconfident. At the initial stage of listing, investors rely strongly on their private information and do not pay attention to the publicly available information. This causes IPO price to overreact, and the initial return increases. However, return reversal occurs when investors begin to pay attention to public information. As the information is absorbed into the IPO prices, the returns are adjusted downwards. When investors feel like their own intuition or private information is correct, their confidence persists, causing return momentums. As the IPO prices do not revert to their fair value, IPO returns stay high, as manifested by overperformance.

Table 2.1
Selected Comparative Studies on IPO Underperformance.

Author	Region	Focus	Initial Returns	Abnormal Returns
Schuster (2003)	European Countries (Germany, France, Italy, Spain, Sweden & Switzerland)	Comparison of IPO long-run performance	N/A	Overall: <i>under</i> performance. Overperformance only reported for Germany. Cross-sectional findings vary across the markets.
Locke & Gupta (2009)	China vs. India	Firm size effects	N/A	<i>Over</i> performance in both mar- kets, higher in India.
Moshirian et al. (2010)	Asia (China, Korea, Malaysia, Hong Kong, Japan, & Singapore).	Each market may have unique specific market features. Focus on testing various benchmarks.	Higher in emerging markets than developed markets.	Only Hong Kong underperform the broad market. IPOs in all markets underperform reference portfolios.
Al-Shiab (2013)	Middle East and North Africa (MENA) Region (Tunisia, Morocco, Jordan, Egypt, Kuwait, Qatar, Bahrain, Oman, the UAE, Saudi Arabia)	Regulation & transparency of information	N/A	<i>Over</i> performance in Oman, the UAE and Saudi Arabia. Under- performance in other markets.
Alanazi & Al-Zoubi (2015)	Gulf Cooperation Council (GCC) (Saudi Arabia, Kuwait, Bahrain, Qatar, UAE, Oman)	Institutional & regulations environment	Extremely high (>200%) in Kuwait, Qatar, Saudi and UAE.	<i>Under</i> performance in all markets except Oman.
Berk & Peterle (2015)	Central and Eastern Europe (CEE) vs Developed EU Markets	Information asymmetric theory	Higher in CEE than de- veloped EU markets. Higher in smaller IPOs.	<i>Over</i> performance in CEE. Un- derperformance in advanced European markets.
Komenkul & Kiranand (2017)	ASEAN member states (Indonesia, Malaysia, Singapore, Thailand, Myanmar, Laos, Viet- nam)	Healthcare and Biopharma- ceutical sectors	N/A	<i>Under</i> performance in Indonesia and Singapore. <i>Over</i> performance in Malaysia and Thailand. Consistent findings when size factor is taken into consideration.

2.2.4 Reflections on the Literature Review

Based on the literature review, it is notable that comparative studies provide meaningful comparison and facilitate further understanding of IPO return behaviour. Although many studies have focused on the individual Southeast Asian markets, regional studies that compare ASEAN markets are still scarce, except for Komenkul & Kiranand (2017). While the aforementioned study is a good beginning, more of such researches are urgently needed in this region, in order to broadly understand the behavioural patterns of IPO investors in ASEAN. Thus, this study contributes to the body of knowledge by examining and comparing investor behaviour in IPO environments in Singapore, Malaysia, Thailand and Indonesia.

This study is particularly important as it examines the pattern of overconfidence among IPO investors which has not previously been done in this region. As this behavioural trait is hardly avoidable and is more prominent in Asian culture, it creates urgency for this area of research. With regard to the data used in existing studies, most of them include samples of IPOs listed before 2000 (Ahmad-Zaluki et al. 2007, Ahmad-Zaluki & Kect 2012, Komenkul 2015, Komenkul et al. 2017). As such, the development of IPO return anomalies is unclear for IPOs listed in more recent years, creating an urgency for studies of IPOs listed after 2000. Therefore, this study further contributes to the literature by using a more recent set of data; thus shedding light on the characteristics of IPO return anomalies of current years.

IPO return characteristics in the short- and long-run perfectly fit the theory of over- and under-reaction in stock markets (Daniel et al. 1998), that revolves around investor overconfidence. The literature suggests that the manifestation of overconfidence behaviour vary in different culture and information environments. Overconfidence is more prevalent in the culture where collectivism is stronger, and information environment is less efficient. With regard to culture, overconfidence investors in a highly collectivist society are found to be more overconfident, as manifested in higher initial returns in these markets (Costa et al. 2013, Chouliaras 2016). While in general the ASEAN-4 score low in individualism dimension that translates into high collectivism in these cultures, Indonesia is the most highly

collectivist culture among the four countries. To add to it, as a secondary emerging market, the information environment in Indonesia is less efficient than in Singapore.

Being a highly collectivist nation, and a market where information asymmetry is the highest, I argue that among the ASEAN-4 countries, Indonesia has the strongest presence on overconfidence; and the least in Singapore. If overconfidence causes price overreaction in IPO prices, then it is hypothesised that:

H1:

There are variations in the IPO underpricing level among the ASEAN-4 markets, with the highest being in Indonesia and lowest in Singapore.

In the IPO domain, investors overconfidence is manifested by high returns in the first trading day, followed by return reversals in the long-run (Daniel et al. 1998). Where investors suffer from self-attribution bias, return momentum occurs instead, in response to investors' persistent confidence. In the light of the global occurrence of underpricing, it can be postulated that IPO investors are indeed overconfident during the initial stage of listing. In many instances, investors reverse their opinion towards the IPOs as public information arrives, leading to price reversals (Ritter 1991, Schuster 2003, Ahmad-Zaluki et al. 2007, Maximilian & Gupta 2018). However, underperformance is not a generalised case, as return reversal does not occur. Instead, the long-run IPO return exhibits momentum (Locke & Gupta 2009, Berk & Peterle 2015, Komenkul & Siriwattanakul 2016), as a result of self-attribution bias.

For ASEAN-4 markets, research shows significant underperformance in Singapore (Moshirian et al. 2010) and Malaysia (Yaakub et al. 2018). Conversely, Thai (Komenkul 2015, Komenkul & Siriwattanakul 2016) and Indonesia (Utamaningsih et al. 2013) IPOs are found to be overperforming. Clearly, the literature suggests that there are variations in the long-run behaviour. Therefore, I argue that this pattern is partly a result of the varying degrees of overconfidence among the ASEAN-4 investors. Although overconfidence exists in all the markets, Singapore and Malaysia investors are quicker to react to publicly available information and incorporate them into their aftermarket valuations of IPOs. Thai and Indonesian investors, on the other hand, appear to suffer from self-attribution bias. As a

result, we do not see price correction in these IPO markets. Drawing on the literature findings on the long-run performance of IPOs, supported by the fact that collectivism is strongest in ASEAN-4, and information environment is the least efficient in this market, it is hypothesised that:

H2a:

There are variations in the IPO levels of long-run abnormal returns among the ASEAN-4 markets, with the highest being in Indonesia and lowest in Singapore;

and with regard to the long-run IPO price reversals, it is hypothesised that:

H2b:

Indonesian (Singaporean) investors take longer (shorter) to react to the publicly available information, thus taking longer (shorter) time to reverse their IPO valuations.

With regard to firm and IPO characteristics, the literature reports high variability in cross-sectional patterns of IPO returns. Underpricing and underperformance tend to be higher during the hot-market conditions (Ritter 1991) and among smaller and younger firms (Ritter 1991, Schuster 2003, Ahmad-Zaluki et al. 2007). These characteristics are linked with high ex-ante uncertainty, the environment in which investors tend to be more overconfident. Investors tend to be more overconfident in these environments due to the positive outlook on the future cash flows of young, growth firms. Also, available information about these types of firms is somewhat limited. Thus investors are prone to rely on their own intuitions when making investment decisions.

Cross-sectional analyses on IPO long-run returns also show heterogeneous return behaviour across various industries (Ritter 1991, Ahmad-Zaluki et al. 2007, Komenkul 2015). It is not easy to generalise the tendency of IPO long-run behaviours when segregated according to industries. However, Ritter (1991) argues that investors tend to be more overconfident towards the future prospect of an IPO firm if its listing coincides with the time when the related industry is booming. Therefore, the following hypothesis is built:

H3a:

Among the ASEAN-4 markets, underpricing and underperformance are higher among IPOs listed in high volume years, smaller and younger firms, IPOs with smaller listing size, and IPOs that belong to booming sectors during the time of issue, regardless of the market factor.

2.3. Models, Methodology and Data

2.3.1 Empirical Models

The primary interest of this study is to examine the overconfidence behaviour of IPO investors in the ASEAN-4 region. Overconfidence is exhibited by high initial return, followed by return reversals (Daniel et al. 1998) where return momentum occurs, implying the existence of the self-attribution bias. In the IPO domain, the common time frame to examine return reversals is within three years aftermarket (Ritter 1991, Ahmad-Zaluki et al. 2007, Komenkul et al. 2017, Maximilian & Gupta 2018, Yaakub et al. 2018). Therefore, this study is interested in the initial return and three-year abnormal returns of IPO stocks.

The first empirical model of interest in this study is the IPO underpricing model. In line with the previous literature (Ritter 1991, Ahmad-Zaluki et al. 2007, Ahmad-Zaluki & Kect 2012, Yaakub et al. 2018), this study adopts raw initial return to represent underpricing of IPO i ($UNDP_i$). Raw initial return is the return of IPO stock i at the end of the first trading day, calculated as:

$$UNDP_{it} = [(P_{i1} - P_{i0})/P_{i0}] * 100\% \quad (2.1)$$

where P_{i1} is the closing price of IPO at the end of the first trading day, and P_{i0} is the offer price of IPO i . Average underpricing is calculated for each market.

Consequently, this study employs the benchmark-adjusted abnormal return model to calculate the three-year abnormal returns of the IPOs, as below:

$$AR_{it} = R_{it} - R_{mt} \quad (2.2)$$

where (AR_{it}) , the abnormal return of IPO stock i in month t (AR_{it}), is the difference between monthly raw return (R_{it}) and a monthly benchmark return (R_{mt}), excluding the initial returns to exclude the abnormally high return on the first trading day (Ritter 1991). The monthly raw returns of IPO i , R_i is identified using the closing price of stock i at the end of the last trading day of month t , P_{it} ⁷.

2.3.2 Methodology

The *event study methodology* is used to test the market efficiency around the arrival of new information or ‘event’ (Barber & Lyon 1997, Kothari & Warner 1997, Lyon et al. 1999, Kothari & Warner 2006). By using this methodology, researchers can also detect the sign of under- or overreaction of stock prices (Barber & Lyon 1997, Daniel et al. 1998). The IPO literature has long adopted this methodology. As a result, it has been found that the IPO market is less than efficient, manifested by the presence of positive (Ahmad-Zaluki et al. 2007, Komenkul & Siri Wattanakul 2016, Komenkul & Kiranand 2017) or negative (Ritter 1991, Maximilian & Gupta 2018, Yaakub et al. 2018) long-run abnormal returns.

In a widely cited paper concerning event study methodology, Kothari & Warner (2007) mention that the majority of long-run performance studies focus on between one- to five-year periods. Thaler & Ganser (2015) suggest that three to five years is ‘long enough’ to assess the long-run performance of a stock. The literature of IPO long-run performances suggests that the common time frame for examining the abnormal returns is from month 1 to 36 post-listing (Ritter 1991, Ahmad-Zaluki et al. 2007, Berk & Peterle 2015, Maximilian & Gupta 2018) that represents the first three years aftermarket. Thus, for consistency, this study adopts the same timeframe to assess the long-run performance of ASEAN-4 IPOs.

Event study concerns abnormal returns that can be simply defined as the return of a stock relative to its benchmark. The most common benchmarks used in calculating abnormal returns are the market indices returns and the reference portfolio returns (Kothari & Warner 1997, Fama 1998, Kothari & Warner 2006). This study is particularly interested in IPO long-run performance relative to the

⁷The raw return of an IPO stock is calculated as: $R_{it} = (P_{it} - P_{it-1})/P_{it-1}$, where R_{it} is the closing price of IPO at the end of last trading day of month t , and P_{it-1} is the closing price of IPO at the end of last trading day of month $t - 1$. Following Ritter (1991), one month consists of 21 trading days.

broad market, hence the market indices returns are used as benchmarks. Thus, R_{mt} in Equation 2.2 represents the respective ASEAN-4 index returns. They are the main benchmark index of each ASEAN-4 market as follows: (1) the Straits Times Index (STI) for Singapore; (2) the FTSE Bursa Malaysia Kuala Lumpur Composite Index (FBM KLCI) for Malaysia; (3) the Stock Exchange of Thailand Index (SET) for Thailand; and (4) the Jakarta Stock Exchange Composite Index (JCI) for Indonesia.

With regard to this methodology, the consensus in the literature is that the abnormal returns are sensitive to methodological changes (Fama & French 1993). The two abnormal returns metrics, namely *cumulative abnormal returns* (CAR) and *buy-and-hold abnormal returns* (BHAR) tend to produce abnormal returns with slight variations. For robustness of findings, this study employs both methods, using both equal and value weightings. Equal-weighting is useful to see the average performance of IPOs, while value-weighting enables average wealth change to be quantified following the IPOs.

2.3.2.1 Event Time Approach

A. Cumulative Abnormal Returns

The cumulative abnormal return (CAR) is a traditional performance measure (Ritter 1991, Fama & French 1993). The CAR from event month 1 to event month t is the summation of the mean benchmark-adjusted abnormal returns during the 36-month aftermarket period. The cumulative abnormal return involves monthly rebalancing of the portfolio to achieve equal weighting each month. The first step is to calculate the mean benchmark-adjusted abnormal returns in event month t . \overline{EWAR}_{it} , the equally-weighted arithmetic mean of the benchmark-adjusted returns, calculated as follows:

$$\overline{EWAR}_{it} = \frac{1}{n} \sum_{i=1}^n AR_{it} \quad (2.3)$$

The value-weighted arithmetic mean of the benchmark-adjusted return, $\overline{AR}_{i,t}$ is consequently calculated as:

$$\overline{VWAR}_{it} = \sum_{i=1}^n \omega_i AR_{it} \quad (2.4)$$

where ω is the equal or value weighting of the abnormal returns. The equal weighting is calculated as $1/n$, where n is the number of IPO firms in each event month. The value weighting is calculated as $MV_i / \sum MV_i$, where MV_i is the market capitalisation of IPO firm i on the first trading day, and $\sum MV_i$ the total market capitalisation of all IPO on the first trading day.

The cumulative abnormal returns, CAR_{it} of IPO i from event month 1 to t is then calculated as:

$$CAR_{it} = \sum_{1=t}^n \overline{AR}_{it} \quad (2.5)$$

where AR_{it} takes the value of $EWAR_{it}$ for equally-weighted CAR, and $VWAR_{it}$ for value-weighted CAR.

This study assumes that, for Equations 2.2, 2.3, 2.4 and 2.5, the event windows of the n IPO stocks do not overlap to set the covariance terms to zero. Inferences about the cumulative abnormal returns can be drawn using

$$\overline{CAR}(1, t) \sim n(0, \sigma^2(1, t)) \quad (2.6)$$

Once the CAR_{it} are obtained, the next step is to estimate whether it is significantly different from zero. A parametric test, conventional t -statistic, is used and calculated as follows:

$$CAR_{t,month} = \frac{\overline{CAR}_{i,t}}{\sigma(CAR_{i,t}/\sqrt{n})} \quad (2.7)$$

where σ is the standard deviation of the abnormal return in the sample, and n is the number of IPOs in event month t .

Kothari & Warner (1997, 2006), among others, have reported that abnormal return distributions show fat tails and are right-skewed, implying that the parametric tests such as the conventional t -test are not well specified. Thus, the statistical literature acknowledges that non-parametric tests are more powerful in detecting a false null hypothesis of no abnormal returns, therefore useful to ensure

robustness of the results (Akhigbe et al. 2003, Álvarez & González 2005). As such, the Wilcoxon signed-ranks test is employed to test the null hypothesis that the median abnormal return is zero. This test considers that both the sign and the magnitude of abnormal returns are important. The statistic is given by:

$$S_n = \sum r_i^+ \quad (2.8)$$

where r_i^+ is the positive rank of the absolute value of abnormal returns. It is assumed that none of the absolute values is equal, and that each is different from zero. The sum is over the values of abnormal returns greater than zero. When n is large, the distribution of S_n , under the null hypothesis of equally likely positive or negative abnormal returns, will be approximately a normal distribution.

B. Buy-and-Hold Abnormal Returns (BHAR)

Statistically speaking, BHAR is used to mitigate the potential upwards bias in CAR due to the accumulation of the monthly abnormal returns (Barber & Lyon 1997, Kothari & Warner 2006). Therefore, further evidence of the long run performance of ASEAN-4 IPOs is presented using buy-and-hold returns (BHAR) and wealth relative (WR). Another reason for calculating BHAR is that it does not involve monthly portfolio rebalancing, but instead assumes that the IPOs are held from the first day of listing for three years, or until the IPOs are delisted. It takes into consideration the compounding return of the stocks, hence more closely reflect the actual investors' experience using the buy-and-hold strategy. The compounding interest effect reflects the total returns accumulated at the end of the holding period. Hence, investors may rely on this method to make future decision making an investment decision.

As with the CAR calculation, the 36-month holding period is assumed to start from the day after the listing day due to the abnormally high initial returns (Ritter 1991). If an IPO is delisted prior to 36 months of listing, the aftermarket period is truncated, and the 3-year BHAR ends on the delisting month, following Loughran & Ritter (1995), Komenkul & Kiranand (2017), Yaakub et al. (2018). The buy-and-hold returns for IPO stock i (BHR_{it}) defines BHAR as the geometrically compounded return on the stock in time t and identified as:

$$BHR_{i,t} = \left[\prod_{t=start}^{\min(t, delist)} (1 + r_{it}) - 1 \right] * 100\% \quad (2.9)$$

where r_i is the monthly raw return on IPO stock i in event month t , $start$ is the first event listing month, and $\min(t, delist)$ is the earlier of the 36-month window or the final month of listed trading.

The mean buy-and-hold returns for IPO stocks and the benchmarks are then calculated as follows:

$$\overline{BHR}_{it} = \sum_{i=1}^n \omega_i BHR_{iT} \quad (2.10)$$

Consequently, the benchmark-adjusted buy-and-hold return for IPO stock i for holding-period t , $BHAR_{it}$ is calculated as:

$$BHAR_{it} = \left[\prod_{t=start}^{\min(t, delist)} (1 + r_{it}) - 1 \right] - \left[\prod_{t=start}^{\min(t, delist)} (1 + r_{mt}) - 1 \right] \quad (2.11)$$

where r_{it} is the IPO stock's monthly raw return and r_{mt} is the benchmark monthly return at time t . An overperformance (underperformance) over the benchmark is indicated by a positive (negative) BHAR value. Next, the mean $BHAR_{it}$ are calculated as:

$$\overline{BHAR}_{it} = \sum_{t=q}^s \omega_i AR_t \quad (2.12)$$

where ω is the equal or value weighting of the abnormal returns. For equally weighted BHAR (EWBHAR), the equal weighting is calculated as $1/n$, where n is the number of IPO firms in each event month. To calculate the value-weighted BHAR (VWBHAR), the weighting is calculated as $MV_i / \sum MV_i$, where MV_i is the market capitalisation of IPO firm i on the first trading day, and $\sum MV_i$ the total market capitalisation of all IPO on the first trading day.

After obtaining the $BHAR_{it}$, the conventional t -statistic, a parametric test, is employed to test whether it is significantly different from zero. The formula used is:

$$BHAR_{t,month} = \frac{\overline{BHAR_{i,t}}}{\sigma(BHAR_{i,t}/\sqrt{n})} \quad (2.13)$$

where σ is the standard deviation of the abnormal return in the sample, and n is the number of IPOs in event month t .

Lyon et al. (1999) and Kothari & Warner (2006) suggest that abnormal returns suffer from potential skewness bias, resulting in the standard t -statistics being negatively biased. To eliminate such bias and to test that the $BHAR_{it}$ is significantly different from zero, the bootstrapped skewness-adjusted t -statistics (Johnson 1978) is employed, using:

$$t_{sa} = \sqrt{n} \left(S + \frac{1}{3} \hat{\gamma} S^2 + \frac{1}{6n} \hat{\gamma} \right) \quad (2.14)$$

where:

$$S = \frac{\overline{BHAR}}{\sigma(BHAR_t)} \quad (2.15)$$

and

$$\hat{\gamma} = \frac{\sum_{i=1}^n (BHAR_{i,t} - \overline{BHAR_t})^3}{n\sigma(BHAR_t)^3} \quad (2.16)$$

C. Wealth Relative (WR)

Ritter (1991) defines wealth relative (WR) as the ratio of the end-of-period wealth from holding a portfolio of issuers to the end-of-period wealth from holding a benchmark portfolio, in this case the market indices. WR serves as an indicator of overall long-run relative performance, where a value of higher (lower) than 1.00 indicates over- (under)performance. Following Ritter (1991), WR is calculated as:

$$WR = \frac{1 + \overline{BHR_{i,36}}}{1 + \overline{BHR_{m,36}}} \quad (2.17)$$

where $BHR_{i,36}$ is the 36-month buy-and-hold returns of IPO i and $BHR_{m,36}$ is the 36-month buy-and-hold returns of the respective benchmarks.

2.3.2.2 Calendar-Time Approach

Fama (1998), Mitchell & Stafford (2000) and Gao & Jain (2011), among others, suggest that event-time approach suffers from cross-sectional correlations amongst individual securities. Therefore, the statistical significance of mean abnormal returns may be overstated. Kothari & Warner (2006) argue that most return models employed in the event-time approach of calculating abnormal stock performance appear misspecified over different periods. Hence, to mitigate the potential cross-sectional correlations and misspecification issues, previous researchers suggest the calendar-time approach (Fama & French 1996, Gompers & Lerner 2003, Ahmad-Zaluki et al. 2007, Agathee et al. 2014). In this study, the Fama & French (1993) 3-Factor model (henceforth *FF3F*) is employed to determine the existence of underperformance. To do so, the preceding 36-month excess returns of IPO is regressed against the factors over the whole study period to obtain the Jensen's α value that indicates the magnitude and direction of abnormal performance of the IPOs.

Firm size and book-to-market (BTM) values have been found to be significant in explaining stock returns (Fama & French 1993). Researchers find evidence that the stock return variation in Southeast Asia are explained by size and BTM, for example in Malaysia (Ahmad-Zaluki et al. 2007, Yaakub et al. 2018) and Thailand (Komenkul & Siriwattanakul 2016, Komenkul et al. 2017). Following these studies, the Fama & French (1993) model is used as a benchmark and will be regressed against the IPO excess returns to find the intercept (α coefficient). If the intercept is positive (negative) and significant, it implies that the IPOs are significantly over-(under)perform. The abnormal return is estimated as:

$$R_{it} - R_{ft} = \alpha + \beta_i(R_m - R_{ft}) + \beta_{SMB}SMB_t + \beta_{HML}HML_t + \epsilon_{it} \quad (2.18)$$

where R_{it} is the return on IPO stock i in month t , R_{mt} is the return on the market in event month t calculated using the respective market index return; R_{ft} is the return of risk-free security in month t ; SMB is the value-weighted return on a portfolio of small minus big firms; and HML is the value-weighted return on a portfolio of high book-to-market (BTM) firms minus the value-weighted return on firms with low BTM. The betas are estimated by regressing the preceding

36-month IPO_i monthly excess returns on the monthly market excess returns, book-to-market, and size factor returns for the 36-month estimation period.

The SMB and HML portfolios for each market are constructed separately, following the methodology introduced by Fama & French (1993), taking into account each event month t and sorting the stocks listed in each of the ASEAN-4 markets by market capitalisation and book-to-market (BTM) value. First, the stocks are segregated into *small* (S) and *big* (B) according to their market capitalisation, divided using the median market capitalisation at the end of June every year. Next, the stocks are divided into three BTM groups based on the top 30% (*low*, L), middle 40% (*medium*, M) and bottom 30% (*high*, H) BTM value. The BTM value is the reciprocal of market-to-book value at the end of December each year. Finally, six portfolios are constructed. They are: SL , SM , SH , BL , BM and BH . Then, the SMB_t value is derived from the difference between the average returns of small firms and big firms. The HML_t value is the average returns of IPOs with high BTM ratio minus low BTM ratio. Hence:

$$SMB_t = \frac{(SL + SM + SH)}{3} - \frac{(BL + BM + BH)}{3}$$

and

$$HML_t = \frac{(SH + SL)}{2} - \frac{(BH + BL)}{2}$$

The calendar-time approach method weights each month equally, which reduces any underperformance when it is correlated with the number of IPOs in the portfolios (Gompers & Lerner 2003). As a result, the intercepts provide a test of the null hypothesis that the mean monthly abnormal return on the calendar-time portfolio is zero. Following Komenkul (2015), The intercepts are estimated using the Weighted Least Squares (WLS) method, weighted by the square root of the number of IPOs in the IPO portfolios in each calendar month.

2.3.3 Data

The markets of focus in this study are the four largest stock market among the state members of ASEAN. The markets are Singapore, Malaysia, Thailand and

Indonesia, or collectively known as the ASEAN-4 markets for this study. The data used are from 1 January 2000 to 31 December 2013. January 2000 is chosen as the start of the study period because the region had just recovered from the 1998 Asian Financial Crisis, hence minimising the possibility of the abnormal returns includes the effect of the crisis. As this study examines three-year abnormal performance, the return data of 36 months are required, to ensure appropriate interpretation of the abnormal return patterns. As this study was initiated in early 2017, 31 December 2013 is the latest suitable listing date to allow for full three calendar years, so that the last date of the returns is 31 December 2016.

A number of criteria have been taken into considerations for the IPOs to be included in a sample. First, IPOs that are offered mainly to institutional investors are excluded from the sample, as this study is concerned with the behaviour of individual investors. Secondly, IPOs belonging to the Financial Services (including banking, investment houses and insurance companies) and Real Estate Investment Trusts sectors are excluded, due to differences in financial reporting requirements which makes the returns not directly comparable to those of other sectors. This procedure is in line with many previous studies such as Ahmad-Zaluki et al. (2007) and Ahmad-Zaluki & Kect (2012). The third criterion is that the IPOs must be listed in the local currency of the stock exchange on which they are listed. Finally, IPOs with missing offer price data are also excluded. The filtration resulted in a total of 1,277 IPOs in the whole sample. The IPO sample consists of IPOs listed in Singapore ($n = 523$), Malaysia ($n = 453$), Thailand ($n = 221$) and Indonesia ($n = 80$). In the final sample selection, IPO firms that were delisted within less than 36 months are included to avoid survivorship bias (Kothari & Warner 1997, 2006).

To begin with, a list of IPOs that went public during the study period is required. The list is obtained from a number of sources. For Malaysian IPOs, the primary source is the Bursa Malaysia Information Services. For Singapore, Thailand and Indonesia, this data is primarily obtained from the ThomsonOne Banker database. The OSIRIS database is used as a checking mechanism to ensure the completeness of the list of IPO firms. Together with the list of firms, listing dates, listing prices and number of IPO shares are obtained from the same databases. Data that are not available from ThomsonOne Banker and OSIRIS were hand-picked from the stock exchange on which the IPOs are listed, as follows: (1) The Singapore Exchange (<https://www.sgx.com>); (2) Bursa Malaysia

(<http://www.bursamalaysia.com/market/>); (3) The Stock Exchange of Thailand (<https://www.set.or.th/en/>); and (4) Bursa Efek Indonesia (<http://www.idx.co.id/>).

In order to calculate the IPO initial return, the closing prices of IPO on the first trading day are obtained from the Datastream database. To calculate abnormal returns, the data required are daily closing prices for IPOs and for the market indices for each of the four markets, namely the Straits Times Index (STI), the FTSE Bursa Malaysia Kuala Lumpur Composite Index (FBM KLCI), the Stock Exchange of Thailand Index (SET) and the Jakarta Composite Index (JCI). These data are also obtained from Datastream. The daily closing prices for IPOs are downloaded from the first trading day up to 31 December 2016. The daily closing prices for market indices are downloaded from 1 January 1999 up to 31 December 2016. These are to allow calculations of the excess returns for the calendar-time analysis.

For the same purpose, the risk-free rate is downloaded from the websites of the national banks of each country, as follows: (1) Monetary Authority of Singapore (<http://www.mas.gov.sg/>); (2) The Central Bank of Malaysia (www.bnm.gov.my/); (3) Bank of Thailand (<https://www.bot.or.th>) and (4) Bank Negara Indonesia (www.bni.co.id/id-id/). In order to construct the FF3F SML and HML factors, the market capitalisation and the book-to-market values of the IPOs are required. For the former, six-monthly data are downloaded from the June prior to the listing date up to June 2016. For the latter, annual data of the market-to-book value are obtained, starting from December in the year before listing, up to December 2016. The book-to-market value is then calculated as the reciprocal of the market-to-book value. Finally, in order to conduct the cross-sectional analysis of the IPO returns, the data required are the date of incorporation of the IPO firms and sector classifications. The former is obtained from OSIRIS and the Bloomberg website (<http://www.bloomberg.com/>), and the latter from Datastream.

2.4. Empirical Findings

2.4.1 Distribution of IPO Samples

Before starting the analysis, the distribution of IPO samples across the ASEAN-4 markets is examined. The distribution patterns are examined by the IPOs' ex-ante characteristics, namely listing market, listing year, IPO size, firm size, firm age and industry. It is important to examine the sample distribution to assess the initial flavour of the data. Previous studies show that the variations of IPO short- and long-term performances are, to some extent, attributed to these factors (Ritter 1991, Ahmad-Zaluki et al. 2007, Ahmad-Zaluki & Kect 2012, Komenkul & Kiranand 2017). As shown in Figure 2.2, there are variations in IPO sample distributions between each market. The largest amount of sample is for the Singaporean IPOs ($n = 523$), followed by Malaysian ($n = 453$) and Thai ($n = 221$) IPOs, respectively. Indonesian IPOs represent the least number of sample ($n = 80$). The distribution of IPO samples is consistent with the size of IPOs in each market as discussed in Section 1.3.2.

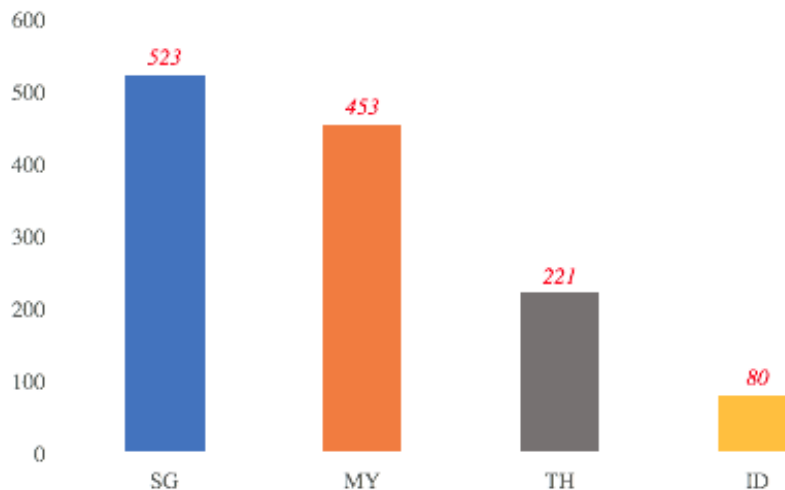


Figure 2.2:
Distribution of ASEAN-4 IPO Samples
by Listing Markets

Next, the sample distribution is segregated by listing year. Notably, Figure 2.3 shows that the pattern of listing numbers is not monotonous. The first interesting pattern to note is that new listings are highest during 2004 and 2005,

particularly in Singapore ($n_{IPO2004} = 74$), Malaysia ($n_{IPO2005} = 72$), and Thailand ($n_{IPO2004} = 42$). The increasing patterns are particularly obvious for the Malaysian and Thai markets. The increase in activities in these markets may signify hot-market conditions. Thus the IPO volume during these periods are higher than the other periods. The number of IPOs in Singapore and Malaysia in 2008 and 2009 show a declining pattern, in response to the US Subprime Crisis that adversely impacted the global stock market. However, the Thai and Indonesian IPO activities do not appear to be adversely affected by the event. In fact, there is a slight increase in the number of IPOs listed in the Thai market during these years.

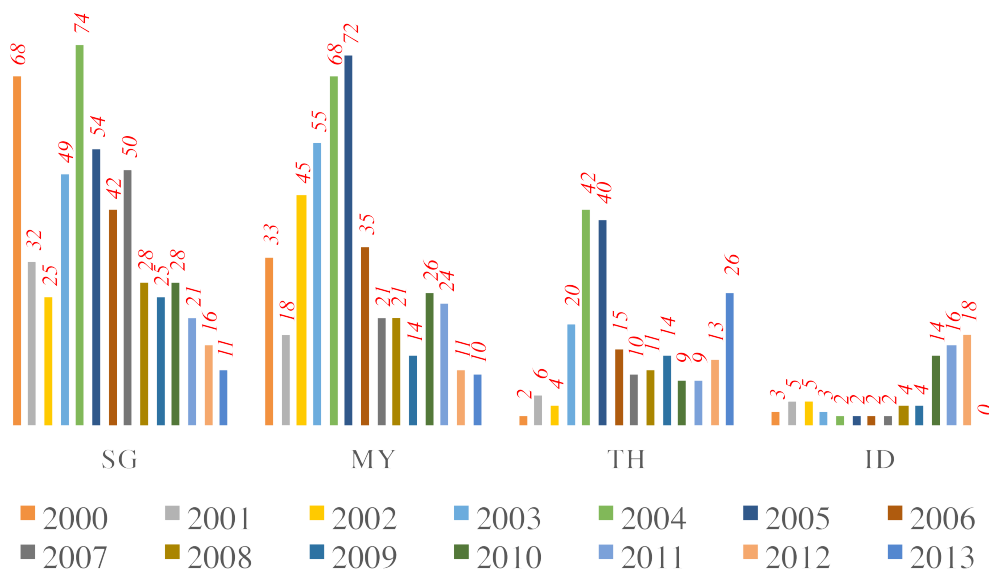


Figure 2.3:
Distribution of ASEAN-4 IPO Samples
by Listing Year

Notably, Figure 2.3 shows contrasting patterns of IPO listings, for Singapore and Malaysia with listing activities with those of Thailand and Indonesia during the four final years of the study (2010 to 2013). There have been declining trends in Singapore ($n = 28$ to $n = 11$) and Malaysia ($n = 26$ to $n = 10$), implying that the Singapore Exchange and Bursa Malaysia have been reducing listing activities

in recent years. In contrast, the huge jump in listing activities for Thailand ($n = 9$ to $n = 26$) and Indonesia ($n = 4$ to $n = 18$) implies better growth of these IPO markets in recent years. One final point to note is that there is no IPO sample for Indonesia for 2013. This is due to the filtration of the sample that requires the exclusion of all IPOs listed in this market during the year.

Moving on to offer size, Figure 2.4 exhibits that Singapore and Malaysia IPO markets are dominated by relatively small to medium sized IPOs. Taken together, around 78% ($n = 409$) and 85% ($n = 385$) of Singaporean and Malaysian IPOs, respectively, are small to medium IPOs. In contrast, smaller percentages of IPOs in Thailand (59%, $n = 130$) and Indonesia (43%, $n = 34$) are small to medium-sized IPOs. These markets are dominated by large IPOs. It is worth noting that the segregations are done at the market level, due to variations in IPO sizes within each market. IPO offer values in each market are segregated into four quartiles, and the process is repeated for all the four markets. Figure 2.4 shows the interesting patterns of IPO distribution across ASEAN-4 markets.

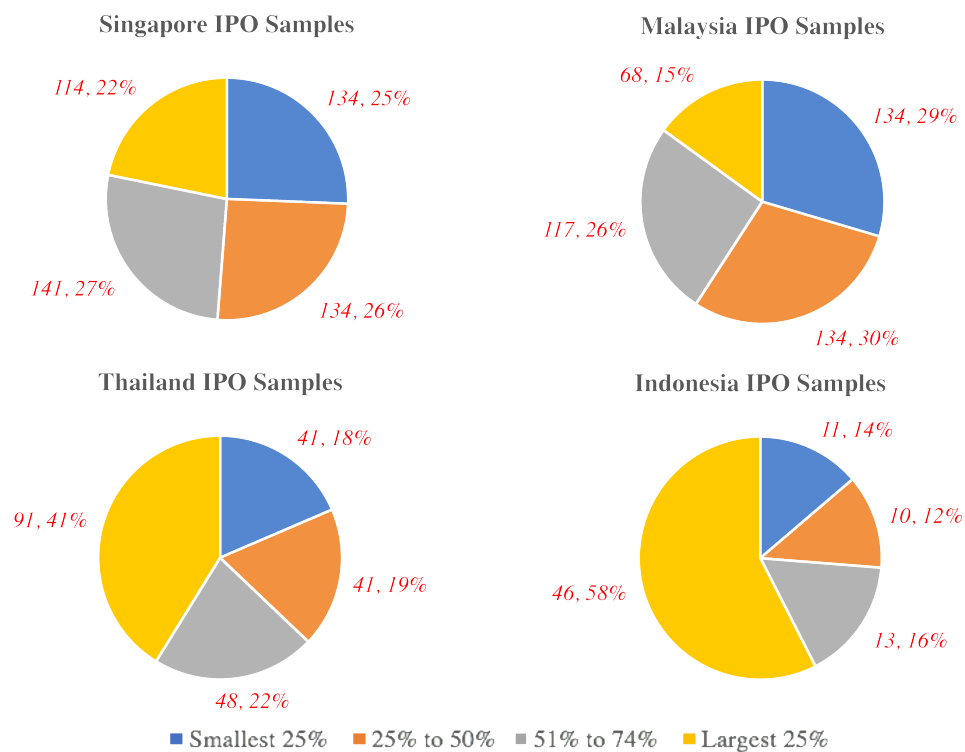


Figure 2.4:
Distribution of ASEAN-4 IPO Samples
by Offer Size

The next distribution pattern focuses on the IPO firm size. It is worth noting that the segregations are not based on the overall ASEAN-4 region, due to variations in IPO firm sizes within each market. Rather, the IPOs are segregated according to the market capitalisations of IPO firms within the market where they are listed only. This is important to avoid misclassification. For example, the largest IPO firm listed on the Singapore Exchange is US\$33.89 million, but only US\$3.96 million for the Jakarta Stock Exchange. In the same vein, the smallest IPO firm on the former market has the market capitalisation of US\$0.35 million, and only US\$0.28 million in the latter. Therefore, *small* market capitalisation in the US Dollar value in Singapore may not imply the same in the other three markets. To allow more meaningful comparison, the firms are segregated into four quartiles according to their market capitalisations. Figure 2.5 shows an interesting pattern. In the Singapore and Malaysia markets, the majority of the of IPO firms are small to medium in terms of market capitalisations, representing 81% and 82% of the IPO samples in the respective markets. In contrast, IPO firms in Thailand and Indonesia tend to be large firms, as represented by 41% and 60% of the samples for the respective markets.

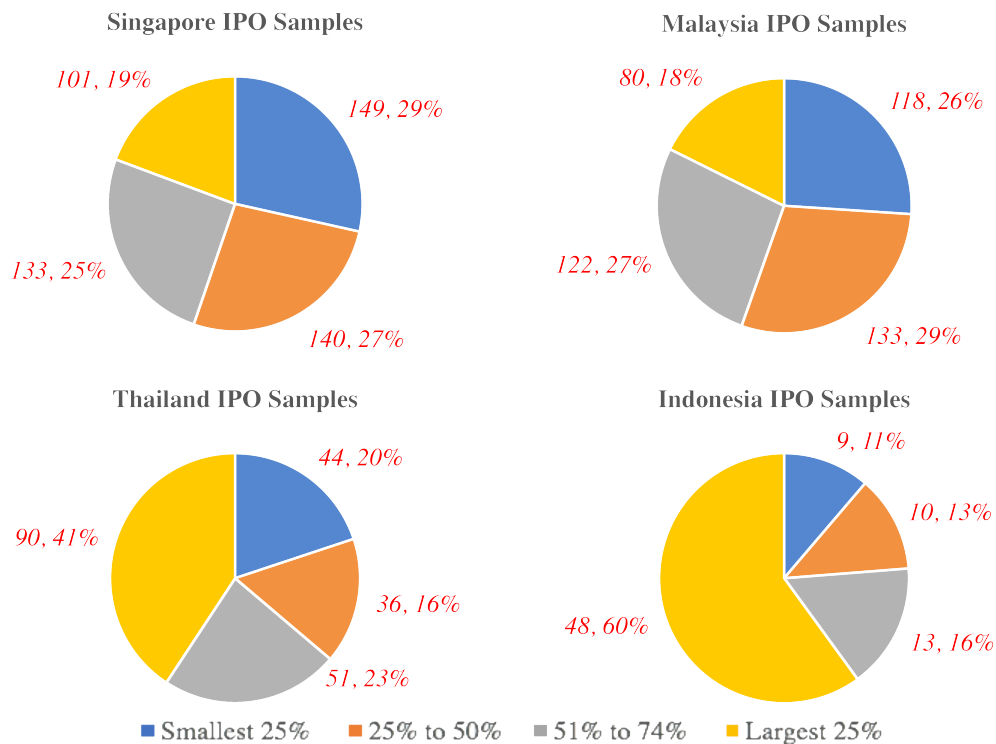


Figure 2.5:
Distribution of ASEAN-4 IPO Samples
by Firm Size

Next, I report the distribution of ASEAN-4 IPO samples segregated by firm age. Following Ritter (1991), IPO firm ages are classified into five groups as follows: (1) 0 to 1 years; (2) 2 to 4 years; (3) 5 to 9 years; (4) 10 to 19 years; (5) more than 20 years. Referring to Figure 2.6, the age profiles of IPO firms in Singapore are quite similar to their Malaysian counterparts. The Singapore Exchange and Bursa Malaysia are dominated by young IPO firms, particularly those that have only been established within less than a year from the listing date. On the other hand, the Thai and Indonesian IPOs mainly consist of older firms, particularly those that have been established between five to nine years prior to listing. Taken together, the size (Figure 2.5) and age distributions imply that in Singapore and Malaysia, the IPO markets are dominated by smaller and younger growth firms; while in Thailand and Indonesia, most firms are only ready to go public as they become more mature and established.

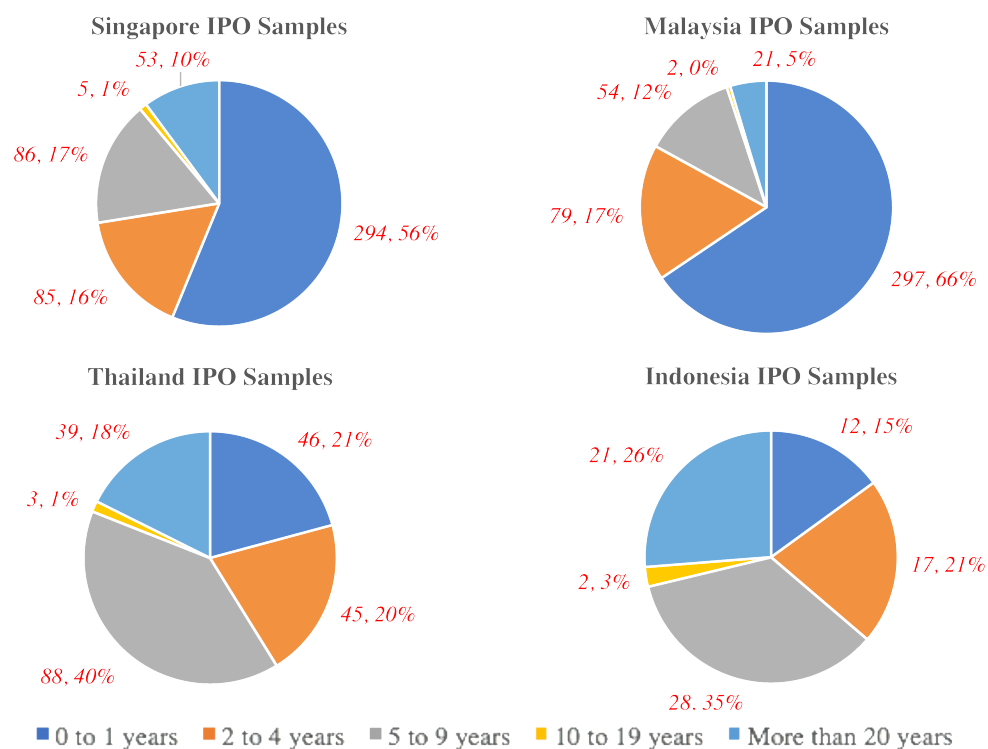


Figure 2.6:
Distribution of ASEAN-4 IPO Samples
by Firm Age

Finally, the IPO samples are segregated by sector groupings. As each market

has its own sector classifications, for uniformity, this study groups the IPOs according to the Thomson Reuters sector classifications⁸, the data of which are sourced from Datastream. Based on this classification, the IPO samples are grouped into nine sectors, namely *Basic Materials*, *Consumer Goods*, *Consumer Services*, *Healthcare*, *Industrial*, *Oil and Gas*, *Technology*, *Telecommunications* and *Utilities*.

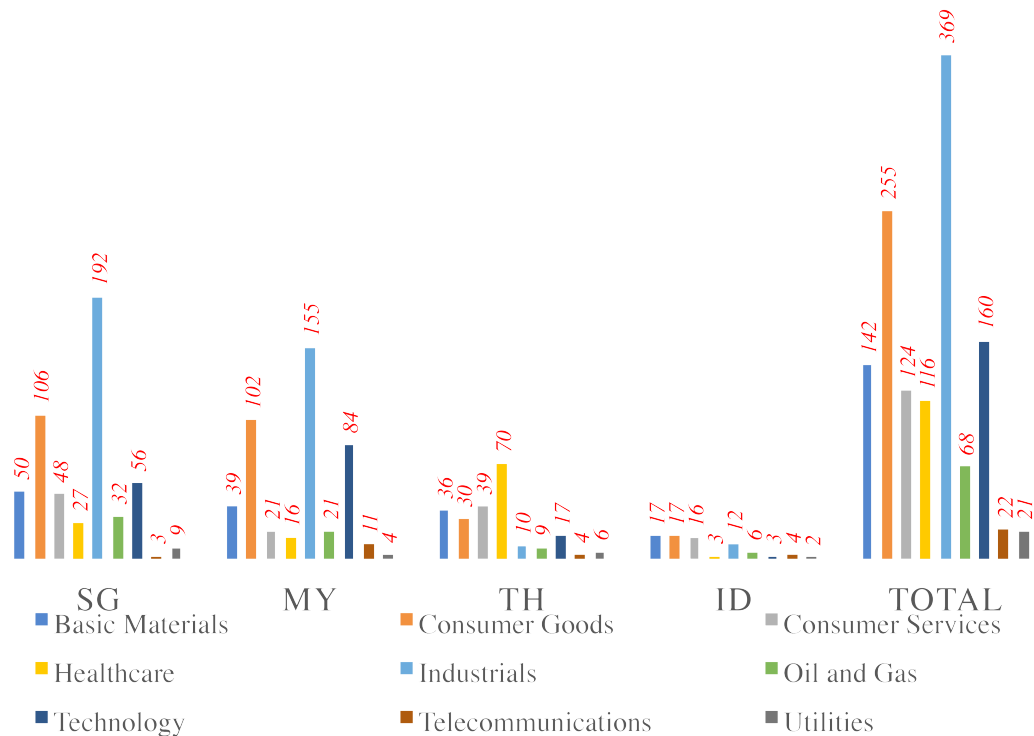


Figure 2.7:
Distribution of ASEAN-4 IPO Samples
by Sector Groupings

Figure 2.7 illustrates the distribution of IPO samples by industry classifications in each of the ASEAN-4 markets. As can be seen, there is a variation in sector classifications for IPOs in each market. Most of the IPO samples for Singapore ($n = 192$) and Malaysia ($n = 155$) markets are from the Industrials sector. Overall, these IPO markets are dominated by the Industrials, Consumer Goods and Technology sectors. For the Thai market, the highest number of listings is

⁸Thomson Reuters classifies the main umbrella as *industry* classification, under which there are sectors and sub-sectors. However, in this study the term *sector* is used instead of *industry*, to avoid confusion with the *Industrial* sector.

from the Healthcare sector ($n = 70$). Finally, for Indonesia, I report similar number of samples from the Basic Materials ($n = 17$), Consumer Goods ($n = 17$) and Consumer Services ($n = 16$) sectors. In all markets, Telecommunications and Utilities IPOs represent the least samples.

Based on the sample distributions by country and further segregated by year of listing, firm size and age, and sector groupings, we can see that Singapore and Malaysia IPOs have quite similar characteristics. Clearly, the distribution patterns of the IPO samples suggest that Singaporean and Malaysian IPOs tend to carry higher ex-ante uncertainty due to the smaller size and younger age of the firms. However, at this initial stage, it is too early to make deductions on the overall return behaviour of the IPO samples. Therefore, further analyses are conducted to examine the IPO return behaviour in the ASEAN-4 markets.

2.4.2 Descriptive Analysis

The analysis is begun by reporting the mean, minimum, maximum and standard deviation for IPO characteristics, namely offer size, firm size and age, and IPO initial returns. Table 2.2 presents the descriptive statistics. The statistics are presented at the market level. I first focus on the offer size, as reported in Panel A of the table. On average, the IPO size across the ASEAN-4 markets varies. The mean IPO size is highest for Indonesia (US\$324.22 million). Singapore exhibits the lowest mean offer size at US\$30.04 million. There is a high standard deviation in offer size in Indonesia, potentially driven by the maximum value of offer being US\$10,064.98 million. As discussed earlier, it may not be representative to justify *small* and *big* based on the absolute value due to the varying range of IPO sizes across the markets. Thus, the IPO samples are classified into IPO size brackets using relative values. The mean of US\$30.04 million shown in Panel B is considered *small* for IPOs in Singapore, while US\$34.78 million is considered *large* for Thai IPOs. Clearly, when it comes to firm and IPO size, relative value makes a better representation than absolute monetary value and makes better sense for cross-country comparison.

Next, Panel B reports the IPO firm size in each ASEAN-4 market. The statistics show that the size of IPO firms is not standardised in terms of what is considered *small* and *large*. The table reports very high standard deviations, in particular for Singapore and Malaysia. Thus, classifying the IPO samples into size

brackets, as explained in Section 2.4.1, makes the comparison more sensible rather than merely using the absolute monetary value. Linking the findings in this Table to Figure 2.5, it is apparent that the mean values do not represent the relative firm size in the context of each market, particularly for Singapore, Malaysia and Thailand. While US\$260.56 million and US\$165.61 million are considered *small* in the former two markets, US\$113.03 million is *large* for the latter. Moving on to Panel C, the mean age indicates that Singapore ($mean_{age} = 6.99$) and Malaysia ($mean_{age} = 5.38$) IPO firms in this sample are generally younger than their Thai ($mean_{age} = 14.42$) and Indonesian ($mean_{age} = 15.21$) counterparts. Consistent with the numbers reported in Figures 2.5 and 2.6 together, the mean values indicates that Singaporean and Malaysian IPO samples consist of smaller and younger IPOs, while their Thai and Indonesian counterparts consist of larger, in the respective country contexts, and more mature firms.

Table 2.2
Descriptive Statistics of IPO Samples.

This table reports the mean, minimum and maximum values, and standard deviations for firm size, firm age, IPO size and IPO initial returns for IPOs listed in ASEAN-4 markets from January 2000 to December 2013. The statistics are reported at the market level. SG, MY, TH and ID represents Singapore, Malaysia, Thailand and Indonesia, respectively.

	SG ($n = 523$)	MY ($n = 453$)	TH ($n = 221$)	ID ($n = 80$)
Panel A: Offer Size (US\$ million)				
Mean	30.04	74.88	34.78	324.22
Min.	1.12	0.86	1.01	1.16
Max.	1,409.97	3,880.43	717.87	10,064.98
Std. Dev.	85.17	357.97	94.71	1,247.20
Panel B: IPO Firm Size (US\$ million)				
Mean	260.56	165.61	113.03	375.45
Min.	0.35	1.22	0.05	0.03
Max.	33,882.45	12,517.51	2,748.79	3,955.81
Std. Dev.	1,804.20	900.67	332.81	716.80
Panel C: IPO Firm Age (Years)				
Mean	6.99	5.38	14.42	15.21
Min.	0.00	0.00	0.00	0.00
Max.	66.00	40.00	60.00	51.00
Std. Dev.	8.83	6.94	10.17	10.83
Panel D: IPO Initial Return (%)				
Mean	0.24	0.27	0.34	0.57
Min.	-0.97	-0.75	-0.92	-0.84
Max.	8.70	8.62	5.90	12.63
Std. Dev.	0.64	0.63	0.69	1.54

Finally, Panel D reports the initial returns of IPOs in ASEAN-4 markets. The positive mean initial across the market provides an early indication that in general,

IPOs in ASEAN-4 markets are underpriced. The negative minimum value indicates that there are IPOs that yield negative returns in the first day of trading, as well as extremely high returns, as indicated by the maximum value. Importantly, the negative initial returns are exhibited in each market, indicating that underpricing is a general characteristic of IPOs at the market level, and not necessarily true at the firm level. Overall, the statistics reported in Table 2.2 imply variability in characteristics of IPOs in ASEAN-4. Consistent with what is reported in Section 2.4.1, IPOs in Singapore and Malaysia exhibit similarities in characteristics. With ‘small and young’ being the apparent characteristics, IPOs in these two markets appear to carry higher ex-ante uncertainty as compared to their counterparts in Thailand and Indonesia.

2.4.3 Initial Returns of ASEAN-4 IPOs

The first IPO return anomaly that will be examined in this study is underpricing. Table 2.3 reports the mean IPO returns for the ASEAN-4 markets, complete with the relevant tests for significance. The mean underpricing is calculated for IPOs listed in Singapore, Malaysia, Thailand and Indonesia from 2000 to 2013. As shown in the Figure, underpricing exists in all the ASEAN-4 markets, and the levels vary across the markets. The highest underpricing is seen in Indonesia (56.74%), followed by Thailand (33.8%) and Malaysia (26.8%). The lowest underpricing is reported in Singapore (24.1%). As reported in Table 2.3, the t -statistics are significant across all markets, indicating that the mean underpricing in ASEAN-4 markets are significantly different from zero. Importantly the F -statistics ($p < 0.05$) from the one-way analysis of variance (ANOVA) indicates that the mean underpricing of ASEAN-4 IPOs are significantly different. The non-parametric test results, namely the z -statistics ($p < 0.001$) and the χ^2 ($p < 0.010$) further supports the findings. Interestingly, the Scheffe post-hoc test suggest that significant difference in underpricing can be found between Singapore and Indonesia ($p < 0.001$), and Malaysia and Indonesia ($p < 0.001$). Overall, the findings are consistent with $H1$ that in the ASEAN-4 region, underpricing exists across the ASEAN-4 markets, where the highest level is in Indonesia and lowest in Singapore.

These findings are consistent with the literature that underpricing exists in IPO markets, regardless of the market characteristics. Recent studies report significant underpricing in Singapore (Ho 2016), Malaysia (Ahmad-Zaluki et al. 2007, Yaakub et al. 2018), Thailand (Ekkayokkaya & Pengniti 2012, Komenkul et al. 2017) and Indonesia (Utamaningsih et al. 2013, Utamaningsih 2017). Further, the findings that underpricing is highest in Indonesia and lowest in Singapore support previous comparative studies that report underpricing is higher in the less developed market as compared to developed market (Moshirian et al. 2010, Berk & Peterle 2015). The latter attributes the differences to information asymmetry that is higher in the less developed markets. With regard to cultural difference, these findings lend support to Costa et al. (2013), Chouliaras (2016) that underpricing is higher in a more collectivist society.

The literature reports that overconfidence behaviour is higher in an environment where information asymmetry is high (Tekçe & Yılmaz 2015) and in the society that exhibits strong collectivism (Yates et al. 1998, Chui et al. 2010, Tekçe & Yılmaz 2015). Thus, the findings reported in Table 2.3 are in accordance with the literature. The lack of information availability makes it harder for investors to value an IPO stock correctly. As a secondary emerging market, information dissemination in Indonesia is less efficient than in Singapore and Malaysia. As a result, investors rely heavily on their private information or intuition; and tend to be too confident with the correctness of their information or intuition.

Table 2.3
Initial Returns of ASEAN-4 IPOs.

This table reports the mean underpricing for IPOs listed in ASEAN-4 markets from 2000 to 2013. The t -statistics are obtained using the one-sample t -test that the mean underpricing in each market is significantly from zero. The z -statistics are obtained using the Wilcoxon signed-rank test that the median underpricing in each market is significantly different from zero. The F -distribution is obtained from the one-way analysis of variance (ANOVA) that the mean of the populations is significantly different. The χ^2 is obtained from the Kruskal-Wallis test that the median of the populations is significantly different. ***, ** and * indicate statistical significance at the 1, 5 and 10% levels respectively.

	SG	MY	TH	ID
Panel A: Mean underpricing of ASEAN-4 IPOs and related tests of significance				
Mean IR	0.241	0.268	0.338	0.567
<i>One-Sample parametric and non-parametric tests of significance:</i>				
t -stat.	8.642 ***	9.014 ***	7.266 ***	3.303 **
z -stat.	10.075 ***	11.291 ***	8.293 ***	5.931 ***
<i>Population parametric and non-parametric tests of significance:</i>				
F -stat.	5.050 **			
χ^2	10.362 *			
Panel B: Scheffe test for significance in differences between population means				
	SG	MY	TH	
MY	0.028			
TH	0.098	0.07		
ID	0.327 ***	0.299 ***	0.229	

Cultural characteristics may partly explain the significant difference in underpricing between Indonesia and its two neighbouring countries, Singapore and Malaysia. As they belong in a strongly collectivist society, investors in Indonesia may be more inclined to pay more attention to attention-grabbing information that is circulated within the society, despite their lack of relevance. On the other hand, Singaporean and Malaysian investors may be more analytical and trusting of information based on fact in their IPO valuation. The results further suggest that Thai investors are generally more overconfident than Singaporean and Malaysian investors, but perhaps not as strongly overconfident as their Indonesian counterparts. These early inferences can only be validated by the behaviour of long-run performance of ASEAN-4 IPOs. To answer this question, the three-year after-market performances of the ASEAN-4 IPOs are examined. The following section discusses the findings.

2.4.4 Long-Run IPO Performances of ASEAN-4 IPOs

2.4.4.1 Event-Time Approach

A. Cumulative Abnormal Returns

Next, we move to discussing the 3-year abnormal returns of IPOs in ASEAN-4. The abnormal returns are calculated using various event- and calendar-time approaches of the event methodology. For the former, abnormal returns are calculated using both cumulative and buy-and-hold abnormal returns approach, using both equal- and value-weighting metrics. The literature suggests that abnormal returns calculated using the event study methodology are sensitive to the methods being employed (Kothari & Warner 1997, Kothari et al. 2009). Therefore, both equal- and value-weightings are employed to identify whether firm market capitalisation will alter abnormal returns. Also, with the usage of both weighting metrics, the findings of this study may benefit a broader audience. Equal weighting is useful for readers who are interested to see the average three-year returns of IPO investment. On the other hand, readers who are more interested to learn how firm size effects an IPO portfolio return will benefit from the value-weighted abnormal returns.

The first analysis on IPO long-run performance focuses on the market-adjusted cumulative abnormal returns (CAR) of IPOs in ASEAN-4 markets in 2000-2013. Table 2.4 reports the market-adjusted cumulative abnormal returns (CAR) for the months 1 to 12, 18, 24 and 36 post-listing. The complete month-by-month CARs are presented in Appendix A. At first impression, the table shows that ASEAN-4 IPO long-run performance patterns are not monotonic. There are variations in the pattern of CARs across the market. By first focusing on Panel A, it reports the equally-weighted cumulative abnormal returns (EWCAR). On average, significant 3-year underperformance exists in the Singapore and Malaysia markets at -0.1% ($p < 0.01$) and -0.2% ($p < 0.001$), respectively. In contrast, significant overperformance is found in the Thai market at 24.7% ($p < 0.001$). No evidence of under- or overperformance is found for the Indonesia market. A one-way ANOVA shows that the mean 36-month abnormal returns of IPOs in each ASEAN-4 market are significantly different from each other ($p < 0.001$). In a post-hoc Sheffe test, it

can be seen that the significant differences in mean EWCAR exist between Singapore and Malaysia ($p < 0.01$), Singapore and Thailand ($p < 0.001$), Malaysia and Thailand ($p < 0.001$), and Malaysia and Indonesia ($p < 0.001$).

Table 2.4

3-year Cumulative Abnormal Returns for ASEAN-4 IPOs.

This table reports the cumulative abnormal returns from 1- to 12-month, 24-month and 36-month periods aftermarket, excluding the IPO underpricing. Data covers the period of January 2000 to December 2013. The benchmark used is the main market index returns for each ASEAN-4 market. The weighting metrics used are equally-weighted and value-weighted. Brown and Warner's (1980) t -statistics (t -stat) are the two-tailed test results of a null hypothesis that the mean CARs are equal to zero. ***, ** and * indicate statistical significance at the 1, 5 and 10% levels, respectively.

	SG		MY		TH		ID	
Month	AR	CAR	AR	CAR	AR	CAR	AR	CAR
Panel A: 3-year Equally-Weighted Cumulative Abnormal Returns for ASEAN-4 IPOs								
1	-0.068	-0.068***	-0.019	-0.019	-0.040	-0.040**	0.058	0.058
2	-0.058	0.010***	-0.018	0.002	0.010	-0.030	-0.006	0.052
3	-0.061	-0.003***	-0.030	-0.012*	-0.002	-0.032	-0.003	0.049
4	-0.070	-0.009***	-0.043	-0.013*	0.032	0.000	0.015	0.064
5	-0.073	-0.003***	-0.042	0.001*	0.004	0.004	0.018	0.082
6	-0.081	-0.008***	-0.046	-0.004*	-0.004	0.001	0.004	0.086
7	-0.096	-0.015***	-0.053	-0.006*	-0.001	-0.001	-0.009	0.077
8	-0.099	-0.003***	-0.060	-0.008*	0.005	0.005	-0.013	0.064
9	-0.112	-0.013***	-0.066	-0.006**	-0.006	-0.001	-0.004	0.060
10	-0.114	-0.002***	-0.075	-0.009**	-0.005	-0.006	0.002	0.061
11	-0.114	0.000***	-0.078	-0.002**	0.009	0.003	0.024	0.086
12	-0.121	-0.007***	-0.075	0.003**	0.004	0.007	0.067	0.152*
24	-0.109	0.005**	-0.188	-0.017***	0.009	0.046	0.012	0.202*
36	-0.087	-0.001*	-0.283	-0.002***	0.006	0.247***	0.003	0.127
Panel B: 3-year Value-Weighted Cumulative Abnormal Returns for ASEAN-4 IPOs								
1	-0.046	-0.046***	0.001	0.001	-0.007	-0.007	-0.015	-0.015
2	0.074	0.028*	0.022	0.023	0.003	-0.004	0.006	-0.010
3	-0.020	0.008	0.014	0.036*	-0.016	-0.020	0.034	0.025
4	-0.013	-0.005	0.018	0.054**	0.021	0.001	0.025	0.050
5	0.003	-0.002	-0.010	0.044*	-0.004	-0.003	0.007	0.056
6	-0.019	-0.021	-0.007	0.037*	-0.011	-0.013	-0.008	0.048
7	-0.017	-0.038*	-0.008	0.029	0.002	-0.012	-0.038	0.010
8	0.003	-0.034	-0.005	0.024	0.034	0.022	-0.005	0.005
9	-0.009	-0.044*	-0.010	0.014	0.005	0.028	-0.007	-0.002
10	0.013	-0.031	-0.024	-0.010	0.007	0.034	-0.034	-0.035
11	-0.016	-0.047*	-0.001	-0.010	0.024	0.058	-0.001	-0.037
12	-0.013	-0.061*	-0.011	-0.021	0.005	0.064	0.011	-0.026
24	0.006	-0.054	-0.008	-0.077*	0.028	0.131*	-0.010	-0.105
36	0.019	-0.004	-0.024	-0.129**	0.025	0.354***	0.014	-0.203

When value-weighting (Panel B) is employed, the significance disappears for Singapore. Consistent significant underperformance is reported for Malaysia (-12.9%, $p < 0.05$) and overperformance in Thailand (35.4%, $p < 0.001$). The ANOVA yields insignificant F -statistics, indicating that the means of VWCAR of ASEAN-4 IPOs are not significantly different between each market. Noticeably,

Panel B shows that when value-weighting is employed, mean abnormal returns are not as consistently different from zero as when equal-weighting is employed throughout the 36 months period. This shows that market capitalisation of IPO firms may not be a strong contributing factor in determining abnormal returns in the ASEAN-4 region. For Malaysian IPO, larger firms show long-run underperformance. In contrast, large IPO firms in Thai overperform in the long-run. The finding sheds the light that self-attribution bias is more prevalent when investments are made in larger firms.

Previous comparative studies report variability in abnormal returns patterns within the same region (Schuster 2003, Moshirian et al. 2010, Alanazi & Al-Zoubi 2015, Komenkul & Kiranand 2017). These authors focus on the European, Asian, the Middle East and North African and Southeast Asian regions, respectively. For the ASEAN region, Moshirian et al. (2010) and Ho (2016) report significant underperformance using EWCAR approach in the Singapore, while Chorruck & Worthington (2010) and Komenkul et al. (2017) report overperformance in Thailand. Using the VWCAR method, Yaakub et al. (2018) report significant underperformance in Malaysia. Komenkul et al. (2017) on the other hand, report significant overperformance among Thai IPOs.

To understand the CAR patterns for ASEAN-4 IPO, Figure 2.8 is presented. For more comprehensive interpretations, this figure should be used with Tables A.1, A.2, A.3, and A.4 in Appendix A. The figure illustrates the EWCAR and VWCAR patterns from month 1 to 36 aftermarket. Varying patterns of EWCAR can be seen from Figure 2.8(a). For EWCAR, the abnormal return patterns for Singapore and Malaysia are similar. The IPO prices adjusted instantaneously to the market as early as the first-month aftermarket, not only in these two markets but also in Thailand. Previously, Ahmad-Zaluki et al. (2007) and Komenkul (2015) report similar patterns. Marginal (but significant) underperformance is seen at month-36 for these Singapore and Malaysia. The EWCAR patterns are rather stable throughout the 36-month period, suggesting that investors in Singapore and Malaysia do not tend to overweight ‘salient, anecdotal and extreme information’ (Grether 1980, Tversky & Kahneman 1980). Instead, they appear to respond more to actual facts when valuing the IPOs; hence price overreaction can be avoided. The return reversals indeed is a manifestation that Singaporean and Malaysian investors are overconfident (Daniel et al. 1998) at the initial stage of IPO listings.

However, as suggested by the figure, they are quick to adjust to publicly available information and incorporate them into their IPO valuations.

Thailand IPOs exhibit similar pattern with Singapore and Malaysia until month 21 aftermarket. There is a temporary adjustment to the market for the CAR, until an upwards trend of the CAR emerges from month 21 to 36, with no signs of return reversal. A closer examination at Table A.3 shows that the abnormal returns have been consistently positive since month 21, suggesting that the Thai IPOs tend to beat the market during the period. This may have caused investors to be more confident that their information or intuition is correct about the IPO value, as they can persistently beat the market. The persistent confidence suggests that Thai investors suffer from self-attribution bias (Langer & Roth 1975, Miller 1977).

In the Indonesian market, the fluctuating pattern of EWCAR is rather confusing. In the first month aftermarket, the IPO return falls, but not fall below the Jakarta Composite Index returns, thus yielding positive abnormal returns. The EWCAR keeps fluctuating, and there is an uptrend from month 9 to 14 aftermarket. After that point, the fluctuating trend re-emerges. The pattern suggests that Indonesian IPOs are rather reactive to their own private information and underreacting to publicly available information. Investors in this market may have treated unimportant information as news, thus are highly reactive to it. Note that there is a declining trend from months 32 to 36, suggesting that investors may have begun to absorb publicly available information into the IPO price. However, the pattern of EWCAR behaviour is unknown beyond the 36-month point.

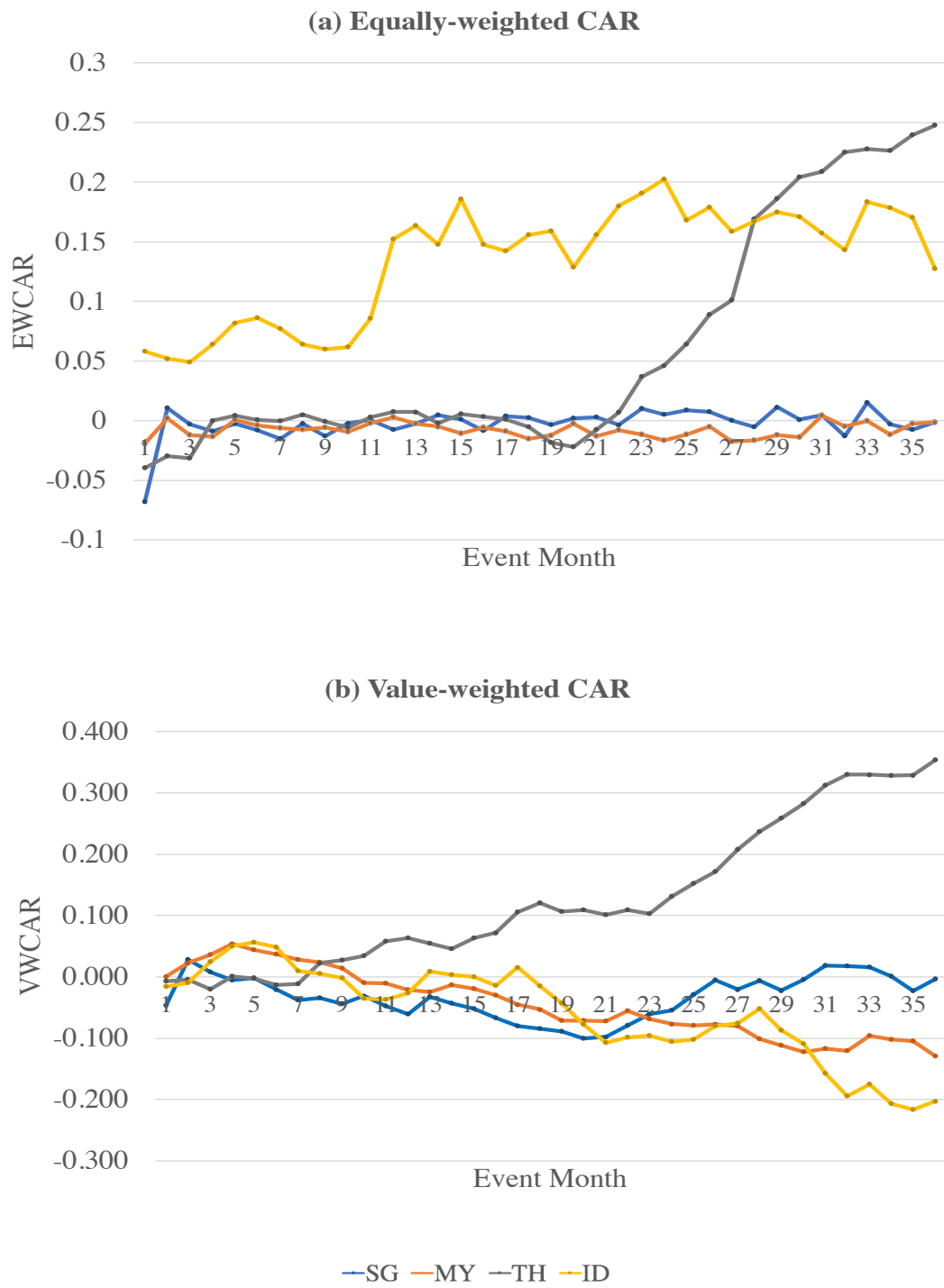


Figure 2.8:
3-year Cumulative Abnormal Returns (CAR)
of ASEAN-4 IPOs

When value weighting is employed to calculate CAR (Figure 2.8(b)), Singapore IPOs consistently underperform throughout the period, except for quick rebounds in months 2 and 3, and 31 through 34. For Malaysian IPOs, the prices do not adjust to the market until month 11 aftermarket. Noticeably, the underperformance is higher for these two markets when value weighting is employed. While small fluctuations of returns are common (Fama 1998, Thaler & Ganser 2015) as the stock market itself is never stagnant, The patterns imply that investors in Singapore, Malaysia and Indonesia are more overconfident with IPOs with large market capitalisations. For Indonesia, employing value weighting flipped the CAR pattern, where underperformance can be seen in the long-run. In the Indonesian market, firm size appears to carry informational value, hence reflected in the prices in the long-run. The EWCAR pattern for Indonesia shown in Figure 2.8(b) implies that firm size is a strong factor to predict the long-run performance of an IPO in the market. When the size factor is not considered, valuing IPOs appears to be hard for Indonesian investors. The absence of information causes the investors to be persistently confident with their private information and intuitions. Finally, the abnormal returns pattern for Thai IPOs does not appear to be altered when the size factor is taken into consideration.

B. Buy-and-Hold Abnormal Returns

The discussion continues with the 3-year buy-and-hold abnormal returns (BHAR) for IPOs in ASEAN-4, as reported in Table 2.5. It reports the 12- 24- and 36-month BHAR. The complete month-by-month BHCARs are presented in Appendix B. The equally-weighted buy-and-hold returns (EWBHAR) is reported in Panel A, followed by the value-weighted buy-and-hold returns (VWBHAR) in Panel B. Finally, Panel C reports the wealth relatives. By first focusing on the EWBHAR, the table reports significant 36-month underperformance for Singapore (-20.7%, $p < 0.001$) and Malaysia (-27.9%, $p < 0.001$). On the other hand, Thai IPOs significantly overperform in 36 months aftermarket at 24.5% ($p < 0.01$). For Indonesia, although there is significant overperformance in the 12 and 24 months aftermarket, the significance disappears in month 36. The F -distribution from the one-way ANOVA is significant ($p < 0.001$), indicating that the 36-month mean BHAR in each ASEAN-4 market are significantly different from each other. The Scheffe test that follows shows that the significant differences in mean BHAR exist

between Singapore and Thailand ($p < 0.01$), Singapore and Indonesia ($p < 0.001$), Malaysia and Thailand ($p < 0.01$), and Malaysia and Indonesia ($p < 0.001$).

Table 2.5

3-year Buy-and-Hold Abnormal Returns for ASEAN-4 IPOs.

This table reports the buy-and-hold abnormal returns for ASEAN-4 IPOs, for the periods of 12-month, 24-month and 36-month aftermarket, excluding the IPO underpricing. Data covers the period of January 2000 to December 2013. The benchmark used is the main market index returns for each ASEAN-4 market. The weighting metrics used are equally-weighted and value-weighted. The table reports the bootstrapped skewness-adjusted t -statistics (t -stat), which is the two-tailed test results of the null hypothesis that the mean BHARs are equal to zero. ***, ** and * indicate statistical significance at the 1, 5 and 10% levels, respectively. Wealth relatives of higher (lower) than 1 indicates overperformance (underperformance).

	SG		MY		TH		ID	
Month	BHR	BHAR	BHR	BHAR	BHR	BHAR	BHR	BHAR
Panel A: 3-year Equally-Weighted Buy-and-Hold Abnormal Returns for ASEAN-4 IPOs								
12	-0.050	-0.092	0.045	-0.012	0.143	0.056	0.338	0.213*
24	-0.002	-0.122**	0.056	-0.115*	0.293	0.104	0.722	0.398*
36	-0.007	-0.207***	-0.016	-0.279***	0.419	0.245*	1.450	0.902
Panel B: 3-year Value-Weighted Buy-and-Hold Abnormal Returns for ASEAN-4 IPOs								
12	0.082	-0.050*	0.039	-0.013	0.128	0.090**	0.180	0.048
24	0.093	-0.070**	0.074	-0.044	0.432	0.270***	0.414	0.152
36	0.138	-0.025	0.145	-0.053	0.608	0.516***	0.792	0.442
Panel C: Wealth Relatives for ASEAN-4 IPOs								
EW	0.828		0.779		1.208		1.582	
VW	0.948		0.906		1.369		1.157	

When value-weighting (Panel B) is employed, the significance disappears for Singapore and Malaysia. On the other hand, the evidence of overperformance becomes stronger for Thailand (51.6%, ($p < 0.001$)). In fact, significance appears for the 12- ($p < 0.05$), 24- ($p < 0.001$) BHARs for this market. Consistent significant overperformance is reported for Thailand (51.6%, $p < 0.001$). The ANOVA yields insignificant F -statistics, indicating that the means of VWCAR of ASEAN-4 IPOs are not significantly different between each market. Noticeably, Panel B shows that for Singapore and Malaysia, when value-weighting is employed, the mean abnormal returns are not as consistently different from zero as when equal-weighting is employed. As BHAR reflects the actual investors' experience, this implies that Singaporean and Malaysian investors are not strongly influenced by firm size. In contrast, firm size appears to be important for Thai IPO investors. Overall, Tables 2.4 and 2.5 reflect rather similar patterns of 3-year abnormal returns, even when the method changes. Previous comparative studies report variability in abnormal returns patterns within the same region (Schuster 2003, Moshirian et al. 2010, Alanazi & Al-Zoubi 2015, Komenkul & Kiranand 2017). In the ASEAN region,

studies report significant underperformance using EWBHAR approach for Malaysia (Yaakub et al. 2018). Using VWBHAR method, Chorrak & Worthington (2010) report significant overperformance among Thai IPOs.

Wealth relatives, as reported in Panel C of Table 2.5, lend support to the findings in Panels A and B. The 3-year wealth relatives of less than 1.0 for Singapore ($WR_{EWBHAR} = 0.828$, $WR_{WVBHAR} = 0.948$) and Malaysia ($WR_{EWBHAR} = 0.779$, $WR_{WVBHAR} = 0.906$) support that underperformance exist in these markets. For Thailand ($WR_{EWBHAR} = 1.206$, $WR_{WVBHAR} = 1.369$) and Indonesia ($WR_{EWBHAR} = 1.582$, $WR_{WVBHAR} = 1.157$), wealth relatives of over 1.0 support the findings of overperformance discussed above. In addition to wealth relatives, the BHAR results are robust to parametric and non-parametric tests that show consistency in the findings.

In understanding the patterns of 3-year BHARs for ASEAN-4 IPOs, Figure 2.9 illustrates the EWBHAR (2.9(a)) and VWBHAR (2.9(b)) patterns from month 1 to 36 aftermarket. For a more comprehensive interpretation, this figure should be used with Tables B.1, B.2, B.3, and B.4 in Appendix B. For EWBHAR, the abnormal return patterns for Singapore and Malaysia show small declines for the first 18 months aftermarket. The trend continues for Singapore until around month 29. For Malaysia, a more obvious declining trend of BHAR is seen from month 18. The figure also shows that for these markets, the reversal of IPO prices begins instantaneously, from the first-month aftermarket. The IPOs consistently underperform the market throughout the 36-month period. A contrasting pattern is seen for Thai IPOs. Although price reversal occurs during the first-month aftermarket, IPOs in this market overperform from month 8 onwards. The patterns suggest that investors in Thailand become more confident as the market begins to persistently 'validate' the accuracy of their private information. For Indonesia, the change of method in calculating abnormal return seems to alter the abnormal return patterns. Upward trends are seen throughout the study period, implying that investors in this market suffer from self-attribution bias.

We next move to examining the pattern of VWBHAR, as shown in Figure 2.9(b). The first thing to notice is that value weighting increases the magnitude of abnormal returns for ASEAN-4 IPOs. Second, the patterns for VWBHAR for Singapore and Malaysia IPOs are quite similar to the VWCAR (Figure 2.8(b)). Despite the fluctuation in abnormal returns, IPOs in these markets almost consistently underperform. The trend for Thai IPOs VHBHAR is also similar to

VWCAR, strengthening the earlier argument that Thai investors do not consider firm size as informative, hence even when value-weighting is included, there is no sign of price reversals. Surprisingly, when VWBHAR is employed, Indonesian IPO prices do not appear to be adjusted to the market. This is in stark contrast to the VWCAR pattern in Figure 2.8(b). Instead, there is a sharp increase in overperformance during the second year aftermarket. One possible explanation for this is that there are huge jumps in prices for some large capitalisation firms. As BHAR is calculated using compounding interest, it creates a snowball effect on the abnormal returns. Overall, Figures 2.8 and 2.9 show that Singapore and Malaysia IPOs underperform, and share quite similar patterns of long-run abnormal returns. On the other hand, Thai and Indonesian IPOs tend to deviate away from their intrinsic values.

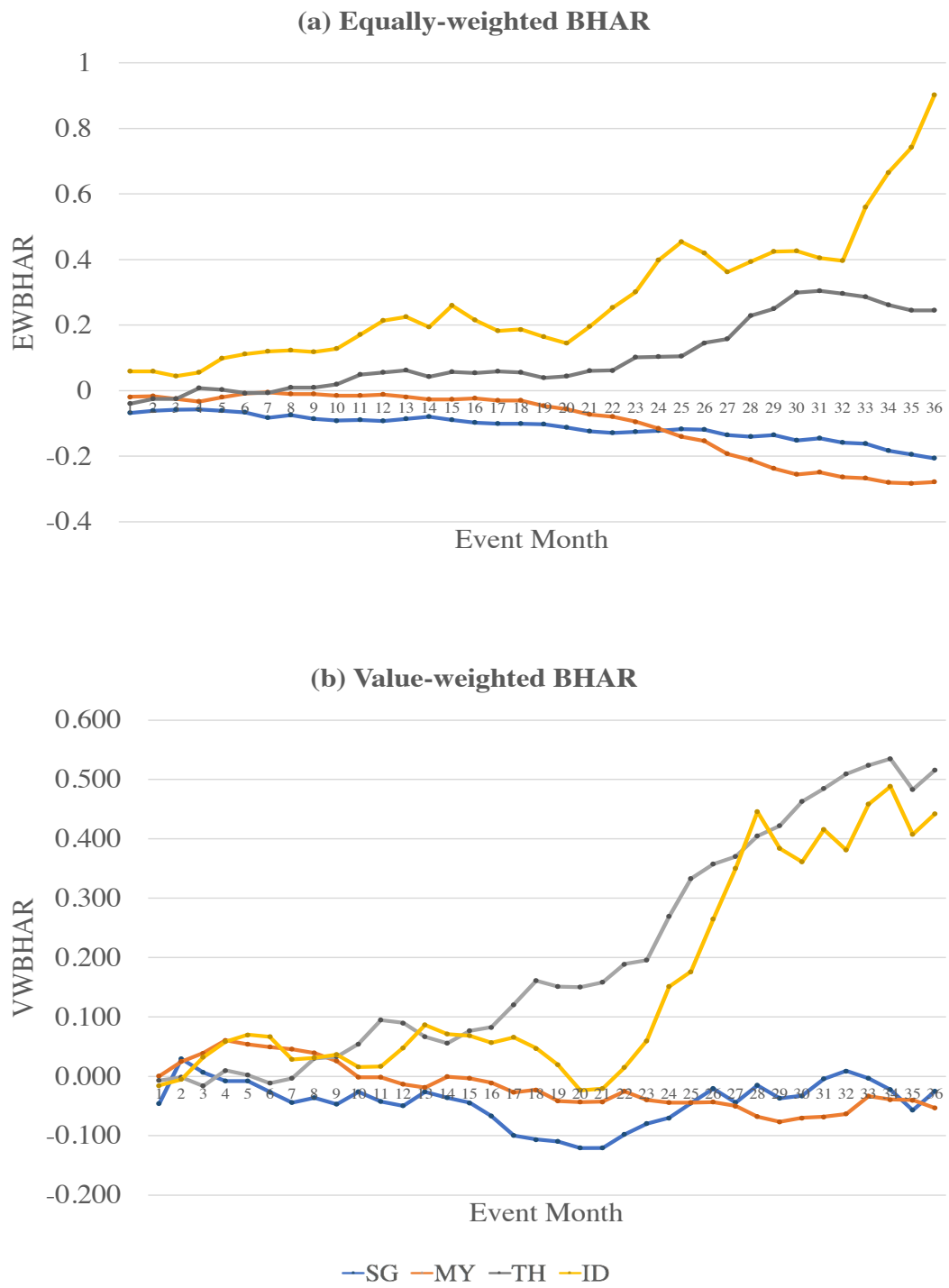


Figure 2.9:
3-year Buy-and-Hold Abnormal Returns (BHAR)
of ASEAN-4 IPOs

Taken together, the findings reported in Tables 2.4 and 2.5 and Figures 2.8 and 2.9 yield a number of important points. First, as seen in previous studies (Ritter 1991, Ahmad-Zaluki et al. 2007, Moshirian et al. 2010, Komenkul 2015, Maximilian & Gupta 2018), among others, abnormal returns are sensitive to the methodology employed in the calculations. The results are altered as the methods change, although no highly contradicting findings are detected. This is unsurprising as large firms have more weightage in the portfolio; thus the overall portfolio returns are largely influenced by changes in returns of the large firms.

Second, the results suggest heterogeneity in the 3-year IPO abnormal returns among ASEAN-4 markets. Significant 3-year underperformance exists in Singapore and Malaysia, in line with Ho (2016), Moshirian et al. (2010) and Yaakub et al. (2018). The findings are similar to findings in other developed markets such as the UK (Belghitar & Dixon 2012), US (Chemmanur & Yan 2017), and Germany (Maximilian & Gupta 2018). Contrastingly, significant *overperformance* is reported for Thailand, supporting previous studies by Chorrak & Worthington (2010), Komenkul (2015) and Komenkul et al. (2017). No statistical evidence of under- overperformance is found for Indonesia, although in general, the IPOs overperform. The ANOVAs suggest that the mean IPO abnormal returns are different among the ASEAN-4 markets. The third important reflection is that IPOs underperform in the markets where information asymmetry is lower (Singapore), indicating that return reversal occurs. However, where information asymmetry is higher (Indonesia), return momentum occurs, causing overperformance. These findings lend support to Moshirian et al. (2010) and Berk & Peterle (2015).

According to (Daniel et al. 1998), overconfident investors are prone to rely too strongly on their private information or intuition and tend to ignore public information as it arrives. For IPO stocks, publicly available information tends to be limited prior to listing; thus overconfidence is almost unavoidable. The findings suggest that investor overconfidence levels differ among the ASEAN-4 markets. Although overconfidence is almost unavoidable, it is lower among Singaporean and Malaysian investors. This is reflected by the instantaneous return reversal in the first-month aftermarket and the almost consistent underperformance throughout the 36-month period. Singapore and Malaysia do not take long to enter the price correction phase, suggesting that they do not overweight their private information or intuitions, even in the uncertainty surrounding an IPO investment. Instead, they recognise the usefulness of factual information in valuing IPOs. The small

fluctuations in abnormal returns are normal, as occasional overreaction could be due to simple chance, suggesting that humans do overvalue information at times (Fama 1998).

Consequently, the return momentum reported for Thai and Indonesia abnormal performance suggests that investors in these markets are persistently overconfident about the validity of their private information and intuition (Daniel et al. 1998, Daniel & Hirshleifer 2015). This is indicative of the self-attribution bias (Langer & Roth 1975), a cognitive process that causes confidence to increase when initial belief is validated. Investors believe that the precision of their judgment is ‘validated’ by the market through consistent positive returns hence further increasing their confidence.

Linking the findings with cultural profiles of ASEAN-4 countries, the literature suggests that investors in highly collectivist cultures are more overconfident than those in individualistic cultures (Yates et al. 1998, Chui et al. 2010, Tekçe & Yılmaz 2015). Indonesia, as the most collectivist culture among the four nations, is highest in terms of overperformance, reflecting that they are persistently overconfident, to the point that return momentum occurs as opposed to reversal. Interestingly, social factors like income level and literacy are linked with investors overconfidence (Tekçe & Yılmaz 2015). Among ASEAN-4, Singapore has the highest wealth, as measured by the gross national income (GNI) per capita⁹, as well as financial literacy index score¹⁰. On the other hand, Indonesia is the least wealthy country among the four markets, with the lowest financial literacy rate. Thus, the findings of this study are in-line with Tekçe & Yılmaz (2015). Thailand is the least collectivist country in ASEAN-4, yet the IPOs also underperform. Therefore, the findings only partially support the notion.

Overall, the findings partially support hypothesis *H2a*: that underperformance is highest in Indonesia and lowest in Singapore. However, that is due to Indonesian IPOs overperforming due to the non-existence of price reversal, reflecting persistent overconfidence of the investors. Finally, the findings support

⁹The GNI per capita in US\$ million (World Bank, 2016) is US\$85.0 consecutively followed by Malaysia (US\$26.9), Thailand (US\$16.1) and Indonesia (US\$11.2). The data are accessible at <https://data.worldbank.org/indicator/NY.GNP.PCAP.PP.CD>

¹⁰According to the MasterCard Asia-Pacific Financial Literacy Index 2016, the scores for financial literacy (investment score) for Singapore, Malaysia, Thailand and Indonesia are 62, 60, 61 and 47, respectively. Data is obtained from <https://www1.mastercard.com/content/intelligence/en/research/reports/2013/mastercard-index-of-financial-literacy-report-2013h1.html>

H2b that Singaporean investors are quicker to enter the price correction phase as compared to their Indonesian counterparts.

2.4.4.2 Calendar-Time Approach

Brown & Warner (1980) argue that long-run abnormal returns may suffer from cross-sectional relations of IPOs when the event-time approach is employed. Hence, the calendar-time approach is employed, using the Fama & French (1993) model, to ensure the robustness of the findings. The dependent variable is the equally-weighted monthly excess returns ($R_i - R_f$) on IPO portfolios between January 2000 and December 2013. Separate portfolios are formed for each country. The excess returns of the IPO portfolios are regressed on risk premium ($R_m - R_f$), *small minus big* portfolio returns (*SMB*) and *high minus low* portfolio returns (*HML*) variables using the weighted least squares (WLS) regression. Separate regressions are performed on each market. The intercept (α) from the regressions indicate the monthly risk-adjusted performance of the IPOs. The regression results are presented in Table 2.6.

Table 2.6
Calendar-Time Abnormal Returns for ASEAN IPOs.

This table presents the regression results of calendar-time market-adjusted monthly abnormal returns using the Fama-French 3-factor model (FF3F); $R_{it} - R_{ft} = \alpha_i + \beta_i(R_m - R_{ft}) + \beta_{SMB}SMB_t + \beta_{HML}HML_t + \epsilon_{it}$ where R_{it} is the return on IPO stock i in month t , from January 2000 to December 2016. R_{mt} is the return on the market in event month t calculated using the main market index returns for the respective ASEAN-4 markets, R_{ft} is the risk-free rate of returns in month t for each market, *SMB* is the value-weighted return on a portfolio of small minus big firms, and *HML* is the value-weighted return a portfolio of high book-to-market (BTM) firms minus the value-weighted return on firms with low BTM. The t -statistics (shown in brackets) are calculated using the time-series standard deviation of the mean monthly abnormal returns. The statistical significance is generated after the White heteroskedasticity adjustments. ***, ** and * indicate statistical significance at the 1, 5 and 10% respectively.

	SG ($n = 523$)	MY ($n = 453$)	TH ($n = 221$)	ID ($n = 80$)
α	0.00 (1.06)**	-0.01 (3.51)**	0.01 (2.05)*	0.01 (1.25)
$r_m - r_f$	0.98 (21.19)**	0.98 (36.40)**	0.87 (15.91)**	0.89 (20.62)**
<i>SMB</i>	-0.03 (0.27)**	-0.75 (9.05)**	-0.02 (0.35)	-0.01 (0.08)
<i>HML</i>	-0.04 (0.48)	-0.27 (3.70)**	-0.11 (0.586)	0.03 (0.41)
<i>Adjusted R</i> ²	0.91	0.86	0.67	0.79
<i>Observations</i>	523	453	221	80

The regression intercepts conform to the results presented using event-time approach to calculate IPO abnormal returns, presented earlier in Tables 2.4 and 2.5. For Singapore and Malaysia markets, the significant negative intercepts confirm that IPOs in these markets underperform three years aftermarket. For Singapore, $\alpha_{SG} = -0.004$ ($p < 0.01$) indicates significant monthly underperformance at -0.4% or -13.43%¹¹ over three years. Malaysian IPO underperformance is at -0.8% ($p < 0.01$) or -25.11% for three years. The $\alpha_{TH} = 0.012$ ($p < 0.05$) for the Thailand market indicate significant overperformance of 1.2% monthly, that accumulates to 53.63% in three years. For Indonesia, the insignificant positive intercept $\alpha_{TH} = 0.012$ conforms to the previously presented result that no significant under- or overperformance is found among Indonesian IPOs.

The positive and significant coefficients for market premium ($R_m - R_f$) for all markets indicate that market risk is an important variable in explaining long-run performance in ASEAN-4 IPOs. Size factor SMB is only positively significant for Singapore and Malaysian IPOs. The negative coefficient implies that the smaller the IPO firms are, the higher the underperformance tend to be. Book-to-market value (HML) is significant only for explaining Malaysian IPOs. The negative HML implies that firms with lower book-to-market multiple tend to have higher underperformance.

All in all, this study reports robust and consistent findings using event- and calendar-time approaches. The calendar-time regressions analysis lend further support to the findings using the event-time approach that significant underperformance exists in Singapore and Malaysia, and significant overperformance exists in Thailand. The findings further corroborate that no evidence of statistically significant under- or overperformance for Indonesian IPOs.

2.4.4.3 Cross-Sectional Patterns of ASEAN-4 Long-Run IPO Performance

A. Long-Run Performance Categorized by Listing Year

The cross-sectional analysis is begun with the examination of IPO underperformance among ASEAN-4 markets listed from 2000 to 2013, segregated by listing

¹¹Following Ritter (1991), Ahmad-Zaluki et al. (2007), Komenkul (2015) and Komenkul et al. (2017), the 36-month abnormal return is calculated as: $[1 - (\alpha * 100)^{36}] - 1$.

Table 2.7

Long-Run Performance of ASEAN-4 IPOs Categorised by Listing Year.

This table reports the 36-month equally-weighted buy-and-hold abnormal returns for ASEAN-4 IPOs excluding the underpricing, segregated by year of listing. The benchmark used is the main market index returns for each ASEAN-4 market. The equal weighting metric is used as this analysis is interested in identifying the average effect of investing in IPOs listed in each year. The table reports the bootstrapped skewness-adjusted t -statistics (t -stat), which is the two-tailed test results of null hypothesis that the mean BHARs are equal to zero. ***, ** and * indicate statistical significance at the 1, 5 and 10% levels, respectively.

Listing Year	SG		MY		TH		ID	
	IR	AR	IR	AR	IR	AR	IR	AR
2000	0.26*	0.06	0.55***	0.06	-0.01	-0.27	0.68	0.35
2001	0.07	0.50	0.21	0.25	-0.02	-0.48	0.58	-1.67**
2002	0.30**	-0.13	0.20***	-0.31***	1.57	-0.03	0.30	-1.38*
2003	0.44***	-0.66***	0.43***	-0.54***	0.43***	-0.50**	0.22	1.63
2004	0.19***	-0.51**	0.40***	-0.76***	0.15***	-0.12	0.16	0.11
2005	0.02	-0.02	0.11*	-0.43***	0.22	0.18	0.44	0.00
2006	0.35***	-0.26*	0.17*	-0.12	0.02	-0.02	0.42	-0.71
2007	0.65***	-0.40***	0.28***	-0.16	0.36*	0.10	0.20	-1.07*
2008	-0.08*	-0.17	0.28	-0.41*	0.08	0.08	0.86	0.30
2009	0.07	-0.39***	0.15*	-0.62***	0.14*	1.21	-0.06	16.13
2010	0.14	-0.39***	0.07	-0.38*	0.47**	1.12	0.44*	0.86
2011	0.11	0.31	0.17*	0.40	0.71*	1.03	1.27	-0.3*
2012	0.47	-0.08	0.42	1.43	0.82***	0.55	0.34***	0.10
2013	0.21*	-0.24	0.12*	0.27	0.65***	0.83***	n/a	n/a

year, as reported in Table 2.7. EWBHARs for each market is reported in separate columns. When segregated by listing year, the IPOs across ASEAN-4 exhibits heterogeneous behaviour patterns, consistent with Loughran & Ritter (1995) and Ahmad-Zaluki et al. (2007). The majority of Singapore IPOs underperform three years aftermarket, except those listed during years 2000, 2001 and 2011. For Malaysian IPOs, underperformance occurs among IPOs listed from 2002 to 2010, but IPOs listed in 2000, 2001, and 2011 to 2013 overperform three years aftermarket. While underperformance exists in Thailand from 2000 to 2004, IPOs listed in more recent years overperform. Indonesia shows a more mixed pattern of IPO performance.

Interesting patterns emerge for IPOs listed in 2008 and 2009 that coincide with the US Subprime Crisis that adversely affected the global stock markets. Singapore is the only market in which IPOs listed in 2008 have negative underpricing, showing that investors correspond to public information that emerged during the crisis. Three years aftermarket, no mean reversal occur, indicating that investors in Singapore were not overreacting when they devalued IPOs in 2008. Investors in Malaysia, Thailand and Indonesia appear to be underreacting to information regarding the financial crisis; thus IPO valuations remain high during the year. As more information arrives, Malaysian investors correct their opinion that leads to

price reversal. As a result, IPOs underperform in the long-run. In contrast, a momentum of return is reported for Thailand and Indonesia, suggesting persistence in investor overconfidence.

In general, the results show that underperformance is not concentrated in years when IPO issues are higher, hence fail to support Loughran & Ritter (1995) and Ahmad-Zaluki et al. (2007) who found underperformance occurs in IPOs listed during the hot issue periods. Instead, the years when there are smaller numbers of IPOs tend to produce relative underperformance and vice versa.

B. Long-Run Performance Categorised by Firm Characteristics

To examine the long-run performance of ASEAN-4 IPOs by firm characteristics, the IPO samples are classified based on firm size and age. Table 2.8 reports the long-run underperformance of ASEAN-4 IPOs listed from 2000 to 2013, segregated by firm size quantile (Panel A) and firm age groups (Panel B). In general, based on age, significant underperformance exists for IPOs in Singapore and Malaysia, across almost all firm size quantiles. IPOs that are below median size are classified as small IPOs. Significant underperformance is reported, particularly in small IPOs in Singapore and Malaysia. However, contradictory findings are reported for Thailand, where significant overperformance is reported for large IPO firms. Meanwhile, in Indonesia, this study does not find evidence of under- or overperformance. Findings for Singapore and Malaysia are more consistent with the literature that smaller firms are more underpriced than large firms.

In the same vein, young IPO firms in Singapore and Malaysia significantly underperform. Instead, for Thailand, significant overperformance exists among firms aged up to one year, and underperformance is found for firms aged between two to four years. The findings for Singapore and Malaysia are similar to Ritter (1991), Ahmad-Zaluki et al. (2007) and (Komenkul 2015) growth firms tend to be young and small firms, and that investors tend to be more optimistic about their future prospects. Underperformance occurs when their expectations are not met, hence lowering their long-run valuations. Investors in Thailand on the other hand, appear to be persistently optimistic about the future prospect of growth IPOs. As shown in Panel B, young IPO firms in Thailand have the highest underpricing as compared to older firms. Investors may interpret this as a market validation for

their ability to value IPO with their private information. As such, they become more overconfident, and the positive return persists. In Indonesia, this study does not find statistical significance for young IPOs; hence no conclusion can be made for the investor behaviour.

Table 2.8

Long-Run Performance of ASEAN-4 IPOs Categorised by Firm Characteristics.

This table reports the 36-month equally-weighted buy-and-hold abnormal returns for ASEAN-4 IPOs excluding the underpricing, segregated by firm size and age brackets. The benchmark used is the main market index returns for each ASEAN-4 market. The equal weighting metric is used as this analysis is interested in identifying the average effect of investing in each IPO portfolio. The table reports the bootstrapped skewness-adjusted *t*-statistics (*t*-stat), which is the two-tailed test results of null hypothesis that the mean BHARs are equal to zero. ***, ** and * indicate statistical significance at the 1, 5 and 10% levels, respectively.

	SG		MY		TH		ID	
	IR	AR	IR	AR	IR	AR	IR	AR
Panel A: Performance of ASEAN-4 IPOs Categorised by Firm Size								
<i>Firm Size Brackets:</i>								
Smallest 25%	0.376***	-0.147*	0.482***	-0.348**	0.440**	0.236	2.260	-0.227
25% to 49%	0.305***	-0.255**	0.205***	-0.400***	0.291**	0.022	0.509*	-0.124
50% to 74%	0.186***	-0.167	0.204***	-0.123	0.295***	-0.159	0.441	4.385
Largest 25%	0.023	-0.273**	0.156	-0.210*	0.331***	0.582**	0.296***	0.160
Panel B: Performance of ASEAN-4 IPOs Categorised by Firm Age								
<i>Age Brackets:</i>								
0 to 1 years	0.223***	-0.295***	0.232***	-0.230**	0.557***	0.904*	0.840*	0.771
2 to 4 years	0.196***	-0.027	0.379***	-0.487***	0.400**	-0.236*	0.134**	-0.233
5 to 9 years	0.218***	-0.085	0.355*	-0.318***	0.241**	0.188	0.528**	1.907
10 to 19 years	1.808	-0.432	0.080	0.350	0.048	0.150	0.357	4.631
More than 20 years	0.304**	-0.197	0.162*	-0.139	0.252***	0.192	0.835	-0.312

C. Long-Run Performance Categorised by IPO Characteristics

The next cross-sectional analysis is the long-run performance of ASEAN-4 by IPO characteristics, represented by initial return percentile and IPO size. The EWBHAR of ASEAN-4 IPOs by IPO characteristics are presented in Table 2.9. By first focusing on Panel A, significant underperformance is found for IPOs in Singapore and Malaysia, more profoundly among IPOs with initial returns that belong in high return categories. The finding is consistent with Ritter (1991) and Ahmad-Zaluki et al. (2007), implying that high initial returns induce more confidence in investors. Thai IPOs overperform in the long-run, but no statistical significance is reported when IPOs are classified according to their initial returns percentile. Significant underperformance is found among IPOs that belong in the fifth and sixth initial return percentile, while significant overperformance is found

for IPOs with lower underpricing. The findings are not in line with Ritter (1991)'s theory that IPOs with highest underpricing will have the worst underperformance. In fact, the results imply that investors have more confidence in IPOs with lower underpricing, which is somewhat puzzling. It is argued that the result is attributed to one or only a few IPO samples, and does not represent the generic behaviour.

Table 2.9

Long-Run Performance of ASEAN-4 IPOs Categorised by IPO Characteristics.

This table reports the 36-month equally-weighted buy-and-hold abnormal returns for ASEAN-4 IPOs excluding the underpricing, segregated by initial returns percentile and IPO size brackets. The benchmark used is the main market index returns for each ASEAN-4 market. The equal weighting metric is used as this analysis is interested in identifying the average effect of investing in each IPO portfolio. The table reports the bootstrapped skewness-adjusted *t*-statistics (*t*-stat), which is the two-tailed test results of null hypothesis that the mean BHARs are equal to zero. ***, ** and * indicate statistical significance at the 1, 5 and 10% levels, respectively.

	SG		MY		TH		ID	
	IR	AR	IR	AR	IR	AR	IR	AR
<i>Panel A: ASEAN-4 IPO Performance Categorised by Initial Returns Percentile</i>								
<i>IR Percentile:</i>								
1	(0.33)	(0.11)	(0.35)	(0.22)	(0.28)	0.03	(0.47)	(0.64)
2	(0.10)	(0.07)	(0.09)	(0.13)	(0.10)	0.44	(0.08)	9.08
3	(0.03)	(0.12)	(0.01)	(0.23)	(0.02)	0.32	(0.02)	0.12
4	0.03	(0.07)	0.03	(0.38)**	0.03	0.62	0.04	2.99*
5	0.08	(0.39)***	0.08	(0.24)	0.08	0.23	0.09	(0.60)*
6	0.16	(0.05)	0.17	(0.02)	0.15	0.39	0.14	(1.03)**
7	0.26	(0.04)	0.25	(0.36)*	0.26	0.20	0.26	0.01
8	0.40	(0.57)***	0.40	(0.21)	0.41	0.15	0.42	0.88
9	0.68	(0.26)	0.65	(0.50)***	0.64	0.03	0.70	(0.18)
10	1.68	(0.50)***	1.60	(0.49)**	1.61	0.05	2.69	(0.14)
<i>Panel B: ASEAN-4 IPO Performance Categorised by IPO Size Brackets</i>								
<i>IPO Size Bracket:</i>								
Smallest 25%	0.39***	(0.21)*	0.27***	(0.32)**	0.33***	0.20	0.75*	1.22
25% to 49%	0.29***	(0.44)***	0.26***	(0.44)***	0.30***	0.01	0.66*	(0.15)
50% to 74%	0.21***	(0.07)	0.30***	(0.15)	0.35**	(0.04)	0.38**	(0.08)
Largest 25%	0.05*	(0.08)	0.24*	(0.11)	0.35***	0.54*	0.56*	1.10

Panel B reports IPO underperformance for ASEAN-4 when the IPOs are segregated by offer size. Consistent with results in previous sections, significant underperformance is found for the Singapore and Malaysia markets, in particular for smaller IPOs, consistent with Ritter (1991). Small IPOs tend to be issued by growth firms with low market capitalisation and young age. Investors in Singapore and Malaysia market exhibit stronger overconfidence in this type of firm, thus tending to initially deviate from the stocks' true value. At a later stage of holding the portfolio, they re-evaluate their beliefs and adjust their valuations, moving the IPO stock prices closer to their intrinsic value.

Unsurprisingly, based on findings in Section 2.4.4, Thai IPOs exhibit the opposite behaviour. Significant overperformance is reported among large issues. In light of the finding that overpricing is found among large IPO firms in Thailand, this result appears sensible. The result further supports the argument that Thai investors tend to have persistent overconfidence when their initial belief about an IPO is validated, leading to persistent positive returns. Also as expected, long-run performance for Indonesian IPOs show mixed patterns, and no statistical significance has been found.

D. Long-Run Performance Categorised by Sector Groupings

An inspection of Table 2.10 demonstrates that IPO returns across sectors in ASEAN-4 are not evenly distributed. This situation is expected, as the hype about each sector during IPO announcements tends to vary. The results show return reversal for IPOs in almost all sectors except consumer services and utilities. Significant underperformance is found for basic materials, consumer goods, industrials and technology IPOs. A similar long-run performance pattern is found in Malaysia, where the only IPOs that underperform are those from the Healthcare and Oil and Gas sectors. Significant underperformance is found for basic materials, consumer goods, industrials and technology IPOs. The varying patterns is similar to findings reported by Ritter (1991), Ahmad-Zaluki et al. (2007), Ahmad-Zaluki & Kect (2012) and Komenkul (2015).

The findings suggest that investors in Singapore and Malaysia hold different beliefs about each sector. Reversal of returns occur in most sectors, showing that investors are initially overconfident about their perception of those IPO shares, but later correct their opinion as public information emerges. However, overperformance for Oil and Gas suggests that investors are persistently overconfident about the long-term prospect of this sector. Oil and Gas is a lucrative business in Malaysia. Thus it is not surprising that investors maintain their optimism about this sector. Moving on to the Thai market, IPOs in all sectors overperform on average. Significant overperformance is found for Industrials and Oil and Gas sectors. The result differs from Komenkul (2015) that reports underperformance in most sectors in the same market. However, the difference could be partly due to the sector classification methods employed that differ from this study. For Indonesian IPOs, significant underperformance is found for the Healthcare sector. All

other sectors in this market, except basic materials overperform, but no statistical significance is reported.

Table 2.10

Long-Run Performance of ASEAN-4 IPOs Categorised by Sector Groupings.

This table reports the 36-month buy-and-hold equally-weighted abnormal returns for ASEAN-4 IPOs excluding the underpricing, segregated by sector groupings using the Thomson Reuters industry classifications. The benchmark used is the main market index returns for each ASEAN-4 market. The equal weighting metric is used as this analysis is interested in identifying the average effect of investing in each IPO portfolio. The table reports the bootstrapped skewness-adjusted t -statistics (t -stat), which is the two-tailed test results of the null hypothesis that the mean BHARs are equal to zero. ***, ** and * indicate statistical significance at the 1, 5 and 10% levels, respectively.

Sector Grouping	SG		MY		TH		ID	
	IR	AR	IR	AR	IR	AR	IR	AR
Basic Materials	0.43**	-9.74*	0.15**	-11.90***	0.42**	4.51	0.38**	-0.38
Consumer Goods	0.21***	-18.12*	0.20***	-45.13***	0.21*	8.66	0.27*	0.01
Consumer Services	0.17***	3.78	0.23*	-3.66*	0.48**	7.73	0.64**	2.43
Healthcare	0.11	-1.86	0.33*	3.17	0.25***	15.79	0.33	-3.76**
Industrials	0.27***	-6.71**	0.24***	-44.74*	0.83*	7.51**	1.44	3.23
Oil and Gas	0.35***	-3.64	0.36**	8.33*	0.17*	5.77*	0.64**	2.62
Technology	0.12*	-12.70***	0.38***	-30.82***	0.31***	0.07	-0.08	1.07
Telecommunications	0.08	-0.41	0.76	-2.61	0.09	3.54	0.39*	3.26
Utilities	0.04	1.41	0.24	-0.73	0.19	2.04	0.42	2.64

The cross-sectional analyses allow examination of generalisation of IPO underperformance across the ASEAN-4 markets. The findings show that underperformance is not as generic a phenomenon as underpricing. Mixed evidence of under- and overperformance have been found, with varying patterns across the markets. In general, IPOs in Singapore and Malaysia underperform, regardless of when they are segregated by listing year, firm size and age, IPO underpricing percentile and size, and sector groupings. For the Thai market, the analyses result in overperformance in general. Indonesian IPOs are less consistent in terms of patterns, where mixed patterns of long-run performance are reported throughout, and this study does not report significant under- or overperformance in most cases. Referring back to abnormal returns patterns of ASEAN-4 IPOs at the market level, they are consistent with the findings for cross-sectional analysis. The evidence from ASEAN-4 markets shows that investors are indeed overconfident, and the pattern varies among the countries. The findings support $H3$ that there are variations in long-run performance behaviour in ASEAN-4 IPOs.

2.5. Summary

This study examines the behaviour of initial public offerings short- and long-run performance in ASEAN-4 markets, consisting of Singapore, Malaysia, Thailand and Indonesia that widely vary in terms of market and cultural settings. The IPO initial returns (underpricing) is calculated using the raw return method, while the three-year abnormal returns are measured using robust event study methods, namely event- and calendar-time approaches. The hypotheses testings are also robust using parametric and non-parametric methods.

The central debate of this study revolves around whether investors overconfidence exhibits varying patterns given different market and social environments across the four markets. Using the event-time approach to calculate abnormal returns, this study finds that overreactions exist across the four markets, in varying patterns. Investors in all four markets show overconfidence during the initial stage of IPO listings, implied by underpricing that is significantly from zero. For Singapore and Malaysia, long-run price reversal that is manifested by underperformance, imply that investors eventually correct their valuation errors as more publicly available information arrive. Interestingly, no price reversal occurs in Thailand and Indonesia, implying that investors suffer from self-attribution bias, a cognitive process that further enhances humans' confidence when their initial belief is validated. In this case, return momentum occurs when investors perceive that the market approves their beliefs about IPO stocks. The findings are consistent with the literature that investors tend to be more overconfident in the absence of information, and where income and literacy are lower.

The initial findings of this study are validated by the calendar-time analysis that exhibits significant underperformance in Singapore and Malaysia, and significant overperformance in Thailand. The study does not report statistical overperformance for Indonesian IPOs. The cross-sectional analysis further validates that underperformance cannot be generalised like underpricing. When IPO samples are segregated by listing year, firm size and age, IPO size, initial return percentile and sector groupings, the results show heterogeneity in abnormal returns across all factors. However, in general, the results conform to the findings that underperformance exists in Singapore and Malaysia, while Thai and Indonesian IPOs tend to overperform. Overall, this study suggests that investor overconfidence

behaviour pattern can vary under varying market characteristics, such as market efficiency levels and cultural factors.

In general, the empirical findings imply that investors in all ASEAN-4 market exhibit various degrees of overconfidence. Investors in Singapore and Malaysia appear to be overconfident with their own private information of IPO shares in the beginning, hence causing an initial overreaction of the IPO share prices. However, they are quick to recognise the publicly available information and incorporate them into their stock valuation, leading to abnormal IPO return in the long-run. Conversely, Thai investors appear to suffer from *self-attribution bias* whereby investors become more overconfident when their public information is validated by the market through positive stock performance. This causes return momentum for around six months to one year, where consistent positive abnormal returns are reported before return reversal occurs. On the other hand, IPOs in Indonesia barely exhibit mean return reversal. The consistent momentum in positive returns implies that investors in Indonesia are more intuitive in their investment decision making. Thus they almost completely underreact to public information.

To the best of my knowledge, thus far, this study is one of the most robust that focuses on the Southeast Asian region, in particular with regard to investor overconfidence behaviour patterns. This study is important for academicians as it provides a further understanding of overconfidence, a salient human characteristic and its role in financial decision making. For policymakers, this study holds relevance for regional economic integration efforts that are actively taking place among ASEAN state members, in the sense that it provides knowledge about how the stock market tends to behave in the short- and long-run. Finally, this study is useful for investors as the findings from this study may assist them in building an optimal investment portfolio that suits their risk preferences.

A question that the scope of this study does not cover is whether reversal of price occurs in Thai and Indonesian IPOs within the five years aftermarket. By answering this question, we can understand whether investors in these market will actually find the usefulness of publicly available information on the markets. One final point to reflect is, does underperformance really mean IPO investments are not ideal for the long-term? In the case of ASEAN-4, IPOs, particularly in Singapore and Malaysia, although IPOs show worse performance as compared to the whole market index return, in terms of absolute performance, investing in *underperformed* IPOs can still be a lucrative investment. This is because on

average, the buy-and-hold returns of IPOs are found to be positive within three years aftermarket. In the same vein, overperformance also does not imply that the IPO investment actually generates wealth, particularly in the case where IPOs with negative raw returns are benchmarked against a worse performing benchmark.

Appendix A

3-year Cumulative Abnormal Returns for ASEAN-4 IPOs

The 3-year cumulative abnormal returns are calculated for each of the ASEAN-4 market, namely Singapore, Malaysia, Thailand and Indonesia. This study employs both equal- and value-weighting metrics to ensure the robustness of the findings. The benchmark employed is the market returns, proxied by the returns of the main market indices in the respective markets, namely, the Straits Times Index, the FTSE Bursa Malaysia Kuala Lumpur Composite Index, the Stock Exchange of Thailand Index and the Jakarta Composite Index. This section presents the equal- and value-weighted cumulative abnormal returns for IPOs listed in the Singapore (A.1), Malaysia (A.2), Thailand (A.3) and Indonesia (A.4) markets, from January 2000 to December 2013.

A.1. Singapore

Table A.1

3-year Cumulative Abnormal Returns for IPOs listed on the Singapore Exchange.

Month	<i>n</i> IPO	Equally-weighted			Value-weighted		
		AR	CAR	<i>t</i> -stat.	AR	CAR	<i>t</i> -stat.
1	523	-0.068	-0.068	-5.976 ^{***}	-0.046	-0.046	-4.035 ^{***}
2	523	-0.058	0.010	-4.353 ^{***}	0.074	0.028	2.116 [*]
3	523	-0.061	-0.003	-3.849 ^{***}	-0.020	0.008	0.488
4	523	-0.070	-0.009	-3.904 ^{***}	-0.013	-0.005	-0.298
5	523	-0.073	-0.003	-3.766 ^{***}	0.003	-0.002	-0.097
6	523	-0.081	-0.008	-3.976 ^{***}	-0.019	-0.021	-1.014
7	523	-0.096	-0.015	-4.524 ^{***}	-0.017	-0.038	-1.775
8	523	-0.099	-0.003	-4.332 ^{***}	0.003	-0.034	-1.513
9	523	-0.112	-0.013	-4.673 ^{***}	-0.009	-0.044	-1.83 [*]
10	523	-0.114	-0.002	-4.653 ^{***}	0.013	-0.031	-1.269
11	523	-0.114	0.000	-4.589 ^{***}	-0.016	-0.047	-1.9 [*]
12	523	-0.121	-0.007	-4.716 ^{***}	-0.013	-0.061	-2.356 [*]
13	523	-0.124	-0.003	-4.524 ^{***}	0.028	-0.032	-1.177
14	523	-0.119	0.005	-4.222 ^{***}	-0.011	-0.043	-1.517
15	523	-0.119	0.001	-4.138 ^{***}	-0.009	-0.052	-1.805 [*]
16	523	-0.127	-0.008	-4.366 ^{***}	-0.015	-0.067	-2.304 [*]
17	523	-0.123	0.003	-4.149 ^{***}	-0.013	-0.080	-2.679 ^{**}
18	523	-0.121	0.002	-4.007 ^{***}	-0.005	-0.084	-2.795 ^{**}
19	523	-0.125	-0.004	-4.032 ^{***}	-0.004	-0.089	-2.863 ^{**}
20	523	-0.123	0.002	-3.883 ^{***}	-0.012	-0.100	-3.168 ^{**}
21	523	-0.120	0.003	-3.781 ^{***}	0.002	-0.098	-3.086 ^{**}
22	523	-0.124	-0.004	-3.802 ^{***}	0.019	-0.079	-2.417 [*]
23	523	-0.114	0.010	-3.467 ^{**}	0.018	-0.060	-1.837 [*]
24	523	-0.109	0.005	-3.215 ^{**}	0.006	-0.054	-1.611
25	523	-0.100	0.009	-2.889 ^{**}	0.026	-0.029	-0.834
26	521	-0.091	0.007	-2.556 [*]	0.020	-0.005	-0.146
27	520	-0.089	0.000	-2.55 [*]	-0.016	-0.020	-0.584
28	519	-0.095	-0.005	-2.667 ^{**}	0.015	-0.006	-0.163
29	518	-0.082	0.011	-2.259 [*]	-0.020	-0.022	-0.614
30	516	-0.081	0.001	-2.239 [*]	0.014	-0.004	-0.118
31	514	-0.075	0.005	-2.03 [*]	0.021	0.018	0.496
32	514	-0.088	-0.013	-2.347 [*]	0.000	0.018	0.484
33	513	-0.075	0.015	-1.997 [*]	-0.002	0.016	0.433
34	513	-0.078	-0.003	-2.088 [*]	-0.015	0.001	0.026
35	512	-0.086	-0.008	-2.302 [*]	-0.023	-0.023	-0.602
36	512	-0.087	-0.001	-2.338 [*]	0.019	-0.004	-0.098

A.2. Malaysia

Table A.2

3-year Cumulative Abnormal Returns for IPOs Listed on Bursa Malaysia.

Month	<i>n</i> IPO	Equally-weighted			Value-weighted		
		AR	CAR	<i>t</i> -stat.	AR	CAR	<i>t</i> -stat.
1	454	-0.019	-0.019	-1.472	0.001	0.001	0.043
2	454	-0.018	0.002	-1.177	0.022	0.023	1.513
3	454	-0.030	-0.012	-1.807*	0.014	0.036	2.212*
4	454	-0.043	-0.013	-2.41*	0.018	0.054	3.026*
5	454	-0.042	0.001	-2.132*	-0.010	0.044	2.205*
6	454	-0.046	-0.004	-2.093*	-0.007	0.037	1.655*
7	454	-0.053	-0.006	-2.246*	-0.008	0.029	1.214
8	454	-0.060	-0.008	-2.49*	-0.005	0.024	0.983
9	454	-0.066	-0.006	-2.638**	-0.010	0.014	0.565
10	454	-0.075	-0.009	-2.925**	-0.024	-0.010	-0.375
11	454	-0.078	-0.002	-2.902**	-0.001	-0.010	-0.385
12	454	-0.075	0.003	-2.667**	-0.011	-0.021	-0.754
13	454	-0.078	-0.003	-2.728**	-0.003	-0.024	-0.853
14	454	-0.083	-0.005	-2.846**	0.011	-0.013	-0.46
15	454	-0.094	-0.011	-3.09**	-0.006	-0.019	-0.634
16	454	-0.099	-0.006	-3.13**	-0.011	-0.030	-0.938
17	454	-0.108	-0.009	-3.347**	-0.015	-0.045	-1.394
18	454	-0.124	-0.016	-3.739***	-0.008	-0.053	-1.599
19	454	-0.136	-0.012	-4.061***	-0.018	-0.071	-2.117*
20	454	-0.139	-0.003	-4.109***	0.000	-0.071	-2.112*
21	454	-0.152	-0.013	-4.39***	-0.001	-0.072	-2.086*
22	454	-0.160	-0.008	-4.552***	0.017	-0.055	-1.565
23	454	-0.172	-0.012	-4.803***	-0.013	-0.068	-1.913*
24	454	-0.188	-0.017	-5.218***	-0.008	-0.077	-2.128*
25	454	-0.200	-0.012	-5.518***	-0.002	-0.079	-2.169*
26	454	-0.205	-0.005	-5.587***	0.002	-0.077	-2.096*
27	454	-0.223	-0.018	-6.048***	-0.003	-0.080	-2.169*
28	454	-0.240	-0.017	-6.489***	-0.021	-0.101	-2.731**
29	454	-0.252	-0.012	-6.941***	-0.011	-0.112	-3.084**
30	454	-0.266	-0.014	-7.306***	-0.010	-0.122	-5.976***
31	454	-0.262	0.004	-7.09***	0.005	-0.117	-3.169**
32	454	-0.267	-0.005	-7.205***	-0.003	-0.120	-3.24**
33	454	-0.267	0.000	-7.176***	0.024	-0.096	-2.578*
34	454	-0.279	-0.012	-7.417***	-0.006	-0.102	-2.702**
35	454	-0.282	-0.003	-7.292***	-0.003	-0.105	-2.713**
36	454	-0.283	-0.002	-7.195***	-0.024	-0.129	-3.281**

A.3. Thailand

Table A.3

3-year Cumulative Abnormal Returns for IPOs Listed on the Stock Exchange of Thailand.

Month	<i>n</i> IPO	Equally-weighted			Value-weighted		
		AR	CAR	<i>t</i> -stat.	AR	CAR	<i>t</i> -stat.
1	224	-0.040	-0.040	-2.928**	-0.007	-0.007	-0.494
2	224	0.010	-0.030	-1.591	0.003	-0.004	-0.22
3	224	-0.002	-0.032	-1.439	-0.016	-0.020	-0.907
4	224	0.032	0.000	-0.007	0.021	0.001	0.041
5	224	0.004	0.004	0.163	-0.004	-0.003	-0.098
6	224	-0.004	0.001	0.02	-0.011	-0.013	-0.504
7	224	-0.001	-0.001	-0.021	0.002	-0.012	-0.404
8	224	0.005	0.005	0.154	0.034	0.022	0.723
9	224	-0.006	-0.001	-0.028	0.005	0.028	0.838
10	224	-0.005	-0.006	-0.166	0.007	0.034	0.973
11	224	0.009	0.003	0.079	0.024	0.058	1.566
12	224	0.004	0.007	0.192	0.005	0.064	1.644
13	224	0.000	0.007	0.174	-0.009	0.054	1.34
14	224	-0.009	-0.002	-0.058	-0.009	0.046	1.12
15	224	0.008	0.005	0.13	0.018	0.063	1.501
16	224	-0.002	0.003	0.079	0.008	0.072	1.672*
17	224	-0.003	0.001	0.02	0.034	0.106	2.381*
18	224	-0.006	-0.006	-0.122	0.015	0.121	2.669*
19	224	-0.013	-0.018	-0.399	-0.015	0.106	2.314*
20	224	-0.004	-0.022	-0.475	0.003	0.109	2.324*
21	224	0.015	-0.008	-0.158	-0.008	0.102	2.11*
22	224	0.014	0.007	0.139	0.008	0.109	2.285*
23	224	0.030	0.037	0.71	-0.006	0.103	1.999*
24	224	0.009	0.046	0.886	0.028	0.131	2.523*
25	224	0.018	0.064	1.229	0.022	0.152	2.923**
26	224	0.025	0.089	1.647	0.019	0.171	3.181**
27	224	0.012	0.101	1.845*	0.037	0.208	3.800***
28	224	0.068	0.169	2.653**	0.029	0.237	3.717***
29	224	0.017	0.186	2.755**	0.022	0.259	3.838***
30	224	0.018	0.204	2.949**	0.024	0.283	4.086***
31	224	0.004	0.209	3.01***	0.030	0.312	4.508***
32	224	0.016	0.225	3.218**	0.017	0.330	4.717***
33	224	0.003	0.228	3.272**	0.000	0.330	4.736***
34	224	-0.001	0.226	3.245**	-0.002	0.328	4.703***
35	224	0.013	0.240	3.459**	0.001	0.329	4.744***
36	222	0.006	0.247	3.552***	0.025	0.354	5.074***

A.4. Indonesia

Table A.4

3-year Cumulative Abnormal Returns for IPOs Listed on Bursa Efek Indonesia.

Month	<i>n</i> IPO	Equally-weighted			Value-weighted		
		AR	CAR	<i>t</i> -stat.	AR	CAR	<i>t</i> -stat.
1	84	0.058	0.058	1.446	-0.015	-0.015	-0.383
2	84	-0.006	0.052	1.146	0.006	-0.010	-0.215
3	84	-0.003	0.049	1.092	0.034	0.025	0.547
4	84	0.015	0.064	1.28	0.025	0.050	0.999
5	84	0.018	0.082	1.373	0.007	0.056	0.949
6	84	0.004	0.086	1.377	-0.008	0.048	0.77
7	84	-0.009	0.077	1.146	-0.038	0.010	0.149
8	84	-0.013	0.064	0.925	-0.005	0.005	0.078
9	84	-0.004	0.060	0.858	-0.007	-0.002	-0.023
10	84	0.002	0.061	0.84	-0.034	-0.035	-0.484
11	84	0.024	0.086	1.117	-0.001	-0.037	-0.48
12	84	0.067	0.152	1.988*	0.011	-0.026	-0.339
13	84	0.011	0.164	2.061*	0.035	0.009	0.111
14	84	-0.016	0.148	1.862*	-0.005	0.003	0.042
15	84	0.038	0.186	2.215*	-0.003	0.000	0.003
16	84	-0.038	0.148	1.762*	-0.014	-0.014	-0.165
17	84	-0.005	0.142	1.737*	0.029	0.016	0.19
18	84	0.014	0.156	1.837*	-0.030	-0.015	-0.172
19	84	0.003	0.159	1.894*	-0.028	-0.043	-0.513
20	84	-0.030	0.129	1.466	-0.034	-0.077	-0.88
21	84	0.027	0.156	1.681*	-0.030	-0.107	-1.16
22	84	0.024	0.180	1.882*	0.009	-0.099	-1.032
23	84	0.011	0.191	1.92*	0.003	-0.095	-0.961
24	84	0.012	0.202	1.87*	-0.010	-0.105	-0.974
25	84	-0.012	0.168	1.485	0.004	-0.102	-0.902
26	83	0.009	0.179	1.579	0.022	-0.080	-0.704
27	83	-0.021	0.158	1.403	0.004	-0.076	-0.671
28	83	0.009	0.167	1.425	0.024	-0.052	-0.442
29	83	0.008	0.175	1.46	-0.035	-0.087	-0.726
30	83	-0.004	0.171	1.413	-0.022	-0.109	-0.901
31	82	-0.027	0.157	1.258	-0.048	-0.157	-1.261
32	82	-0.014	0.143	1.13	-0.037	-0.194	-1.537
33	80	0.012	0.183	1.356	0.020	-0.175	-1.294
34	80	-0.005	0.178	1.286	-0.031	-0.206	-1.487
35	80	-0.008	0.170	1.224	-0.010	-0.216	-1.555
36	78	0.003	0.127	0.909	0.014	-0.203	-1.448

Appendix B

3-year Buy-and-Hold Abnormal Returns for ASEAN-4 IPOs

The 3-year buy-and-hold abnormal returns are calculated for each of the ASEAN-4 market, namely Singapore, Malaysia, Thailand and Indonesia. This study employs both equal- and value-weighting metrics to ensure the robustness of the findings. The benchmark employed is the market returns, proxied by the returns of the main market indices in the respective markets, namely, the Straits Times Index, the FTSE Bursa Malaysia Kuala Lumpur Composite Index, the Stock Exchange of Thailand Index and the Jakarta Composite Index. This section presents the equal- and value-weighted cumulative abnormal returns for IPOs listed in the Singapore (B.1), Malaysia (B.2), Thailand (B.3) and Indonesia (B.4) markets, from January 2000 to December 2013.

B.1. Singapore

Table B.1

3-year Buy-and-Hold Abnormal Returns for IPOs listed on the Singapore Exchange.

Month	<i>n</i> IPO	Equally-weighted			Value-weighted			
		BHR	BHRM	BHAR	<i>t</i> -stat.	BHR	BHAR	<i>t</i> -stat.
1	523	-0.067	0.001	-0.068	-5.987***	-0.015	-0.046	-4.562***
2	523	-0.055	0.006	-0.061	-4.643***	0.076	0.030	2.522*
3	523	-0.047	0.010	-0.058	-3.635***	0.066	0.007	0.525
4	523	-0.045	0.012	-0.057	-2.941***	0.058	-0.007	-0.528
5	523	-0.042	0.019	-0.061	-3.048***	0.085	-0.007	-0.522
6	523	-0.043	0.024	-0.067	-3.079***	0.083	-0.026	-1.712*
7	523	-0.059	0.023	-0.082	-3.787***	0.066	-0.044	-2.729**
8	523	-0.048	0.027	-0.075	-2.977***	0.078	-0.036	-1.994*
9	523	-0.055	0.032	-0.087	-3.334***	0.079	-0.047	-2.603*
10	523	-0.059	0.032	-0.092	-3.473***	0.091	-0.026	-1.38
11	523	-0.052	0.036	-0.089	-3.197***	0.070	-0.042	-2.103**
12	523	-0.050	0.043	-0.092	-3.171***	0.082	-0.050	-2.333**
13	523	-0.043	0.043	-0.086	-2.813***	0.068	-0.026	-1.219
14	523	-0.034	0.046	-0.080	-2.447*	0.082	-0.036	-1.609
15	523	-0.042	0.047	-0.089	-2.716**	0.087	-0.045	-1.825*
16	523	-0.047	0.051	-0.098	-2.965**	0.069	-0.066	-2.749**
17	523	-0.034	0.066	-0.100	-2.869**	0.052	-0.099	-4.13***
18	523	-0.024	0.076	-0.100	-2.714**	0.037	-0.106	-4.083***
19	523	-0.020	0.083	-0.103	-2.698**	0.034	-0.109	-4.065***
20	523	-0.023	0.089	-0.112	-3.051**	0.028	-0.121	-4.842***
21	523	-0.028	0.096	-0.124	-3.484**	0.033	-0.121	-5.096***
22	523	-0.024	0.104	-0.128	-3.486**	0.051	-0.097	-4.076***
23	523	-0.014	0.111	-0.125	-3.237**	0.071	-0.079	-3.125**
24	523	-0.002	0.119	-0.122	-3.146**	0.093	-0.070	-2.695**
25	523	0.009	0.127	-0.118	-2.925**	0.117	-0.045	-1.671*
26	521	0.016	0.134	-0.118	-2.946**	0.121	-0.020	-0.76
27	520	0.003	0.138	-0.135	-3.346**	0.113	-0.044	-1.648
28	519	0.003	0.143	-0.140	-3.406**	0.092	-0.015	-0.578
29	518	0.017	0.152	-0.136	-3.154**	0.077	-0.037	-1.38
30	516	0.006	0.158	-0.151	-3.567***	0.102	-0.033	-1.233
31	514	0.023	0.169	-0.145	-3.239**	0.125	-0.004	-0.149
32	514	0.013	0.172	-0.159	-3.51***	0.141	0.009	0.324
33	513	0.014	0.175	-0.161	-3.59***	0.144	-0.003	-0.108
34	513	0.000	0.183	-0.183	-4.152***	0.134	-0.022	-0.756
35	512	-0.002	0.192	-0.195	-4.293***	0.108	-0.056	-1.975*
36	512	-0.007	0.200	-0.207	-4.581***	0.138	-0.025	-0.835

B.2. Malaysia

Table B.2

3-year Buy-and-Hold Abnormal Returns for IPOs Listed on Bursa Malaysia.

Month	<i>n</i> IPO	Equally-weighted			Value-weighted			
		BHR	BHRM	BHAR	<i>t</i> -stat.	BHR	BHAR	<i>t</i> -stat.
1	454	-0.018	0.001	-0.019	-1.472	-0.004	0.001	0.09
2	454	-0.016	0.001	-0.017	-1.11	0.018	0.025	3.043**
3	454	-0.022	0.003	-0.025	-1.501	0.020	0.039	4.395***
4	454	-0.028	0.006	-0.034	-1.781	0.052	0.061	5.535***
5	454	-0.013	0.008	-0.021	-0.871	0.056	0.054	4.176***
6	454	0.007	0.015	-0.008	-0.266	0.051	0.050	3.355**
7	454	0.016	0.021	-0.005	-0.156	0.054	0.046	2.752**
8	454	0.012	0.023	-0.011	-0.323	0.049	0.040	2.419*
9	454	0.021	0.032	-0.011	-0.289	0.038	0.026	1.485
10	454	0.022	0.038	-0.016	-0.418	0.019	-0.002	-0.087
11	454	0.031	0.047	-0.016	-0.418	0.041	-0.001	-0.055
12	454	0.045	0.058	-0.012	-0.32	0.039	-0.013	-0.717
13	454	0.049	0.068	-0.019	-0.48	0.045	-0.018	-0.963
14	454	0.050	0.077	-0.027	-0.663	0.069	0.000	-0.021
15	454	0.062	0.088	-0.026	-0.592	0.082	-0.003	-0.155
16	454	0.074	0.098	-0.023	-0.495	0.080	-0.011	-0.46
17	454	0.079	0.108	-0.030	-0.606	0.072	-0.027	-1.071
18	454	0.091	0.121	-0.031	-0.552	0.078	-0.023	-0.768
19	454	0.085	0.130	-0.046	-0.821	0.065	-0.041	-1.383
20	454	0.084	0.141	-0.057	-1.049	0.078	-0.043	-1.523
21	454	0.077	0.150	-0.072	-1.312	0.074	-0.043	-1.459
22	454	0.077	0.156	-0.080	-1.406	0.077	-0.025	-0.822
23	454	0.069	0.164	-0.095	-1.698*	0.083	-0.040	-1.335
24	454	0.056	0.171	-0.115	-2.095*	0.074	-0.044	-1.476
25	454	0.036	0.177	-0.140	-2.694**	0.084	-0.044	-1.524
26	454	0.031	0.185	-0.154	-2.976**	0.090	-0.043	-1.472
27	454	0.001	0.194	-0.193	-4.19***	0.095	-0.050	-1.859*
28	454	-0.011	0.201	-0.212	-4.562***	0.090	-0.068	-2.439*
29	454	-0.024	0.213	-0.237	-5.233***	0.096	-0.076	-2.77**
30	454	-0.038	0.218	-0.256	-5.708***	0.103	-0.070	-2.41*
31	454	-0.031	0.219	-0.250	-5.475***	0.113	-0.068	-2.267*
32	454	-0.036	0.227	-0.264	-5.705***	0.125	-0.063	-2.021*
33	454	-0.029	0.239	-0.267	-5.52***	0.150	-0.033	-1.019
34	454	-0.037	0.243	-0.281	-5.605***	0.150	-0.039	-1.187
35	454	-0.027	0.256	-0.283	-5.529***	0.158	-0.040	-1.189
36	454	-0.016	0.263	-0.279	-5.185***	0.145	-0.053	-1.497

B.3. Thailand

Table B.3

3-year Buy-and-Hold Abnormal Returns for IPOs Listed on the Stock Exchange of Thailand.

Month	<i>n</i> IPO	Equally-weighted			Value-weighted			
		BHR	BHRM	BHAR	<i>t</i> -stat.	BHR	BHAR	<i>t</i> -stat.
1	224	-0.021	0.019	-0.040	-2.928**	0.016	-0.007	-0.733
2	224	0.004	0.029	-0.025	-1.248	0.017	-0.001	-0.102
3	224	0.022	0.047	-0.025	-1.055	0.023	-0.016	-0.861
4	224	0.056	0.049	0.008	0.269	0.051	0.010	0.425
5	224	0.057	0.054	0.003	0.126	0.013	0.002	0.094
6	224	0.042	0.050	-0.008	-0.28	0.009	-0.011	-0.484
7	224	0.047	0.054	-0.007	-0.239	-0.012	-0.003	-0.14
8	224	0.063	0.054	0.010	0.29	0.039	0.030	1.209
9	224	0.069	0.060	0.009	0.235	0.044	0.033	1.296
10	224	0.086	0.067	0.019	0.452	0.072	0.055	1.927*
11	224	0.126	0.077	0.049	1.004	0.131	0.095	2.953**
12	224	0.143	0.087	0.056	1.062	0.128	0.090	2.812**
13	224	0.156	0.094	0.062	1.079	0.115	0.067	2.006*
14	224	0.152	0.110	0.042	0.758	0.106	0.056	1.745*
15	224	0.173	0.115	0.058	0.992	0.134	0.077	2.291*
16	224	0.184	0.130	0.054	0.907	0.130	0.083	2.281*
17	224	0.203	0.144	0.059	0.95	0.170	0.121	3.091**
18	224	0.211	0.155	0.056	0.884	0.240	0.162	3.794***
19	224	0.217	0.178	0.039	0.616	0.243	0.151	3.511**
20	224	0.217	0.174	0.044	0.678	0.242	0.150	3.48**
21	224	0.248	0.187	0.060	0.919	0.258	0.158	3.52**
22	224	0.255	0.194	0.061	0.919	0.317	0.189	3.985***
23	224	0.290	0.188	0.102	1.392	0.337	0.196	3.873***
24	224	0.293	0.190	0.104	1.423	0.432	0.270	4.738***
25	224	0.285	0.180	0.105	1.52	0.504	0.333	5.368***
26	224	0.331	0.186	0.145	1.889*	0.509	0.358	5.593***
27	224	0.338	0.181	0.157	2.006*	0.504	0.370	6.104***
28	224	0.413	0.184	0.229	2.683**	0.534	0.405	6.482***
29	224	0.437	0.187	0.250	2.803**	0.504	0.423	6.567***
30	224	0.470	0.171	0.300	2.82**	0.536	0.463	6.596***
31	224	0.473	0.169	0.304	2.83**	0.541	0.485	6.986***
32	224	0.469	0.174	0.295	2.897**	0.564	0.510	7.277***
33	224	0.467	0.181	0.286	2.629**	0.600	0.524	7.011***
34	224	0.440	0.178	0.262	2.463*	0.611	0.535	6.783***
35	224	0.414	0.170	0.245	2.4*	0.560	0.483	6.503***
36	222	0.419	0.174	0.245	2.353*	0.608	0.516	6.71***

B.4. Indonesia

Table B.4

3-year Buy-and-Hold Abnormal Returns for IPOs Listed on Bursa Efek Indonesia.

Month	<i>n</i> IPO	Equally-weighted			Value-weighted			
		BHR	BHRM	BHAR	<i>t</i> -stat.	BHR	BHAR	<i>t</i> -stat.
1	84	0.075	0.017	0.058	1.446	-0.004	-0.015	-0.712
2	84	0.076	0.017	0.059	1.207	0.002	-0.005	-0.19
3	84	0.083	0.039	0.044	0.922	0.057	0.032	0.946
4	84	0.109	0.053	0.056	0.979	0.094	0.059	1.354
5	84	0.156	0.058	0.098	1.296	0.119	0.070	1.319
6	84	0.180	0.068	0.112	1.387	0.138	0.067	1.212
7	84	0.199	0.080	0.120	1.315	0.115	0.028	0.501
8	84	0.214	0.091	0.123	1.219	0.120	0.031	0.491
9	84	0.217	0.100	0.118	1.132	0.148	0.037	0.527
10	84	0.230	0.103	0.127	1.185	0.124	0.016	0.219
11	84	0.285	0.115	0.170	1.459	0.139	0.017	0.219
12	84	0.338	0.124	0.213	1.965*	0.180	0.048	0.535
13	84	0.356	0.131	0.225	2.066*	0.218	0.087	0.956
14	84	0.355	0.161	0.194	1.81*	0.225	0.071	0.767
15	84	0.449	0.190	0.259	2.212*	0.256	0.068	0.686
16	84	0.429	0.213	0.216	1.868*	0.248	0.057	0.599
17	84	0.408	0.226	0.182	1.589	0.268	0.066	0.665
18	84	0.427	0.240	0.186	1.601	0.256	0.047	0.469
19	84	0.413	0.249	0.164	1.44	0.246	0.020	0.184
20	84	0.405	0.261	0.144	1.219	0.202	-0.023	-0.229
21	84	0.475	0.279	0.196	1.546	0.226	-0.020	-0.179
22	84	0.556	0.303	0.253	1.828*	0.277	0.015	0.124
23	84	0.611	0.310	0.301	1.972*	0.325	0.060	0.458
24	84	0.722	0.325	0.398	2.25*	0.414	0.152	0.98
25	84	0.808	0.354	0.454	2.194*	0.460	0.176	1.041
26	83	0.794	0.375	0.419	2.043*	0.546	0.265	1.371
27	83	0.769	0.408	0.361	1.792*	0.638	0.350	1.618
28	83	0.815	0.423	0.392	1.833*	0.747	0.446	1.892*
29	83	0.852	0.429	0.424	1.901*	0.674	0.384	1.619
30	83	0.869	0.444	0.425	1.883*	0.651	0.361	1.58
31	82	0.857	0.452	0.405	1.727*	0.690	0.416	1.57
32	82	0.865	0.468	0.396	1.663	0.680	0.382	1.466
33	80	1.063	0.503	0.560	1.791*	0.784	0.458	1.596
34	80	1.171	0.505	0.665	1.718*	0.808	0.488	1.532
35	80	1.257	0.515	0.742	1.505	0.749	0.408	1.35
36	78	1.450	0.549	0.902	1.391	0.792	0.442	1.366

Chapter 3

Social Mood and IPO Performances

3.1. Introduction for the Chapter

Southeast Asia is a multicultural and multireligious region. As shown in Figure 1.6, each country in the region is composed of a mixture of people from various ethnic groups and religious backgrounds. In Asian societies, cultural elements are strongly weaved into their daily lives. Important cultural and religious festivals are harmoniously celebrated as national holidays. For example, in Singapore, Malaysia and Indonesia where the Muslim populations are high, the *Eid-ul-Fitr*, one of the most important dates in Islam, is a national holiday. Chinese New Year that marks the turning of the Lunar year is widely celebrated in Singapore and Malaysia, which is also a national holiday. In Thailand, the *Songkran* or water festival, is gazetted as the Thai new year day.

The prospect of celebrating a cultural and religious event elevates the mood of the person who celebrates. On the other hand, humans suffer from ‘holiday blues’ following a holiday, when they need to re-adjust to their working environment after being in a holiday mood (Areni & Burger 2008, Stone et al. 2012). Baker & Wurgler (2007) and DellaVigna & Pollet (2009) point out that mood is a ‘transient state of feeling at a particular time’ and tends to be influenced by environmental or social factors, such as seasonal changes (Kamstra et al. 2000, 2003), a religious or cultural holiday (Białkowski et al. 2012, Pantzalis & Ucar 2014), a winning of

a sports team (Edmans et al. 2007, Kaplanski & Levy 2010) or even positive news about a friend (Loewenstein et al. 2001, Slovic et al. 2002). When a group of people experience the same event at a particular time, the mood tends to be transmitted from one to another through social interactions, creating a collective mood, or *social mood*, as termed by Nofsinger (2005). Social mood plays a prominent role in shaping human decision-making (Forgas 1995, Loewenstein et al. 2001, Slovic et al. 2002, Nofsinger 2005) that extends to the aspects of financial decision-making (Prechter 1999). Slovic et al. (2002) and Reimann & Bechara (2010) argue that emotions play an important role in decision-making under uncertainty, such as financial decision-making. Hirshleifer & Shumway (2003), Białkowski et al. (2012) and Kaplanski & Levy (2012) document an increase in stock prices around positive social moods. Conversely, the negative mood has a negative influence on stock prices (Kamstra et al. 2000, 2003, Dzhabarov & Ziemba 2010). Changes in social mood affect investors' financial decision-making through changes in risk preferences (Kamstra et al. 2003, Baker & Wurgler 2007, DellaVigna 2009, Kaplanski & Levy 2010, Hirshleifer et al. 2016). Positive social mood induces overoptimism, causing investors to exhibit greater risk-taking (less risk aversion). Alternatively, negative social mood induces pessimism, and investors are experiencing negative social mood tend to be more risk-averse. As social mood changes during different times of the year, stock prices fluctuate accordingly to reflect these mood changes.

Motivated by the notion that social mood has a non-negligible influence on stock prices, this study attempts to examine to what extent it plays a role in IPO performances in the ASEAN-4 markets. The multicultural and multi-religious environment of this region offers a perfect environment for research in this area. The broad question this study seeks to answer is whether the social mood surrounding cultural and religious holidays is associated with IPO performances in ASEAN-4. Specifically, this study is interested in answering the following research questions:

RQ1: How do positive and negative social moods influence underpricing in ASEAN-4 IPOs? In the long run, are IPO performances still influenced by moods?

RQ2: Do different levels of social mood setting matter in determining the level of IPO performances?

RQ3: Are there variations in how social mood influences IPOs across the ASEAN-4 markets?

This study contributes to the literature by extending the existing works by being one of the first to focus on the ASEAN-4 IPO markets. Importantly, the study is particularly interested in comparing how investors in each of the ASEAN-4 markets react to changes in social mood surrounding IPO listing times. To the best of my knowledge, this is the first study to take a comparative approach in understanding the role of social mood in IPO decision-making, in particular in the Southeast Asian region. Further, the majority of existing studies concerning the social moods surrounding religious or cultural holidays tend to only examine stock reaction before a holiday, when the social mood is high. This study differs by being one of the first to focus on both high and low social mood. Such comparison is essential as it allows us the understanding of how IPO investors value stock prices given different mood settings.

In relation to the context of studies, the majority of existing studies in this area focus on IPOs listed in the US market. Although there is a respectable number of studies focusing on markets outside of the US (Białkowski et al. 2012, Bergsma & Jiang 2015, Yang 2016), to the best of my knowledge, a study specifically focusing on the Southeast Asian IPOs is still non-existent. Despite sharing some of the cultural and religious elements, the local cultural practices in Southeast Asia may be unique to a particular country, hence shaping different mood environments. The differences in cultural settings among the ASEAN-4 countries may yield some variations in how investors respond to social moods surrounding IPOs. Therefore, a comparative study allows further understanding of investor behaviour with regard to IPO valuations around a similar mood setting but in different cultural environments.

The rest of this chapter is structured as follows: Section 2 reviews the literature and identifies the research gaps; Section 3 discusses the data and methodology employed in this study, followed by Section 4 that discusses the empirical findings. Finally, Section 5 concludes and discusses the implication of this research, as well as an avenue for future researches.

3.2. Literature Review

3.2.1 Theoretical Framework

This research is concerned about the role of social mood on IPO initial and long-run performances in the ASEAN-4 markets. Therefore, it is crucial to first understand the framework of the role of moods in human decision-makings. Psychologists have long asserted the role of moods and emotions in the decision-making process (Shiller 1995, Prechter 1999, Loewenstein et al. 2001, Slovic et al. 2002). This role is viewed through two contrasting theories, namely the *Mood Maintenance Model* (MMM) (Isen & Patrick 1983, Isen et al. 1988) and *Affect Infusion Model* (AIM) (Forgas 1995).

From (Isen & Patrick 1983) and Isen et al. (1988)'s points of view, positive moods will result in greater caution and a higher level of risk aversion, while negative mood infuses greater recklessness and less risk aversion. They argue that as humans experience positive mood, they wish to remain to be in this emotional state. As such, they avoid risky behaviours that may jeopardise their positive mood and potentially move them into a negative mood state. In contrast, when in negative moods, humans wish to move into a more positive state so that they are more open to engaging in riskier behaviours with the hope of benefitting from an improvement of mood. As they are already in a negative state per se, they have less to lose by engaging in risky behaviours as compared to those in positive moods.

The AIM, however, offers a contrasting view. Forgas (1995) posits that people in a positive mood exhibit less risk-averse behaviour than those in a negative mood. Generally, positive mood induces optimism. When people are in an optimistic state, they tend to overweight elements of the decision setting, hence underestimating the potential negative consequences of the decision. As a result, they become more willing to take risks (less risk averse) in their decision-making. Conversely, when in a negative mood, they tend to be more pessimistic. In this state, people tend to pay more attention to the negative elements of decision-making, leading them to become more *careful* (risk averse) in the decision-making process.

Rooting from the AIM, the *Theory of Social Mood* (TSM) (Nofsinger 2005) emerged to suit the atmosphere of financial economics. *Social mood* is a product of

collective human interaction at a particular point of time. Shiller (1995) suggests that human mood around an event is contagious through interactions. The exchange of information creates an informational cascade that eventually stimulates human emotions. As a result, humans will build collectively shared opinions about how they feel about a particular event. Social mood emerges around collectively experienced events (Nofsinger 2005), such as a social or religious festive. As the event draws near, the overall surrounding mood elevates as people highly anticipate the festive period. In turn, the collective positive mood stimulates optimism within the surrounding atmosphere. In the same vein, when gloomy weather surrounds, the human mood will collectively drop, and they become pessimistic. The theory of social mood suggests that social interactions act as a medium to transmit optimistic or pessimistic mood to the social network. Nofsinger (2005) further suggests that an optimistic society is more willing to take additional risks, while a pessimistic society tends to avoid risks.

Humans' attitude towards risks changes as a result of changes in mood levels. As mood increases, emotion changes, thus the feelings of happiness, hope and optimism emerge. As emotion further elevates and reaches its peak, extreme positive feelings such as overconfidence, euphoria and excess arise (Forgas 1995, Nofsinger 2005). Alternatively, decreasing mood leads to negative feelings such as pessimism, conservatism and suspicion. At the extreme, the authors point out that humans may feel fear, stinginess and antagonism. Figure 3.1 shows a graphical interpretation of social mood cycle and phases (Nofsinger 2005). The literature of calendar anomalies in asset pricing has vastly documented strong support to Nofsinger (2005)'s theory of social moods. Positive (negative) mood has been found to cause an increase (decrease) in various stock market activities such as trading volume (Al-Khazali 2014, Urquhart & McGroarty 2014, Kaustia & Rantapuska 2016), stock returns (Berument & Dogan 2012, Białkowski et al. 2012, Stone et al. 2012, Hirshleifer et al. 2016) and reactions to earnings announcements (Pantzalis & Ucar 2014). This study is largely concerned about the role of mood in shaping stock returns.

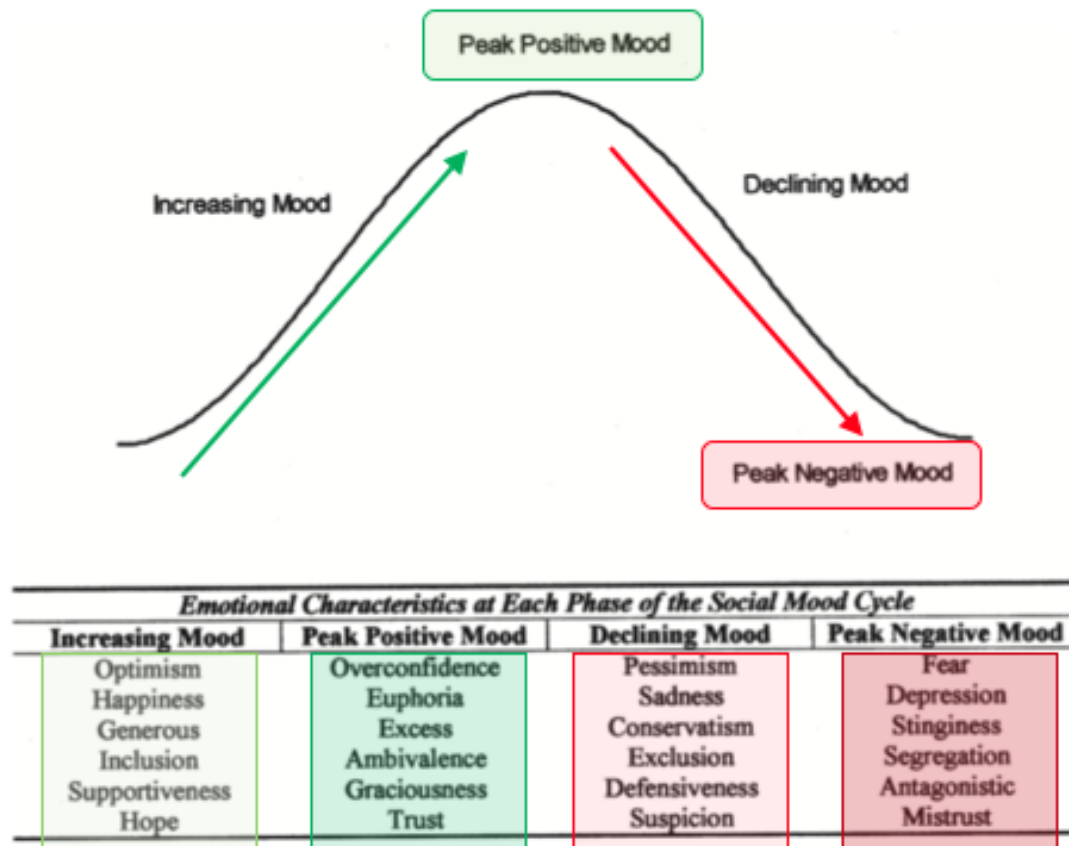


Figure adopted from Nofsinger (2005)

Figure 3.1:
Social Mood Cycle and Phases

3.2.2 Social Moods and Stock Returns

With regard to the influence of social mood on stock performances, the findings can be grouped into two broad streams, as illustrated in Figure 3.2. The majority of the literature attributes stock return movements partly to the changes in social mood around different calendar times, such as during turn-of-the-week (Areni & Burger 2008, Stone et al. 2012, Hirshleifer et al. 2016) and cultural (Kling & Gao 2005, Keef & Khaled 2011) or religious (Al-Hajieh et al. 2011, Bialkowski et al. 2012, Al-Khazali 2014) holidays. Humans tend to be in a higher state of positive emotion in anticipation of the weekend or holiday, therefore inducing optimism. Conversely, recovering from the *holiday blues* tend to cause low emotion (Areni & Burger 2008, Stone et al. 2012). The emotion shifts cause risk preferences to shift, thus changing investors' perception towards a stock valuation.

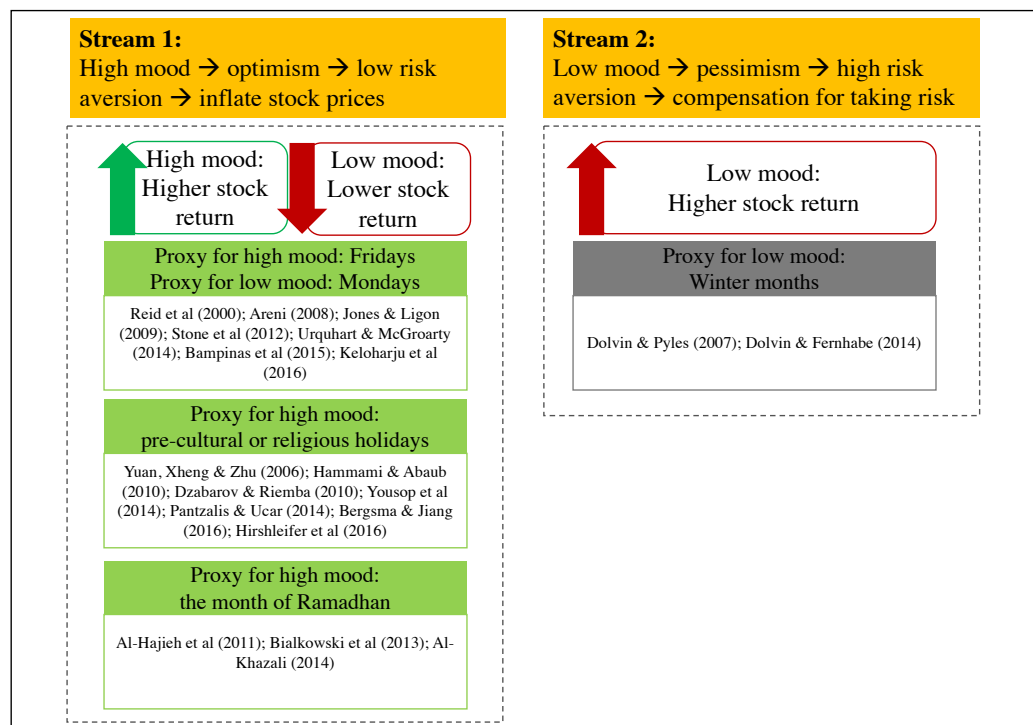


Figure 3.2:
**Summary of Literature Findings on
the Influence of Social Mood and Stock Prices**

The relationship between mood around the weekends and stock performance have been widely investigated. In early studies, French (1980), Lakonishok & Levi (1982) and Lakonishok & Maberly (1990) report significant *Friday effect*, or abnormally high stock returns on Fridays, in the US market. Their findings are further supported by Kling & Gao (2005), Areni & Burger (2008) and Stone et al. (2012), among others. The researchers collectively suggest that in anticipation of the weekend, investors' mood is elated; hence they become more optimistic and less risk-averse. As a result of the optimism, investors tend to be less analytical (DellaVigna 2009), thus tend to price the stocks above their intrinsic value, causing the returns to be shifted further upwards. Despite a significant Friday effect being documented in the US market, no such evidence is found in some countries in Asia such as Pakistan, (Ali & Akbar 2009), or Singapore, Malaysia, Thailand and Indonesia (Bergsma & Jiang 2015). These results illustrate that investors in the US and Asia may have differing levels of anticipations of the weekends that consequently shape their moods. While the US investors highly anticipate

the weekends as explained by the mood changes, Asian investors may observe weekends as a routine cycle; hence they are not emotionally affected by it.

On the contrary, in the US, stock prices are found to be the lowest on Mondays (French 1980, Lakonishok & Levi 1982, Lakonishok & Maberly 1990, Kamstra et al. 2000, Areni & Burger 2008, Stone et al. 2012). Consistent findings are reported in Singapore, Malaysia, Indonesia and Singapore (Bergsma & Jiang 2015). The low stock performance is attributed to low emotions at the beginning of the work week, as investors are still recovering from the weekend effects (Cason 1931, Areni & Burger 2008, Stone et al. 2012). Interestingly, Keloharju et al. (2016) document that stocks' relative performance following an event persists for subsequent weeks if the same event re-occurs.

In the same strand of the literature, some studies link the movements in stock returns to changes in social moods surrounding cultural or religious holidays. These types of holidays are essential parts of human lives, during which social interaction increases. Pioneer researchers document the *mood effect* phenomena, where the aggregate stock markets display substantially higher returns immediately prior to holidays than on other days (Ariel 1990, Fabozzi et al. 1994). The former discovers that investors experience mood uplift in the two trading days leading up to a major holiday, and downward mood swings in the two days following the holiday.

Interestingly, the mood effects phenomenon manifests in various cultural and religious holiday environments, such as the new Lunar phase that marks the Chinese new year (Kling & Gao 2005, Keef & Khaled 2011, Yousop et al. 2014, Yang 2016), *Ramadhan*, which is the holy month for Muslims (Białkowski et al. 2012, Al-Hajieh et al. 2011, Al-Khazali 2014)¹ and even Halloween (Bouman & Jacobsen 2002). Besides, a fairly recent study shows that 11 major international stock markets earn an average of 2.5% higher abnormal returns around a cultural new year than in other times of the year (Bergsma & Jiang 2015). The findings suggest that an uplift in social mood plays a role in shaping investors' decision-making. In the light of the fact that cultural new years do not necessarily overlap with the Gregorian calendar, similar to the *January effect*.

¹Interestingly, Białkowski et al. (2012) reports consistent high stock performance (almost 9 times higher), but low return volatility during the month of Ramadhan in some Islamic countries.

The calendar effect extends to IPO stock performance. For instance, Perfect & Peterson (1997) document that IPOs tend to underperform on Mondays and Tuesdays. While Perfect & Peterson (1997) lend support to the majority of the literature, some authors report contradicting findings. For example, Jones & Ligon (2009) report higher underpricing among the US IPOs listed on Mondays, which contradicts the findings of French (1980), Lakonishok & Levi (1982), Lakonishok & Maberly (1990), Kamstra et al. (2000), Areni & Burger (2008) and Stone et al. (2012). In the same vein, Dolvin & Pyles (2007), Kliger et al. (2012) and Keef et al. (2015) report higher underpricing in the US market around autumn and the start of winter times when investors experience lower emotions than during the summer months.² Kliger et al. (2012) further document that in the long-run, the *cheerful* IPOs have a higher degree of underperformance, indicating that IPO investors exhibit overoptimism during the summer months.

Further, Dolvin & Fernhaber (2014) show evidence that among IPOs listed during the winter months when SAD is at its height, underpricing is higher for smaller firms. The authors argue that younger firms tend to possess a higher level of risk due to the lack of operating history. When these firms go public, the risk is magnified as there is high information asymmetry between the firms and their investors. In turn, SAD impacts young IPO to a greater degree as compared to their larger counterparts. These findings are contradicted by Hirshleifer et al. (2016) and Liu & Marsh (2019) that observe low returns around September and October, during which the onset of SAD is highest.

3.2.3 Reflections on the Literature Review

Based on the literature review, a clear concern about the literature is that the role of social moods on IPO activities is still under-researched. The majority of the existing literature focuses on the broad stock market. To the best of my knowledge, Perfect & Peterson (1997), Jones & Ligon (2009), Kliger et al. (2012) and Dolvin & Fernhaber (2014) are among the few studies focusing on this. As pointed out by Forgas (1995) and Slovic et al. (2002), emotion plays important role in decision-making, in particular under high uncertainty. This suggests that IPO investment is a suitable environment to study the role of social moods, as

²These studies use seasonal changes to proxy for changes in social moods. They attribute the low mood to *seasonal affective disorder* (SAD), a medically-proven psychological disorder commonly occurs during the distressful winter months when daylights are limited.

IPO is closely linked with high ex-ante uncertainties. Surprisingly, this area has not received much attention, in particular for Asian IPOs.

Forgas (1995) argues that situations with greater complexity and uncertainty allow more room for emotions to influence the decision. The stylised fact about IPOs is that there is high information asymmetry between investors, issuers and underwriters, mainly due to the lack of trading history. Examples of seminal studies are Ritter (1984), Rock (1986) and Beatty (1989). Investors are more uncertain about the future cash flows of an IPO stock due to publicly available information. In this setting, psychological factors potentially exert more influence on the stock prices beyond the traditional factors. This warrants further researches on the influence of moods on IPO performance. As such, this study contributes to the literature by being one of the earliest to examine the effects of social mood around holidays on ASEAN IPOs.

In the IPO domain, this stream of research is still scarce. The existing studies measure social mood using the change of seasons, in particular from the summer to winter to examine the role of social moods on IPO initial (Dolvin & Pyles 2007, Kliger et al. 2012, Keef et al. 2015) and long-run returns (Kliger et al. 2012). This proxy is not suitable for the Southeast Asian region, due to its geographical locations near the Equator line where daylight hours are relatively constant throughout the year, and there are no seasonal changes. Therefore, researchers interested in examining the role of social moods need to employ a different measure. Perhaps, weather changes (sunny vs rainy day) can be used instead, if a researcher wishes to carry on the theme of Dolvin & Pyles (2007), Kliger et al. (2012) and Keef et al. (2015).

However, this study is particularly interested in the multiracial and multicultural characteristics of the region, that matches the theme of Białkowski et al. (2012) and Pantzalis & Ucar (2014). Therefore, religious or cultural holiday appears to be one of the suitable measures. A number of studies on holiday effect have been done on some Southeast Asian markets like Singapore and Malaysia (Białkowski et al. 2012, Bergsma & Jiang 2015). However, to the best of my knowledge, studies specifically focus on IPOs in this region, particularly among ASEAN state members, are still scarce. Based on the review of the literature, the majority of the researchers are in agreement with the theory of social mood (Nofsinger 2005) that suggests positive (negative) mood positively (negatively)

influences stock returns. Positive (negative) mood induces optimism (pessimism) that reduces (induces) risk-aversion, which in turn collectively affects human decision-making as they experience similar feelings during a particular event. The application of the theories can be extended onto financial decision-making such as stock valuations including IPOs. The literature generally reports that stock performances are higher when investors are in a positive mood (during pre-weekend and pre-holiday periods) and lower during negative mood (post-weekend and post-holiday) periods. Based on these findings, it is hypothesised that:

H1a:

There is a positive (negative) relationship between positive (negative) social mood and IPO underpricing;

Ritter (1991, 2003, 2011, 2013) documents that high underpricing is a result of investors' optimism around the time of listing. Optimistic investors cause IPO prices to overreact, driving the prices beyond their intrinsic values. As more information becomes available over time, investors gradually re-adjust their valuations and rely more on their cognitive abilities. Consequently, IPO prices are shifted downwards, causing a negative long-run abnormal return. Following this argument, it is expected that IPO stocks exhibit reversals in the long-run. The long-run behaviour of IPOs in relation to moods are hypothesised as:

H1b:

There is a negative (positive) relationship between positive (negative) mood and IPO long-run underperformance.

As shown in Figure 3.1, Nofsinger (2005) suggests that levels of moods can fluctuate, hence producing different feelings or emotions. At the peak of positive (negative) mood, positive (negative) emotions become more intense. These changes in emotions can change investors' risk aversion. I argue that changes in the level of social interactions during the turn-of-the week, short holiday and long-holiday can cause emotional changes among investors, and the degree of emotions are expected to vary around these three periods. With the increasing social interactions during long holidays, I postulate that positive social moods are further elevated during cultural or religious holidays as compared to during weekends. The intensity of the positive emotion can increase. The positive emotions can get

even more intense during long holidays, as social interactions not only increase but last longer. During post-holiday times, humans tend to be in low mood as they readjust their mood from holiday back to the normal routines. Following a long holiday, it is harder to readjust to routine; thus I expect that the low mood lingers, resulting in a prolonged pessimism. As changes in mood level can change risk aversion, the variations in mood levels are expected to influence IPO valuations, leading to the following hypothesis:

H2a:

IPO underpricing before cultural holidays are higher than during other holiday times, and underpricing during periods following long religious and cultural holidays are lower than a weekend or short holiday times.

The majority of the literature of IPO abnormal returns suggests that return reversal occurs, commonly three years aftermarket (Ritter 1991, Maximilian & Gupta 2018, Yaakub et al. 2018), for examples. Ritter (1991) finds that due to investors' overoptimism, IPOs with higher underpricing tend to have higher underperformance. IPOs listed around pre-long holiday periods may have higher underpricing due to an increase in investors' overoptimism around that period. As such, for long-run performance, it is hypothesised that:

H2b:

IPOs listed around pre-long holiday period exhibit higher underperformance than those listed on Fridays or prior to short cultural holidays.

Cultural and religious among the ASEAN-4 may cause investors' mood to vary around the weekends and commonly celebrated cultural and religious festivals. For example, the Eid-ul-Fitr vibe may be more strongly felt in Indonesia, where more than 90% of the populations are Muslim, as compared to Singapore that is more religiously-mixed. The way investors mood respond to the holiday environment should alter the way they value an IPO during the time. Therefore, it is hypothesised that:

H3:

There are variations in the way investors in ASEAN-4 value IPO stocks

given the same mood setting, leading to differences in the level of underpricing.

To test the hypotheses constructed above, an appropriate set of methodology has been employed, which will be discussed in the following section.

3.3. Models, Methodology and Data

3.3.1 Empirical Model

The main objective of this study is to examine the influence of social moods on IPO underpricing and underperformance in ASEAN-4 countries. Specifically, this study focuses on four state members with the largest capital markets, vis Singapore, Malaysia, Thailand and Indonesia. The main dependent variables for this study are IPO underpricing and underperformance, which will be tested in separate models. To test for the relationship between social mood and IPO underpricing, the following model is specified:

$$DV_{i,1} = \alpha + \sum \beta_{high} HIGH_{i,1} + \sum \beta_{low} LOW_{i,1} + \sum \beta_{ctrl} CTRL_{i,t} + \epsilon_{i,0} \quad (3.1)$$

where $DV_{i,0}$ is either the underpricing ($UNDP$) or 3-year cumulative abnormal returns ($CAR3Y$) of IPO i , $\sum \beta_{high} HIGH_{i,1}$ and $\sum \beta_{low} LOW_{i,1}$ represent the dummy variables for high and low social mood, respectively, that surrounds the listing date of IPO i . The classification criteria are illustrated in Figure 3.3, and the social mood dummy variables are defined in Table 3.1. $\sum \beta_{ctrl} CTRL_{i,0}$ represents the control variables, defined in detail in Table 3.2. $\epsilon_{i,1}$ is the error term.

The first dependent variable, $UNDP_{i,1}$ is the return of IPO i at the closing of the first trading day, calculated using the consistent methodology as employed in Section 2.3.1, as follows:

$$UNDP_{i,1} = (P_{i,1} - P_{i,0})/P_{i,0} \quad (3.2)$$

where $P_{i,t1}$ is the closing price of IPO i at the end of the first trading day, and $P_{i,0}$ is the offer price of an IPO i .

In order to explore the influence of social moods on IPO long-run performance, the $DV_{i,1}$ in Equation 3.1 is replaced with underperformance, $CAR_{i,3}$, the three-year equally-weighted³ cumulative abnormal return of IPO i , excluding the first day return, expressed as:

$$CAR_{i,36} = \sum_{i=1}^{36} AR_{it} \quad (3.3)$$

Where $CAR_{i,3}$ is the sum of AR_{it} from $t = 1$ to $t = 36$. AR_{it} is established as:

$$AR_{it} = R_{it} - R_{mt} \quad (3.4)$$

where R_{it} is the monthly return⁴ of IPO i in month t , and R_{mt} is the return in month t of market indices of the market in which the IPO i is listed. In this study, main benchmark indices in each market are used to calculate R_{mt} , as follows: (1) Singapore: Straits Times Index (STI); (2) Malaysia: FBM KLCI Composite Index (FBM KLCI); (3) Thailand: Stock Exchange of Thailand SET Index (SET); and (4) Indonesia: Jakarta Stock Exchange Composite Index (JCI).

The main explanatory variable is mood settings that are dummy variables. The IPOs are first categorised into three social mood setting categories, based on their listing dates. As illustrated in Figure 3.3, the social mood categories are: (1) *weekend*, (2) *short holiday* and (3) *long holiday* moods. The segregations are made on the basis that each of the social mood category represents a different intensity of emotions. For example, in anticipations for the weekend, human emotions are elated, but the degree of elation would be higher in anticipation of a less routine holiday, particularly a cultural or religious holiday where human interactions tend to be wider. When the celebration of a cultural holiday involves a long holiday, human emotion becomes even more positive, in anticipation of reuniting with family and friends that increases social interactions. In the same vein, post-weekend or post-holiday moods tend to be low, as humans are facing the prospect of getting back to their normal routine. Following a long holiday, it may take longer to recover from the *holiday blues*; thus investor pessimism may persist.

³Equally-weighted cumulative abnormal return (CAR) is used as this study is interested in the average returns of the IPO portfolios three-years aftermarket. CAR is chosen as it is less prone to skewness issues commonly found in the buy-and-hold abnormal returns (Kothari & Warner 2006).

⁴Following Ritter (1991), one month consists of 22 trading days. For the first month, the return excludes the first day returns, as the first day returns tend to be abnormally high.

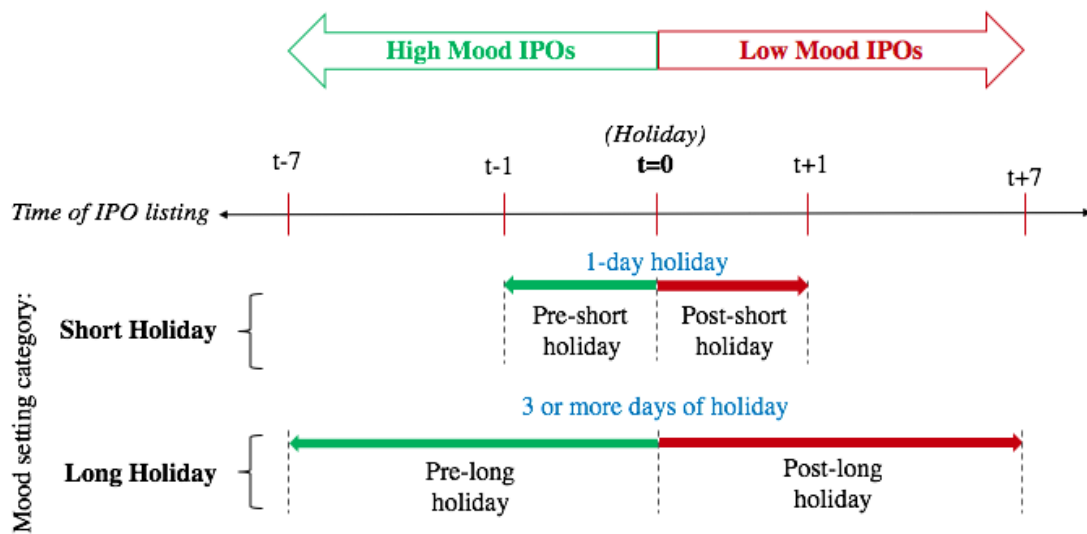


Figure 3.3:
Classifications of IPOs According to
Cultural or Religious Holiday Mood Settings

For each mood setting category, a dummy variable is constructed to represent the *high* and *low* moods. With regard to the weekend (category 1), Friday represents a high mood, and Monday represents a low mood. Therefore, IPO listed on a Friday and a Monday takes the value of 1 to represent each mood. However, an exception is given if the Friday or Monday coincides with a cultural or religious holiday. The IPOs are categorised under a long holiday (category 3) instead, as it involves a long weekend.

IPOs listed around a cultural or religious holiday time are classified as *holiday IPOs*. As a rule of thumb, an IPO is only considered as holiday IPO if the cultural or religious festive in question is a public holiday in the country where the IPO is listed. A summary of public holidays in ASEAN-4 is presented in Table C.1 in Appendix C. There are two sub-categories of the holiday IPOs, that represent the social moods surrounding the listing time, namely *short holiday* (category 2) and *long holiday* IPOs (category 3). Under each category, IPOs listed prior to (following) a holiday are sub-categorised as *high mood* (*low mood*) IPOs.

To qualify for category 2 that represents the social mood surrounding a short (one day) cultural or religious holiday, an IPO must be listed one day before or after ($-1, +1$) the holiday, and the listing day must fall either on Tuesday,

Table 3.1
Dummy Variables for Social Mood Setting Categories.

Mood Setting Category	Emotion Level	Dummy Variable	Definition
Weekend	High	<i>FRI</i> (Friday)	1 if the IPOs are listed on a Friday that does not coincide with a public holiday; 0 otherwise.
	Low	<i>MON</i> (Monday)	1 if the IPOs are listed on a Monday that does not coincide with a public holiday and/or a festive; 0 otherwise.
			IPOs that takes the value of 0 for both <i>FRI</i> and <i>MON</i> are classified as the non-weekend IPOs, or reference group.
Short holiday	High	<i>PRESH</i> (Pre-holiday)	1 if the IPOs are listed one day prior to one-day cultural or religious holiday; 0 otherwise.
	Low	<i>POSTSH</i> (Post-holiday)	1 if the IPOs are listed one day following a one-day cultural or religious holiday; 0 otherwise.
			IPOs that take the value of 0 for both <i>PRESH</i> and <i>POSTSH</i> are classified as the non-holiday IPOs, or reference group.
Long holiday	High	<i>PRELG</i> (Pre-festive)	1 if the IPOs are listed around seven days prior to a festive holiday; 0 otherwise.
	Low	<i>POSTLG</i> (Post-festive)	1 if the IPOs are listed around seven days following a festive holiday; 0 otherwise.
			IPOs that takes the value of 0 for both <i>PRELG</i> and <i>POSTLG</i> are classified as the non-weekend IPOs, or reference group.

Wednesday or Thursday. To qualify for this category, an IPO needs to be listed one day before or after the holiday. The categorisation method is adapted from Bergsma & Jiang (2015). Although Bergsma & Jiang (2015) use 4 days before and after a holiday $(-4, +4)$, this study uses $(-1, +1)$ to differentiate between the effects of social mood surrounding short and long cultural holidays.

Finally, category 3 represents the social moods surrounding a long cultural or religious holiday within a country. To qualify for this category, an IPO must be listed around seven days before or after $(-7, +7)$ a cultural or religious holiday that lasts for at least three days. This usually includes a main cultural or religious celebration that coincides with a weekend. Examples of main cultural or religious holidays include the Chinese New Year, *Eid-ul-Fitr* and Christmas in Singapore and Malaysia, *Eid-ul-Fitr* and Christmas in Indonesia, and the Songkhran festival⁵

⁵The Songkhran festival is the Thai New Year celebration, commonly celebrated around mid-April.

in Thailand. Besides, if a short cultural or religious holiday falls on a Monday or Friday, it belongs under this category as well, as it involves a long weekend. To qualify for this category, the listing date of an IPO must fall within seven days before the first day of the holiday, or within seven days after the last day of the holiday. This is to ensure that the mood build-up and the trailing mood are accounted for. It is important to segregate the IPOs into different mood settings to establish whether these periods influence investors' mood at different levels, which may influence IPO underpricing and underperformance differently. To summarise, the dummy variables that represent mood are listed in Table 3.1.

The control variables employed in this study control for various ex-ante characteristics in relation to IPO stocks, IPO firms, the general stock market, IPO market and macroeconomic environment. To control for IPO characteristics, following Ritter (1984), Ahmad-Zaluki et al. (2011) and Judge et al. (2015), IPO size is used as control variable. With regard to controlling for IPO firm characteristics, firm age (Beatty & Welch 1996, Fische et al. 2014, Judge et al. 2015) and size (Ritter 1984, Beatty 1989, Komenkul 2015) are used. The broad stock market return is reported to significantly influence IPO performance (Rock 1986, Ekkayokkaya & Pengniti 2012); thus stock returns for seven and thirty days before a listing are used to control for this effect on IPO underpricing and underperformance. Beatty (1989) and Fische et al. (2014) report document a significant relationship between IPO market activity surrounding a listing and underpricing. Hence, prior IPO market activity is adapted as a control variable in this study. Finally, following Ekkayokkaya & Pengniti (2012) who find a significant influence of macroeconomic activity on IPO performance, this study also controls for such effect using growth domestic product growth rate.

Table 3.2 lists and defines the control variables employed in this study. Notably, natural logs are used for firm size, earnings per share and book-to-market value. These factors are converted into natural log due to high skewness and kurtosis (see Table 3.3 and discussions in Section 3.4.2), that does not satisfy the OLS assumption that the data are normally distributed. Thus, the absolute figures of these variables, as reported in Table 3.3, are converted into the natural log to ensure the aptness of the OLS estimations results.

Table 3.2
Control Variables.

Characteristics	Control Variable	Definition	Measurement
IPO Firm (General)	<i>LN FIRMSZ</i>	The natural log of IPO firm size	Firm size is the market capitalisation of IPO firm size at listing date in US Dollar.
	<i>AGE</i>	Firm age	Firm age in years from the year of incorporation to listing year.
	<i>BRD</i>	Listing market	A dummy variable of the board on which IPO <i>i</i> is listed. <i>BRD</i> takes the value of 1 if IPO <i>i</i> is listed on the alternative market, and 0 otherwise.
IPO Firm (Financial)	<i>LNEPS</i>	The natural log of earnings per share (EPS)	IPO firm earnings per share in the financial year prior to listing.
	<i>LNBTMV</i>	The natural log of book-to-market value (BTMV)	BTMV is a reciprocal of the market-to-book value in the financial year prior to listing.
Stock Market	<i>RM1W</i>	One-week stock market return	Stock market return for one-week prior to listing date.
	<i>RM1M</i>	One-month stock market return	Stock return for 22-trading (Ritter 1991) days prior to listing date. <i>Note: Stock market returns are calculated using the main index prices for the respective market as follows: (1) Singapore: STI; (2) Malaysia: FBM KLCI; (3) Thailand: SET; and (4) Indonesia: JCI.</i>
IPO Market activity	<i>IPO3M</i>	IPO listing activity	The numbers of new listing 3 months prior to listing of IPO <i>i</i> .
Macroeconomic	<i>GDP</i>	Gross domestic product	Gross domestic product growth rate in the year prior to the IPO listing.

3.3.2 Method of Estimation

In order to establish the relationship between social moods and IPO performances, an ordinary least square (OLS) regression is used to estimate Equation 3.1, following Jones & Ligon (2009) and Bergsma & Jiang (2015). As in Bergsma & Jiang (2015), separate regression models were ran to test the influence of three social mood settings on underpricing and underperformance, namely *weekend*, *short holiday*, and *long holiday* moods for each ASEAN-4 market. The OLS regression is deemed suitable in this study context, as this study focuses on examining the relationship between social moods and IPO performance at the individual market level, rather than at the regional level. Following Bergsma & Jiang (2015), both high and low mood dummy variables are included in each estimation model to determine whether the cultural or religious holiday effect is driven by the high or low mood. For each regression model, the two-sample *t*-test is used to determine whether the mean initial returns and abnormal returns of pre-holiday (high mood)

IPOs are significantly different from those of post-holiday (low mood) IPOs. One-way ANOVA is conducted to determine whether there are differences across the holiday and non-holiday IPOs.

3.3.3 Data

Importantly, for the construction of the main variables, this study employs cultural and religious holiday data from each of the market. Government websites typically only publish public holiday dates for the current and upcoming years. Thus, following Bergsma & Jiang (2015), historical holiday data are downloaded from the *Time and Date*⁶ website, a database for public holidays worldwide that publishes historical information. To ensure consistency, the information is cross-checked against similar data downloaded from another website with a similar function, *Office Holidays*⁷. The data in these two websites were found to be consistent. The data for initial returns and 3-year cumulative abnormal returns are using results presented in Section 2.4. As for the sources, the list of IPOs that went public during the study period is obtained from the Bursa Malaysia Information Services for Malaysia. For Singapore, Thailand and Indonesia, this data is primarily obtained from the ThomsonOne Banker database. To ensure completeness of the list of IPOs, the OSIRIS database is used as a checking mechanism. The same databases provide the list of firms, listing dates, listing prices and number of IPO shares. If data are not available from these sources, they were hand-picked from the stock exchange on which the IPOs are listed, namely The Singapore Exchange⁸, Bursa Malaysia⁹, The Stock Exchange of Thailand¹⁰, and Bursa Efek Indonesia¹¹. IPO closing prices and indices closing prices are obtained from DataStream using daily intervals. Finally, the gross domestic product growth data are obtained from the World Bank Website¹².

⁶URL: <https://www.timeanddate.com>

⁷URL: <http://www.officeholidays.com>

⁸<https://www.sgx.com/>

⁹<http://www.bursamalaysia.com/market/>

¹⁰<https://www.set.or.th/en/>

¹¹<http://www.idx.co.id/>

¹²<http://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG?view=chart>.

3.4. Empirical Findings

The primary objective of this study is to determine whether social mood influences initial public offering (IPO) valuation in the short- and long-run. The central idea of this study is that holidays play a role in shaping the human mood. As such, this study attempts to look at how mood influences, particularly in ASEAN at regional and individual market levels. Focusing on four main major stock markets among the ASEAN state members, the empirical findings of this study will be discussed in this section.

3.4.1 Distribution of IPO Samples

Before beginning the analysis, the distribution of holiday- and non-holiday IPOs across the ASEAN-4 markets is examined. The initial public offerings (IPOs) sample used in this study consists of 1,277 IPOs listed on four major stock markets among ASEAN state members, vis Singapore ($n = 521$), Malaysia ($n = 451$), Thailand ($n = 222$) and Indonesia ($n = 83$). The sample IPOs were listed between 1 January 2000 and 31 December 2013. 1 January 2000 was chosen as the start date to allow the post-effect from the Asian Financial Crisis 1998 to diminish. The samples are segregated between holiday- and non-holiday IPOs. The former consists of IPOs listed before and after a holiday, namely weekend (*FRI* and *MON*), short holiday (*PRESH* and *POSTSH*), and long holiday (*PRELG* and *POSTLG*) IPOs that represents the three social mood categories. The latter are IPOs that are not listed around a holiday period, that serves as a reference group. The distribution of IPO samples by pre- or post-holiday periods, and by mood classifications are presented in Figure 3.4.

By first referring to Figure 3.4(a), there are more IPOs listed around the turn-of-the-week (Friday or Monday), than around cultural or religious holidays. There are also a higher number of IPOs listed around short cultural or religious holidays than the long ones. The patterns are rather consistent throughout the ASEAN-4 markets. Taken together, IPOs listed on a Friday and prior to a cultural or religious holiday are classified as *high mood* IPOs, as investors' mood tend to increase during these periods. On the other hand, IPOs listed following a weekend and a cultural or religious holiday are classified as *low mood* IPOs, as investors tend to suffer from the holiday blues. In general, Figure 3.4(b) shows that there

are more IPOs listed prior to a holiday period than after one. Noticeably, the figure shows that there are a higher number of pre- and post-holiday IPOs than non-holiday IPOs for Singapore and Malaysia. For Thailand and Indonesia, the numbers of non-holiday IPOs are higher than those listed around holiday period, For example, the number of non-holiday (157) IPOs in Thailand is substantially higher than pre-(35) and post-holiday (31) IPOs.

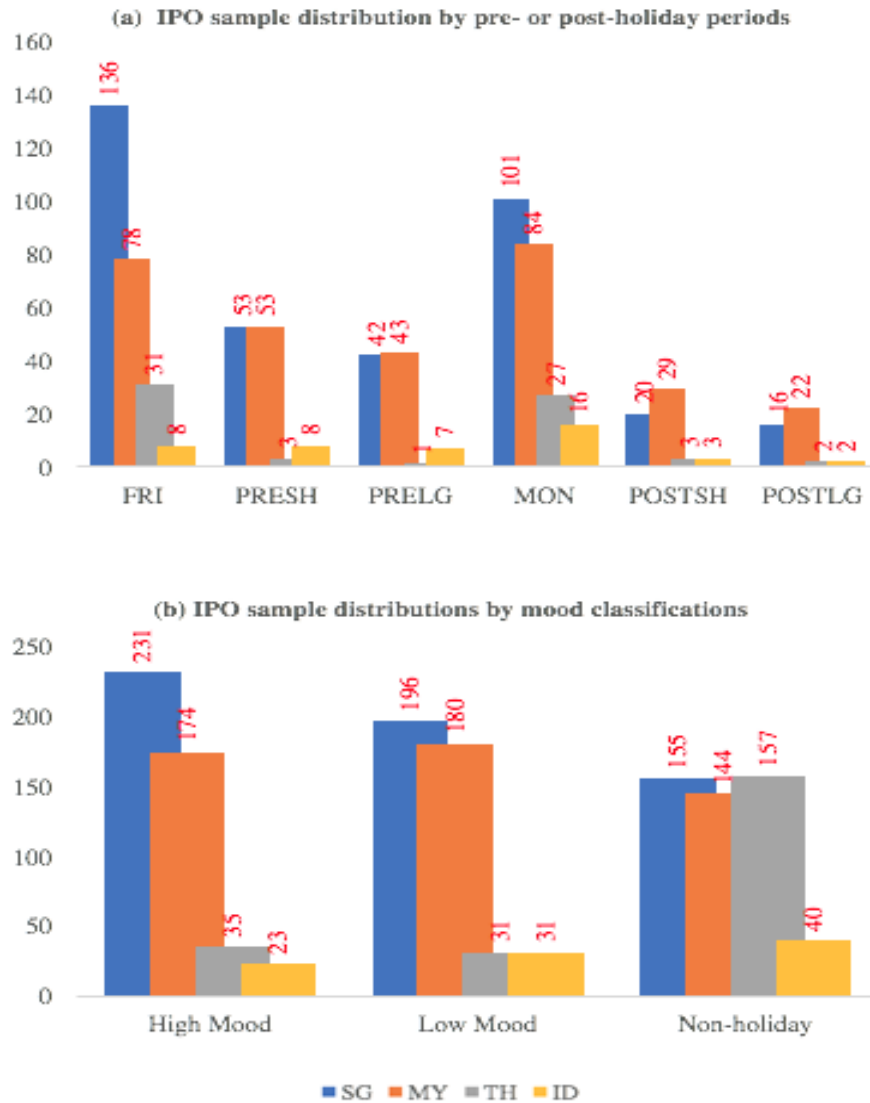


Figure 3.4:
IPO Sample Distributions
by Social Mood Categories

3.4.2 Descriptive Statistics

Next, the descriptive statistics of the variables used in this study are discussed. As the main variables are the dummy variables that represent high or low social moods, only control variables are reported, as per Table 3.3. The first focus is on the dependent variables, IPO underpricing (*UNDP*) and three-year cumulative abnormal returns (*CAR3Y*). The Table reports that the level of underpricing for Singapore (24.1%) and Malaysia (26.9%) are quite similar. Thai IPOs are slightly more underpriced at 33.5%. Among the four markets, Indonesian IPOs are the most underpriced at 54.9%. Moving on to *CAR3Y*, the means indicate that in the long-run, IPOs in Singapore and Malaysia underperform at an average of -0.09% and -28.3% , respectively. On the other hand, IPOs in Thailand and Indonesia overperform at 24.6% and 12.8%, respectively.

The mean values of *FIRMSZ* indicate that overall, IPO firms are larger in Thailand and Indonesia than Singapore and Malaysia. Mean *AGE* indicate that IPO firms in Singapore and Malaysia are relatively younger than their Thai and Indonesian counterparts. The earnings per share (*EPS*) is the highest for Indonesia. *BTMV* is highest for Singapore, implying that IPOs in Singapore generally consist of growth IPOs. Market returns prior to a listing of an IPOs are generally positive. The mean *GDP* shows that the ASEAN-4 markets are quite similar in terms of economic growth rate that is between 5 to 6%. Finally, with regard to the IPO activities, mean *IPO3M* indicate that the IPO markets in Singapore and Malaysia are more active than their Thai and Indonesian counterparts.

The descriptive statistics show high skewness and kurtosis for *FIRMSZ*, *EPS* and *BTMV*. The Jarque-Bera tests show that the variables are indeed non-normally distributed ($p < 0.001$). Therefore, to mitigate heteroskedasticity issues in the OLS regression analysis, the data are transformed into the natural log. As the main dependent variables are dummy variables, I ran the parametric two independent sample samples *t*-test and the non-parametric Mann-Whitney U test to test that the mean and median of high mood and low mood IPOs are significantly different from each other. A one-way ANOVA was run to test whether the IPOs are significantly different.

Table 3.3

Descriptive Statistics of IPOs Listed in Singapore and Malaysia.

This table reports the descriptive statistics of the variables used to determine the relationship between social moods and IPO underpricing and 3-year abnormal returns. Data covers the period from January 2000 to December 2013 for the ASEAN-4 markets, consisting of Singapore, Malaysia, Thailand and Indonesia. The dependent variables used in this study are *UNDP* (underpricing) and *CAR3Y* (3-year abnormal returns). *FIRMSZ* is the IPO firm market capitalisation on listing day, in million US Dollar. *AGE* is the firm age in year, counted from the year of incorporation to the listing year. *EPS* is the earning per share of IPO firm during the last financial year end prior to listing. *BTMV* is the book-to-market value, calculated as the reciprocal of the market-to-book value of IPO firms during the financial year before listing. *RM7D* and *RM30D* are the corresponding market return 7 and 30 days, respectively, before listing of IPO *i*. The market return is represented by the main indices returns for each ASEAN-4 market. *MCAP* is the total market capitalisation in billion US Dollar of the stock market where IPO *i* is listed, during the year prior to listing. *GDP* is the growth rate of the gross domestic products of the market in which IPO *i* is listed, during the year prior to listing. *IPO3M* is the number of listing in the market where IPO *i* is listed, during 3 months prior listing.

Variable	<i>n</i>	Mean	Std. Dev.	Min.	Max.	Skewness	Kurtosis
Panel A: Descriptive Statistics for IPOs Listed on the Singapore Exchange							
<i>Dependent variable:</i>							
<i>UNDP</i>	523	0.241	0.637	-0.972	8.7	6.115	69.423
<i>CAR3Y</i>	512	-0.088	0.847	-2.312	2.622	0.395	3.113
<i>IPO and issuing firm characteristics:</i>							
<i>FIRMSZ</i>	523	261	1,800	0.352	33,900	15.693	269.405
<i>AGE</i>	523	7.119	9.265	0	66	2.222	9.665
<i>EPS</i>	520	0.991	11.727	0	243.07	18.251	360.9
<i>BTMV</i>	523	2.063	15.713	-0.437	310.478	16.437	301.74
<i>Market characteristics</i>							
<i>RM7D</i>	523	-0.002	0.032	-0.128	0.116	-0.043	5.355
<i>RM30D</i>	523	0.006	0.056	-0.183	0.237	0.067	4.982
<i>MKTCAP</i>	523	320	195	101	765	0.798	2.337
<i>GDP</i>	523	5.997	3.534	-0.952	15.24	0.095	3.553
<i>IPO3M</i>	523	11.914	6.543	0	30	0.702	3.528
Panel B: Descriptive Statistics for IPOs Listed on Bursa Malaysia							
<i>Dependent variable:</i>							
<i>UNDP</i>	453	0.269	0.634	-0.75	8.618	6.178	71.779
<i>CAR3Y</i>	453	-0.283	0.84	-2.587	3.08	0.588	4.037
<i>IPO and issuing firm characteristics:</i>							
<i>FIRMSZ</i>	453	166	901	1.222	12,500	10.276	122.129
<i>AGE</i>	453	5.38	6.939	0	40	2.576	10.538
<i>EPS</i>	452	0.959	17.782	0	378	21.163	449.212
<i>BTMV</i>	452	0.753	0.675	0.011	11.711	10.093	157.346
<i>Market characteristics</i>							
<i>RM7D</i>	453	0.001	0.024	-0.151	0.063	-1.103	8.198
<i>RM30D</i>	453	0.008	0.041	-0.205	0.125	-0.768	5.664
<i>MKTCAP</i>	453	219	103	113	500	1.252	3.422
<i>GDP</i>	453	5.121	2.482	-1.514	8.859	-1.497	4.412
<i>IPO3M</i>	453	12.433	6.816	0	30	0.452	2.331

Table 3.3 (continued).

Variable	<i>n</i>	Mean	Std. Dev.	Min.	Max.	Skewness	Kurtosis
Panel C: Descriptive Statistics for IPOs Listed on the Stock Exchange of Thailand							
<i>Dependent variable:</i>							
<i>UNDP</i>	224	0.335	0.688	-0.923	5.9	3.951	27.136
<i>CAR3Y</i>	224	0.246	1.039	-1.612	5.851	1.37	7.226
<i>IPO and issuing firm characteristics:</i>							
<i>FIRMSZ</i>	224	26,900	127,000	0.053	1,360,000	6.896	61.392
<i>AGE</i>	224	14.59	10.119	0	60	1.409	5.95
<i>EPS</i>	220	0.577	1.444	0	14.21	6.322	50.759
<i>BTMV</i>	221	0.578	0.507	0.001	5.882	5.81	57.549
<i>Market characteristics</i>							
<i>RM7D</i>	224	0.005	0.035	-0.139	0.105	-0.39	4.265
<i>RM30D</i>	224	0.025	0.071	-0.225	0.233	-0.253	3.947
<i>MKTCAP</i>	224	177	101	29.2	390	0.965	2.619
<i>GDP</i>	224	5.325	2.281	-0.738	7.507	-1.257	3.5
<i>IPO3M</i>	224	7.063	5.635	0	24	1.388	4.448
Panel D: Descriptive Statistics for IPOs Listed on Bursa Efek Indonesia							
<i>Dependent variable:</i>							
<i>UNDP</i>	84	0.549	1.502	-0.84	12.625	6.46	51.333
<i>CAR3Y</i>	78	0.128	1.236	-2.618	5.831	1.347	7.507
<i>IPO and issuing firm characteristics:</i>							
<i>FIRMSZ</i>	84	361	703	0	3,960	2.878	11.769
<i>AGE</i>	84	15.489	10.815	0	51	0.84	3.371
<i>EPS</i>	84	46.66	95.515	0	615.09	4.06	20.67
<i>BTMV</i>	80	0.759	0.99	0.048	7.692	4.961	32.678
<i>Market characteristics</i>							
<i>RM7D</i>	84	0.002	0.037	-0.121	0.069	-1.076	5.239
<i>RM30D</i>	84	0.025	0.062	-0.137	0.155	-0.216	3.195
<i>MKTCAP</i>	84	276	157	23	428	-0.613	1.637
<i>GDP</i>	84	5.055	1.148	0.791	6.345	-1.666	7.45
<i>IPO3M</i>	84	6.155	3.734	1	14	0.215	2.004

Before examining the statistical relationship between social moods and IPO performances using the OLS regressions, it is worth understanding the behaviours of IPO performances when segregated into the different social mood categories. The analysis will first focus on IPO underpricing, as reported in Figure 3.5. For easy comparisons, high mood IPOs are represented by yellow bars, low mood IPOs by blue bars, and non-holiday IPOs by grey bars. The overall picture that can be seen from the Figure is that the initial return behaviours are heterogeneous across the ASEAN-4 markets.

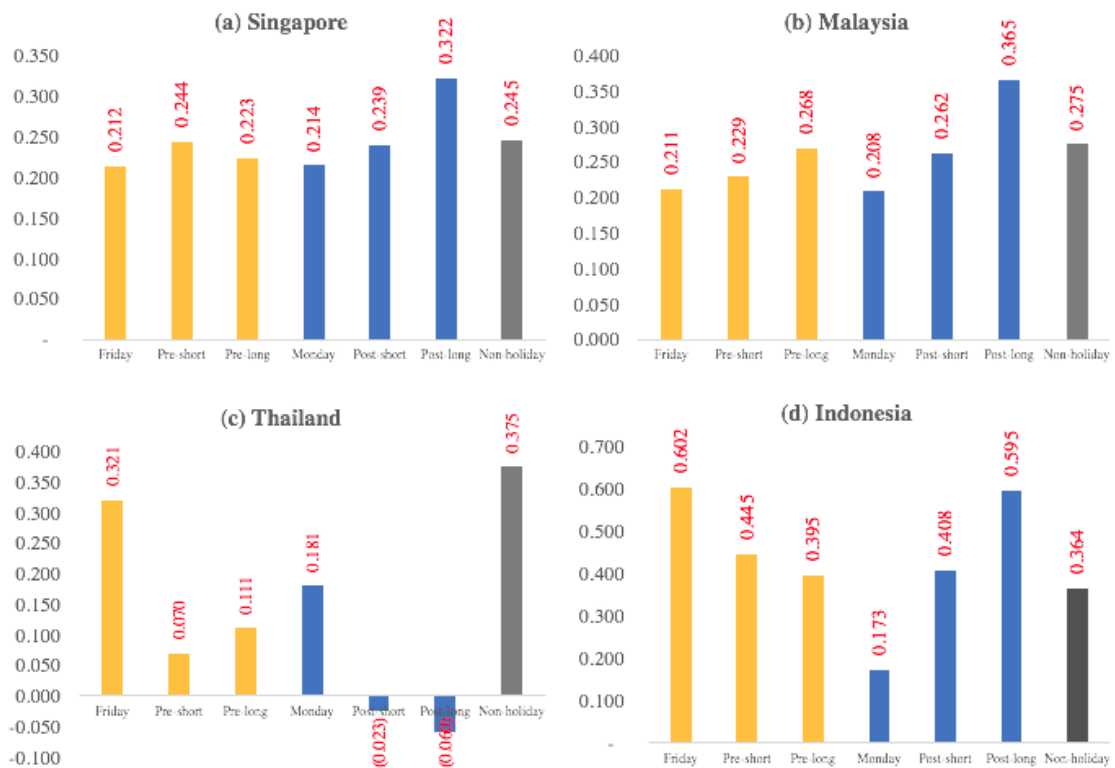


Figure 3.5:
Underpricing of ASEAN IPOs
by Social Mood Categories

When the IPOs are segregated by the social mood categories that surround the listing date, there is no clear pattern that IPOs listed before a weekend, or a cultural or religious holiday, perform better than IPOs listed post-weekend or post-cultural and religious holiday. In fact, for Singapore and Malaysian IPOs, two clear patterns emerge. First, underpricing appear to be highest among IPOs listed following a long holiday, instead of before a holiday. These findings are in-line with Dolvin & Pyles (2007), Dolvin & Fernhaber (2014) that IPOs listed around low mood period are more highly underpriced, as the pessimistic investors need to be lured to invest in IPO stocks. Second, underpricing for pre-holiday IPOs are lower than non-holiday IPOs. This may suggest that investors are not paying attention (Pantzalis & Ucar 2014) to IPO activities during the pre-holiday period.

Noticeably, low mood IPOs for Thailand exhibit negative initial returns on average. Like in Singapore and Malaysia, non-holiday IPOs in Thailand are also more highly underpriced than their counterparts listed around the holiday periods. For Indonesia, in general, high mood IPOs are more highly underpriced than low

mood IPOs, although underpricing is higher among weekend IPOs than IPOs listed around cultural or religious holidays. In an untabulated result, the two-sample t -statistics show that the mean underpricing for high and low mood IPOs are not significantly different. Further, the F -distribution from the one-way ANOVA is not significant, indicating that holiday and non-holiday IPOs are not significantly different from each other.

With regard to 3-year underperformance, Figure 3.6 shows 3-year underperformance in ASEAN-4 IPOs by their respective moods categories. Mixed patterns of IPO long-run abnormal returns are shown in the figure. In general, Singaporean and Malaysian IPOs underperform in the long-run. The only exception is for IPOs listed during the post-short holiday that only marginally overperform the market. The Figure further suggests that in Singapore and Malaysia, high mood IPOs tend to have higher underperformance than low mood and non-holiday IPOs.

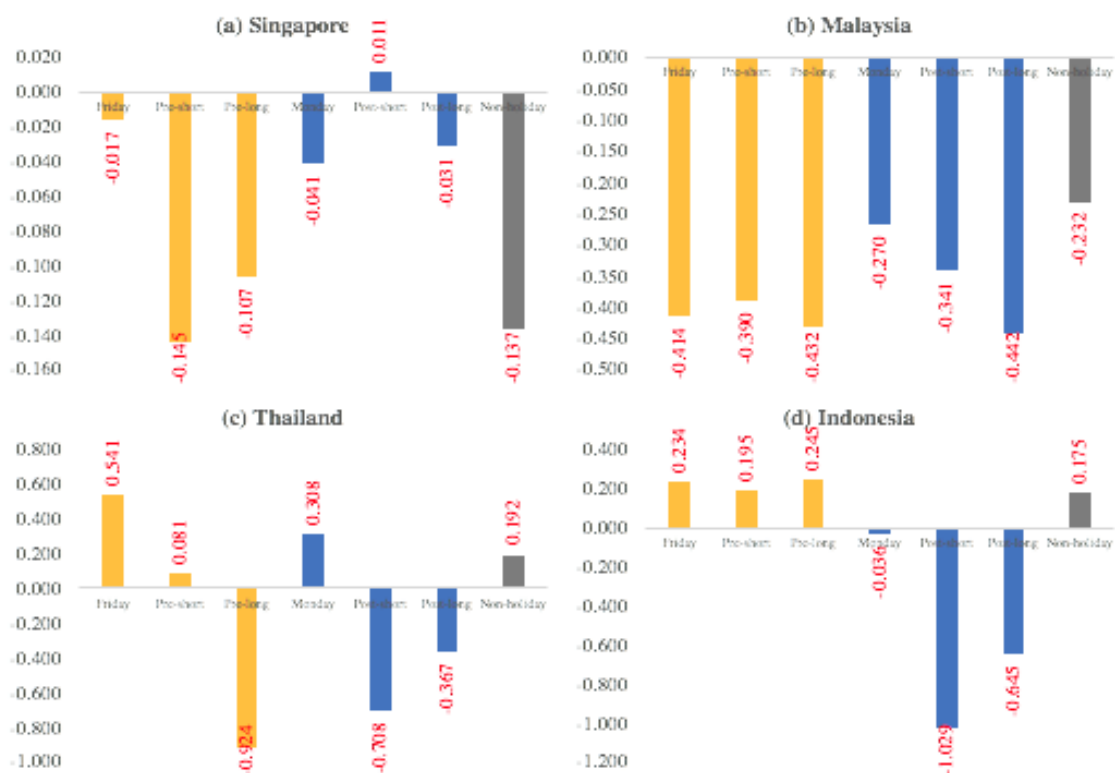


Figure 3.6:
3-year Abnormal Return of ASEAN-4 IPOs
by Social Mood Categories

For the Thai market, there are mixed findings on IPO long-run abnormal returns. While Monday and pre-short holiday IPOs overperform the market, pre-long holiday IPOs exhibit underperformance. The return patterns are not consistent for low-mood IPOs, where Figure 3.6(c) shows underperformance among IPOs listed following cultural and religious holidays, but not weekend. A contrasting pattern is seen in the Indonesian market. While Figure 3.6(d) reports overperformance among high mood IPOs, their low mood counterparts underperform. The absence of return reversals among high mood IPOs suggests that it is harder to value IPOs that are listed around the time when investor pessimism is higher. Overall, based on the patterns of long-run abnormal returns presented in Figure 3.6, it is not easy to infer how social mood plays a role in IPO performances, due to the lack of a generalisable abnormal returns pattern. Similar to underpricing, the two-sample t -statistics show that the mean 3-year abnormal return for high and low mood IPOs are not significantly different. Further, the F -distribution from the one-way ANOVA is not significant, indicating that holiday and non-holiday IPOs are not significantly different from each other.

Next, a Pearson correlation analysis is run to determine whether the continuous variables used in this study are highly correlated to each other. Table 3.4 reports the correlation coefficients between underpricing and the continuous explanatory variables used in this study. Similarly, Table 3.5 shows low correlations between the variables when $CAR3Y$ is used as the dependent variable. The correlation coefficients indicate that there are not high correlations between the variables for every market. Therefore, the OLS regression estimates are free from the autocorrelations issue.

3.4.3 Social Moods and IPO Underpricing

In order to establish the causal relationship between social moods and IPO performances in the short- and long-run, the ordinary least square (OLS) regressions are employed, following Jones & Ligon (2009). Separate regressions are employed for each market to examine how social moods influence IPO initial returns. The estimates from each country on the separate models have no particular meaning regarding another country, allowing comparisons of investors behaviour within each market. The discussions of the empirical findings will first focus on underpricing. The first regression model uses only dummy variables FRI and

Table 3.4**Correlations between Underpricing and Continuous Explanatory Variables.**

This table reports the correlation between underpricing (*UNDP*) and continuous explanatory variables for each ASEAN-4 market. ***, ** and * indicate statistical significance at the 1, 5 and 10% respectively.

	<i>UNDP</i>	<i>LNfirmSZ</i>	<i>AGE</i>	<i>LNeps</i>	<i>LNBMV</i>	<i>RM7D</i>	<i>RM30D</i>	<i>GDP</i>	<i>IPO3M</i>
Panel A:									
Correlations between <i>UNDP</i> and Continuous Dependent Variables for Singapore IPOs									
<i>UNDP</i>	1.000								
<i>LNfirmSZ</i>	-0.248***	1.000							
<i>AGE</i>	0.067	-0.041	1.000						
<i>LNeps</i>	-0.011	0.289***	-0.007	1.000					
<i>LNBMV</i>	-0.172***	-0.063	-0.002	0.113	1.000				
<i>RM7D</i>	0.134**	-0.02	-0.002	-0.041	-0.074*	1.000			
<i>RM30D</i>	0.214***	0.041	0.032	-0.006	-0.057	0.568***	1.000		
<i>GDP</i>	-0.032	0.137**	0.015	0.100*	0.071	-0.050	0.122**	1.000	
<i>IPO3M</i>	0.023	-0.037	-0.005	-0.052	-0.042	0.03	0.002	0.145***	1.000
Panel B:									
Correlations between <i>UNDP</i> and Continuous Dependent Variables for Malaysia IPOs									
<i>UNDP</i>	1.000								
<i>LNfirmSZ</i>	-0.368***	1.000							
<i>AGE</i>	-0.028	0.106*	1.000						
<i>LNeps</i>	-0.061	0.340***	0.019	1.000					
<i>LNBMV</i>	-0.043	0.016	0.050	-0.029	1.000				
<i>RM7D</i>	0.065	-0.011	0.018	0.022	-0.010	1.000			
<i>RM30D</i>	0.127**	-0.092*	-0.017	-0.062	-0.036	0.497	1.000		
<i>GDP</i>	0.049	-0.116*	-0.112*	-0.067	-0.036	-0.037	0.001	1.000	
<i>IPO3M</i>	0.071	-0.264***	-0.018	-0.124*	0.020	0.088	0.039	0.094*	1.000
Panel C:									
Correlations between <i>UNDP</i> and Continuous Dependent Variables for Thailand IPOs									
<i>UNDP</i>	1.000								
<i>LNfirmSZ</i>	0.123*	1.000							
<i>AGE</i>	0.012	0.066	1.000						
<i>LNeps</i>	-0.119*	0.147*	0.098	1.000					
<i>LNBMV</i>	-0.176**	-0.428***	-0.018	-0.068	1.000				
<i>RM7D</i>	-0.034	0.010	-0.110	-0.013	0.068	1.000			
<i>RM30D</i>	0.029	-0.047	-0.035	-0.089	0.085	0.474***	1.000		
<i>GDP</i>	-0.058	0.289***	-0.08	0.038	-0.054	0.088	0.187**	1.000	
<i>IPO3M</i>	-0.149*	0.061	0.053	0.046	0.081	0.032	0.163*	0.417	1.000
Panel D:									
Correlations between <i>UNDP</i> and Continuous Dependent Variables for Indonesia IPOs									
<i>UNDP</i>	1.000								
<i>LNfirmSZ</i>	-0.315**	1.000							
<i>AGE</i>	-0.071	-0.102	1.000						
<i>LNeps</i>	-0.402***	0.434***	-0.031	1.000					
<i>LNBMV</i>	-0.004	-0.165	0.139	-0.012	1.000				
<i>RM7D</i>	-0.017	0.034	-0.024	0.031	-0.167	1.000			
<i>RM30D</i>	0.121	-0.054	0.05	-0.071	0.132	0.151	1.000		
<i>GDP</i>	-0.056	0.120	0.114	-0.096	0.049	-0.042	0.059	1.000	
<i>IPO3M</i>	0.011	0.115	-0.013	0.111	-0.273*	0.068	0.130	0.027	1.000

Table 3.5

Correlations between 3-year Cumulative Abnormal Return and Continuous Explanatory Variables.

This table reports the correlation between 3-year cumulative abnormal return (*CAR3Y*) and continuous dependent variables for each ASEAN-4 market. ***, ** and * indicate statistical significance at the 1, 5 and 10% respectively.

	<i>CAR3Y</i>	<i>LNfirmSZ</i>	<i>AGE</i>	<i>LNEPS</i>	<i>LNBTMV</i>	<i>RM7D</i>	<i>RM30D</i>	<i>GDP</i>	<i>IPO3M</i>
Panel A:									
Correlations between <i>CAR3Y</i> and Continuous Dependent Variables for Singapore IPOs									
<i>CAR3Y</i>	1.000								
<i>LNfirmSZ</i>	0.058	1.000							
<i>AGE</i>	-0.046	-0.041	1.000						
<i>LNEPS</i>	0.005	0.289***	-0.007	1.000					
<i>LNBTMV</i>	0.047	-0.063	-0.002	0.113*	1.000				
<i>RM7D</i>	-0.033	-0.020	-0.002	-0.041	-0.075*	1.000			
<i>RM30D</i>	0.003	0.041	0.032	-0.006	-0.057	0.569***	1.000		
<i>GDP</i>	-0.020	0.137**	0.015	0.100*	0.071	-0.051	-0.122**	1.000	
<i>IPO3M</i>	-0.112*	-0.037	-0.005	-0.052	-0.042	0.030	0.002	0.145**	1.000
Panel B:									
Correlations between <i>CAR3Y</i> and Continuous Dependent Variables for Malaysia IPOs									
<i>CAR3Y</i>	1.000								
<i>LNfirmSZ</i>	0.032	1.000							
<i>AGE</i>	0.047	0.106*	1.000						
<i>LNEPS</i>	-0.078	0.340***	0.019	1.000					
<i>LNBTMV</i>	0.024	0.016	0.050	-0.029	1.000				
<i>RM7D</i>	-0.078	-0.011	0.018	0.022	-0.010	1.000			
<i>RM30D</i>	-0.067	-0.092*	-0.017	-0.062	-0.036	0.497***	1.000		
<i>GDP</i>	0.055	-0.116*	-0.112*	-0.067	-0.036	-0.037	-0.001	1.000	
<i>IPO3M</i>	-0.144**	-0.264***	-0.018	-0.124*	0.020	0.088*	0.039	0.094*	1.000
Panel C:									
Correlations between <i>CAR3Y</i> and Continuous Dependent Variables for Thailand IPOs									
<i>CAR3Y</i>	1.000								
<i>LNfirmSZ</i>	0.189**	1.000							
<i>AGE</i>	0.064	0.066	1.000						
<i>LNEPS</i>	-0.057	0.147*	0.098	1.000					
<i>LNBTMV</i>	-0.041	-0.428***	-0.018	-0.068	1.000				
<i>RM7D</i>	0.056	0.010	-0.110	-0.013	0.068	1.000			
<i>RM30D</i>	-0.038	-0.047	-0.035	-0.089	0.085	0.474***	1.000		
<i>GDP</i>	-0.177**	0.289	-0.080	0.038	-0.054	0.088	0.187	1.000	
<i>IPO3M</i>	-0.181	0.061	0.053	0.046	0.081	0.032	0.163*	0.417***	1.000
Panel D:									
Correlations between <i>CAR3Y</i> and Continuous Dependent Variables for Indonesia IPOs									
<i>CAR3Y</i>	1.000								
<i>LNfirmSZ</i>	-0.131	1.000							
<i>AGE</i>	0.345**	-0.101	1.000						
<i>LNEPS</i>	-0.213*	0.434**	-0.031	1.000					
<i>LNBTMV</i>	0.042	-0.165	0.139	-0.012	1.000				
<i>RM7D</i>	-0.053	0.034	-0.024	0.031	-0.167	1.000			
<i>RM30D</i>	-0.074	-0.054	0.050	-0.071	0.132	0.151	1.000		
<i>GDP</i>	0.075	0.120	0.114	-0.096	0.049	-0.042	-0.059	1.000	
<i>IPO3M</i>	-0.072	0.115	-0.013	0.111	-0.273*	0.068	-0.130	0.027	1.000

MON that represents social moods around weekends. *FRI* represents the high mood that arises as investors are anticipating the weekend. *MON* proxies the low mood that occurs when investors are recovering from the weekend.

Table 3.6 reports the regression results of weekend mood on underpricing. No significant relationship is found between *FRI* and *MON* with *UNDP* in all the ASEAN-4 markets, implying that social mood around weekends does not affect investors stock valuation. Therefore, the findings do not support previous researches that report human emotions on Fridays (Mondays) are positively (negatively) related to stock returns (Kamstra et al. 2000, DellaVigna & Pollet 2009, Bergsma & Jiang 2015, Birru & Wang 2016). The behaviour of ASEAN IPO investors is more similar to stock investors in Pakistan, where Ali & Akbar (2009) found that investors mood around weekend does not have a significant impact on stock returns.

Next, I report the relationship between social moods surrounding short cultural and religious holidays and IPO underpricing, as reported in Table 3.7. There is no statistical relationship between *PRESH* and *POSTSH* and underpricing for most cases, except for Thailand IPOs where there is a significant negative relationship between *POSTSH* and *UNDP*. Overall, these findings fail to fully support Bouman & Jacobsen (2002), Keef & Khaled (2011), Al-Khazali (2014) and Keef et al. (2015) that report significant positive abnormal returns around pre-holiday periods. The results imply that while investors' mood is elated in anticipation of a holiday, the influence of their mood does not extend to IPO investment decision-making. Similarly, as they are recovering from the post-holiday blues, their pessimism does not affect IPO valuations. For *POSTSH*, the only exception is for Thailand, where the significant negative relationship implies that as Thai investors are recovering from the holiday blues, their pessimism extends to IPO valuations. When investors are pessimistic, they are less inclined to take risks, thus will be more prudent in valuing IPO stocks. This finding contradicts Bergsma & Jiang (2015) that reports positive abnormal returns around seven days before and after a cultural new year holiday, but supports Bhana (1994) that reports declining stock returns following a public holiday.

The third regression model tests the influence of social mood around a long cultural or religious holiday and IPO underpricing. As reported in Table 3.8, no significant relationship is found between *PRELG* and *UNDP*, implying that

Table 3.6
Social Mood Around Weekend and IPO Underpricing in ASEAN-4

This table reports the ordinary least squares regression results of social mood surrounding the weekends on underpricing of IPOs listed in Singapore, Malaysia, Thailand and Indonesia. Data covers the period from January 2000 to December 2013. *UNDP* is IPO underpricing. *FRI* is a high mood dummy variable where 1 represents IPOs listed on a Friday and 0 otherwise. *MON* is a low mood dummy variable where 1 represents IPOs listed on a Monday and 0 otherwise. *LNSZ* is the natural log of IPO firm market capitalisation on listing day, in million US Dollar. *AGE* is the firm age in year, counted from the year of incorporation to the listing year. *LNEPS* is the natural log of earnings per share of IPO firm during the last financial year end prior to listing. *LNBTMV* is the book-to-market value, calculated as the reciprocal of the market-to-book value of IPO firms during the financial year prior to listing. *BRD* is the dummy variable for the listing board, where 1 represents the alternative market and 0 for the main market. *RM7D* and *RM30D* is the corresponding market return 7 and 30 days, respectively, before listing of IPO *i*. The market return is represented by the main indices returns for each ASEAN-4 market. *MKTCAP* is the total market capitalisation in billion US Dollar of the stock market where IPO *i* is listed, during the year prior to listing. *GDP* is the growth rate of the gross domestic products of the market in which IPO *i* is listed, during the year prior to listing. *IPO3M* is the number of listing in the market where IPO *i* is listed, during 3 months prior listing. SG, MY, TH and ID represent Singapore, Malaysia, Thailand and Indonesia, respectively. Standard errors are in parentheses. Significance levels: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

	(1) SG <i>UNDP</i>	(2) MY <i>UNDP</i>	(3) TH <i>UNDP</i>	(4) ID <i>UNDP</i>
<i>FRI</i>	0.008 (0.195)	0.003 (0.0516)	0.012 (0.100)	0.005 (0.017)
<i>MON</i>	0.020 (0.352)	-0.027 (-0.497)	-0.072 (-0.847)	-0.045 (-0.235)
<i>LNFMRSZ</i>	-0.104*** (-6.407)	-0.145*** (-5.868)	-0.140*** (-3.595)	-0.127*** (-2.823)
<i>AGE</i>	0.001 (0.403)	-0.002 (-0.701)	-0.003 (-0.697)	-0.009 (-1.194)
<i>LNEPS</i>	0.0280** (2.289)	0.015 (0.872)	-0.001 (-0.003)	-0.103 (-1.587)
<i>LNBTMV</i>	-0.138*** (-6.020)	-0.025 (-0.782)	-0.023 (-0.426)	0.025 (0.229)
<i>BRD</i>	-0.044 (-0.867)	0.031 (0.506)	-0.179* (-1.883)	0.701 (1.676)
<i>RM7D</i>	0.620 (0.842)	0.375 (0.414)	-0.909 (-1.008)	0.0649 (0.0368)
<i>RM30D</i>	1.819*** (3.546)	0.200 (0.335)	0.170 (0.301)	2.979** (2.117)
<i>MKTCAP</i>	0.001*** (3.185)	-0.000 (-0.770)	0.001*** (3.550)	-0.000 (-0.020)
<i>GDP</i>	-0.0355 (-0.665)	-0.444 (-0.546)	0.133* (2.183)	-0.0629 (-0.276)
<i>IPO3M</i>	0.004 (1.083)	0.005 (0.928)	-0.000 (-0.052)	0.010 (0.510)
Industry Fixed Effects	YES	YES	YES	YES
Year Fixed Effects	YES	YES	YES	YES
Constant	2.150*** (4.705)	5.876 (1.139)	2.026*** (3.182)	3.584*** (4.098)
Observations	445	379	193	67
Adjusted R^2	0.344	0.293	0.346	0.605

Table 3.7

Social Mood Around Short Cultural or Religious Holidays and IPO Underpricing in ASEAN-4

This table reports the ordinary least square regression results of social mood surrounding short cultural or religious holidays on underpricing of IPOs listed in Singapore, Malaysia, Thailand and Indonesia. Data covers the period from January 2000 to December 2013. *UNDP* is IPO underpricing. *PRESH* is a high mood dummy variable where 1 represents IPOs listed one day prior to a cultural or religious holiday, and 0 otherwise. *POSTSH* is a low mood dummy variable where 1 represents IPOs listed on a day following a short cultural or religious holiday, and 0 otherwise. SG, MY, TH and ID represents Singapore, Malaysia, Thailand and Indonesia, respectively. Standard errors are in parentheses. Significance levels: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

	(1) SG	(2) MY	(3) TH	(4) ID
	<i>UNDP</i>	<i>UNDP</i>	<i>UNDP</i>	<i>UNDP</i>
<i>PRESH</i>	-0.0239 (-0.471)	-0.0198 (-0.336)	0.167 (1.402)	-0.526 (-1.179)
<i>POSTSH</i>	0.0431 (0.544)	0.0580 (0.782)	-0.286*** (-2.752)	0.503 (1.510)
Control Variables	YES	YES	YES	YES
Industry Fixed Effects	YES	YES	YES	YES
Year Fixed Effects	YES	YES	YES	YES
Constant	2.168*** (4.739)	5.934 (1.119)	2.012*** (3.105)	3.855*** (4.293)
Observations	445	379	193	67
Adjusted R^2	0.345	0.294	0.346	0.638

positive social mood before a long holiday does not have an impact on investors' valuation on IPOs. A significant relationship is reported between *POSTLG* and *UNDP* for Thailand and Indonesia. *POSTLG* is negatively related to *UNDP* for Thailand ($p < 0.001$), which is consistent with findings reported in Table 3.7. These findings imply that investors pessimism following a religious or cultural holiday adversely affects IPO valuations. Intriguingly, Table 3.8 reports a significant positive relationship between *POSTLG* and *UNDP* for Indonesian IPOs ($p < 0.05$). These findings are similar to Dolvin & Pyles (2007), Dolvin & Fernhaber (2014) that when investors are pessimistic, they need to be lured to invest in IPOs, hence requiring high underpricing. Another possible (but contradicting) explanation is that Indonesian investors are in prolonged optimism following a long holiday; thus the positive reaction continues post-holiday (Picou 2006). As such, this influence their IPO valuations on IPOs that are listed around seven days following a long holiday.

In the fourth estimation model, the dummy variables that represent all mood categories are simultaneously regressed against underpricing. In this model, the non-holiday IPO has the value of *zero* for all dummy variables. The OLS estimation results are reported in Table 3.9. At a glance, the results show that to

Table 3.8

Social Mood Around Long Cultural or Religious Holidays and IPO Underpricing in ASEAN-4

This table reports the ordinary least square regression results of social mood surrounding a long cultural or religious holidays on underpricing of IPOs listed in Singapore, Malaysia, Thailand and Indonesia. Data covers the period from January 2000 to December 2013. *UNDP* is IPO underpricing. *PRELG* is a high mood dummy variable where 1 represents IPOs listed one day prior to a cultural or religious holiday, and 0 otherwise. *POSTLG* is a low mood dummy variable where 1 represents IPOs listed on a day following a short cultural or religious holiday, and 0 otherwise. SG, MY, TH and ID represents Singapore, Malaysia, Thailand and Indonesia, respectively. Standard errors are in parentheses. Significance levels: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

	(1) SG <i>UNDP</i>	(2) MY <i>UNDP</i>	(3) TH <i>UNDP</i>	(4) ID <i>UNDP</i>
<i>PRELG</i>	0.016 (0.279)	-0.024 (-0.351)	0.167 (1.402)	-0.648 (-1.607)
<i>POSTLG</i>	0.121 (1.368)	0.137 (1.602)	-0.286*** (-2.752)	0.804** (2.499)
Control Variables	YES	YES	YES	YES
Industry Fixed Effects	YES	YES	YES	YES
Year Fixed Effects	YES	YES	YES	YES
Constant	2.164*** (4.782)	6.346 (1.182)	2.012*** (3.105)	3.749*** (4.334)
Observations	445	379	193	67
Adjusted R^2	0.346	0.296	0.346	0.650

some extent, social moods play roles in determining underpricing in ASEAN-4, but the effects are not uniform across all countries. With regard to the social mood around weekends, *FRI* and *MON* remain insignificant in explaining underpricing for all markets, consistent with findings in Table 3.6. Thus, this confirms that social mood around weekends does not influence IPO valuation among ASEAN investors. These findings do not support Perfect & Peterson (1997) that reports higher underpricing among IPOs listed on Mondays and Tuesdays. At this point, the findings imply that social mood changes around weekends do not affect IPO valuations among ASEAN-4 investors.

Although the mood around weekend is not significant in influencing IPO underpricing, the social mood around cultural and religious holidays, to some extent, are significant. By first focusing on social mood surrounding short cultural or religious holidays, Table 3.9 reports significant positive relationship between *PRESH* and *UNDP* for Indonesia ($p < 0.05$), and significant negative relationship between *POSTSH* and *UNDP* for Singapore ($p < 0.001$) and Thailand ($p < 0.05$). These findings are consistent with *H2a* that high (low) social mood leads to higher (lower) underpricing. The findings suggest that Indonesian IPO investors are highly optimistic prior to a cultural and religious holiday, which in turn

reduces their risk aversion when valuing IPO stocks. Therefore, IPO stock prices are pushed upwards, away from their intrinsic values. In the same vein, investors are more pessimistic following a holiday, thus becoming more risk-averse. As a result, IPOs listed around the time after a holiday tend to be valued downwards by Singapore and Thai investors. The findings are consistent with the majority of the literature that documents positive stock returns before a holiday (see Al-Ississ (2010), Białkowski et al. (2012), Al-Khazali (2014), Hirshleifer et al. (2016), for example).

Intriguingly, I found a *negative* significant relationship between *PRELG* and *UNDP* ($p < 0.05$), inconsistent with H_{01a} that underpricing is higher around high mood periods, in particular before long holidays, the period that are usually highly anticipated. The findings suggest that for Indonesia, optimism among investors prior to a long holiday causes downward valuations on IPO prices. The study rules out that the negative coefficient of *PRELG* is due to investors pessimism. Instead, as suggested by Pantzalis & Ucar (2014), I argue that investors' focus has shifted to the festive celebration, hence limiting their investment activities. Naturally, a decrease in demand will shift IPO closing price downwards, resulting in a lower underpricing.

POSTLG appears to have the strongest influence on IPO valuation among ASEAN-4 markets. Strong *positive* associations are found between *POSTLG* and *UNDP* for Singapore ($p < 0.001$) and Malaysia ($p < 0.01$), that contradicts H_{2a} that low mood has adverse influence on underpricing. In contrast, significant negative relationship between *POSTLG* and *UNDP* for Thailand ($p < 0.001$), supporting H_{2a} . The findings suggest that investors in ASEAN-4 have different patterns of investment decision-making around similar social mood settings. The possible explanation to this situation is that for Singaporean and Malaysian investors, instead of turning into a negative mood after a long holiday, the positive mood that built-up around pre-holiday periods prolongs and lingers. Thus, the prolonged optimism causes them to be less risk averse, consequently reflected in their IPO valuations. The findings provide support to Picou (2006) that reports positive abnormal stock returns following holidays in the US.

The prolonged positive moods among Singaporean and Malaysian investors may be due to the *Eid-ul Fitr* and the Chinese New Year celebrations, that are

celebrated by the majority of Singapore and Malaysia populations. In these countries, the *Eid-ul Fitr* celebrations tend to extend to the whole month of *Syawwal*¹³. As the social interaction prolongs, investors remain in an optimistic state for a prolonged period. Consequently, the positive social mood surrounding these periods may extend to investors communities, which in turn is reflected in IPO valuations.

On a different note, investors in Thailand may not have a prolonged positive mood following a cultural or religious holiday. Instead, they appear to be in a pessimistic state following a major festival, as manifested in the strong significant negative relationship between *POSTLG* and *UNDP* ($p < 0.001$). One of the festive celebrations in Thailand is the *Songkhran*, the Thai New Year's Day, that is celebrated on 13 April every year. The holiday period includes 14 and 15 April. Although the Songkhran is considered a long holiday, the actual celebration only takes place on the Songkhran day itself. The positive mood does not linger as long as it does following the Eid-ul-Fitr or the Chinese New Year in Singapore and Malaysia. As such, investors immediately suffer from negative mood post-holiday, as they are recovering from the long holiday effect. In turn, pessimism induced by the negative mood makes investors become more risk-averse, thus they lower their valuations on the IPOs listed around the post-festive period.

Before moving on to discussing the impact of mood on IPO long-run performance, there are a few points worth highlighting based on the findings so far. First, the overall findings imply that positive social mood tends to positively influence underpricing, while negative social mood has an adverse influence on underpricing. Thus, IPOs listed around these times tend to have higher underpricing than their counterparts listed around negative mood times. Second, as opposed to the hypothesis that investors tend to have a negative mood, some investors exhibit prolonged positive mood following a long cultural or religious holiday, as reflected by the significant positive relationship between *POSTLG* and *UNDP* for Singapore and Malaysia. The heterogeneity of the influence of social moods on IPO underpricing is potentially due to some cultural elements that influence how people within a country enjoy a cultural or religious holiday. This consequently leads to a different approach to investment decisions, in particular in IPO valuations.

¹³Syawwal is the tenth month in the Hijri calendar. Eid ul-Fitr falls on the first day of Syawwal and is one of the main festival in Islam.

Table 3.9
Social Moods and IPO Underpricing in ASEAN-4

This table reports the ordinary least square regression results of social mood on underpricing of IPOs listed in Singapore, Malaysia, Thailand and Indonesia. Data covers the period from January 2000 to December 2013. The definitions of variables are as per Tables 3.6, 3.7 and 3.8. SG, MY, TH and ID represents Singapore, Malaysia, Thailand and Indonesia, respectively. Standard errors are in parentheses. Significance levels: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

	(1) SG	(2) MY	(3) TH	(4) ID
	<i>UNDP</i>	<i>UNDP</i>	<i>UNDP</i>	<i>UNDP</i>
<i>FRI</i>	0.001 (0.0186)	0.002 (0.0362)	0.011 (0.0901)	-0.005 (-0.019)
<i>MON</i>	0.007 (0.118)	-0.030 (-0.555)	-0.072 (-0.827)	0.032 (0.149)
<i>PRESH</i>	-0.132 (-1.529)	-0.008 (-0.074)	0.160 (1.194)	0.781** (2.500)
<i>POSTSH</i>	-0.225*** (-3.422)	-0.127 (-1.020)	-0.285** (-2.519)	1.009 (1.523)
<i>PRELG</i>	0.143 (1.413)	-0.016 (-0.131)	0.167 (1.402)	-1.449** (-2.419)
<i>POSTLG</i>	0.338*** (2.995)	0.261* (1.747)	-0.286*** (-2.752)	-0.199 (-0.290)
Control Variables	YES	YES	YES	YES
Industry Fixed Effects	YES	YES	YES	YES
Year Fixed Effects	YES	YES	YES	YES
Constant	2.161*** (4.776)	6.531 (1.237)	2.020*** (3.115)	3.771*** (4.013)
Observations	445	379	193	67
Adjusted R^2	0.350	0.298	0.348	0.651

3.4.4 Social Moods and IPO Underperformance

Next, the impact of social mood and IPO long-run performance is discussed. Similar to the previous section, OLS regressions are employed on 3-year cumulative abnormal returns using various social mood proxies as dependent variables. Based on the regression OLS estimates presented in Table 3.10, it is found that social mood does not have strong explanatory power on underperformance. With regard to the social mood around the weekend, *FRI* is found to significant positive relation to *CAR3Y* only for Singapore ($p < 0.01$) market, indicating that IPOs listed on Fridays are linked with higher underperformance around three years aftermarket. With regard to social moods surrounding short cultural or religious holiday, only Thai IPOs are influenced by *PRESH* ($p < 0.001$). In the same vein, *PRELG* is negatively related to *CAR3Y* in Thailand.

The findings suggest that during the initial listing stage, investors in Singapore are particularly optimistic around Friday, while their Thai counterparts are optimistic prior to a cultural or religious holiday. As such, IPO prices surrounding these periods are inflated away from their intrinsic value. As more solid public information is available, investors adjust their opinion on IPO stocks listed around these periods. Hence, the IPO prices are adjusted downwards and consequently causing negative abnormal returns. These findings are in support of Ritter (1991) that suggests that overoptimistic investors tend to reverse their IPO valuations in the long-run, causing return reversals, manifested by negative abnormal returns. Although the early findings reported in Figure 3.6 suggests underperformance occur among ASEAN-4 IPOs, the OLS regressions estimates are only significant for a number of cases as discussed above. As such, the results indicate that social mood does not serve as a consistent measure for IPO long-run underperformance.

Table 3.10
Social Moods and IPO Underperformance in ASEAN-4

This table reports the ordinary least square regression results of social mood on 3-year cumulative abnormal returns (CAR_{3Y}) of IPOs listed in Singapore, Malaysia, Thailand and Indonesia. Data covers the period from January 2000 to December 2013. The definitions of variables are as per Tables 3.6, 3.7 and 3.8. SG, MY, TH and ID represents Singapore, Malaysia, Thailand and Indonesia, respectively. Standard errors are in parentheses. Significance levels: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

	(1) SG <i>UNDP</i>	(2) MY <i>UNDP</i>	(3) TH <i>UNDP</i>	(4) ID <i>UNDP</i>
<i>FRI</i>	-0.172* (1.683)	-0.0685 (-0.616)	0.163 (0.645)	-0.0909 (-0.177)
<i>MON</i>	0.104 (0.932)	-0.0608 (-0.557)	0.215 (0.702)	0.0860 (0.109)
<i>PRESH</i>	-0.0619 (-0.255)	-0.199 (-0.821)	-0.832*** (-3.034)	0.521 (0.586)
<i>POSTSH</i>	0.0850 (0.307)	-0.00858 (-0.0249)	-0.165 (-0.697)	-1.801 (-1.058)
<i>PRELG</i>	0.0711 (0.267)	0.230 (0.838)	-0.931*** (-3.936)	-0.542 (-0.364)
<i>POSTLG</i>	-0.119 (-0.321)	-0.0373 (-0.0983)	-0.222 (-1.009)	0.301 (0.160)
Control Variables	YES	YES	YES	YES
Industry Fixed Effects	YES	YES	YES	YES
Year Fixed Effects	YES	YES	YES	YES
Constant	0.629*** (0.410)	-0.426 (-0.319)	-0.806*** (-0.998)	0.853*** (-0.356)
Observations	445	379	193	67
Adjusted R^2	0.066	0.205	0.232	0.605

3.5. Summary

This study aims to determine whether social mood plays a role in IPO valuation on the first listing day and three years post-listing, focusing on the four major capital markets among ASEAN state members, namely Singapore, Malaysia, Thailand and Indonesia. This study is unique as it accounts for the effects of three social mood environments in determining their influence on IPO performances, namely turn-of-the week, as well as short and long cultural or religious holidays. These three social mood environments are postulated to yield a varying intensity of emotions.

In general, underpricing are higher around pre-weekend and pre-holiday periods, as compared to non-holiday periods. However, this study reports mixed patterns of IPO underpricing around high versus low mood periods, indicating heterogeneous behaviours among investors across the ASEAN-4 markets. This study does not find a significant relationship between high or low social moods surrounding weekends and underpricing, implying that investors decision-making are not affected by routine mood changes during weekends.

Consistent with the hypothesis that positive mood induces higher underpricing, it was found that IPOs listed prior to short cultural or religious holidays, that are surrounded by high social mood, tend to be more highly underpriced. In contrast, IPOs listed following the holidays tend to have lower underpricing. Similarly, post-long holiday IPOs in Thailand are found to have lower underpricing, consistent with the negative emotions that follow a holiday. However, the opposite findings are found for Singapore and Malaysia, where long cultural or religious holidays appear to induce longer positive emotions among investors, indicated by the higher underpricing for IPOs listed post-long holidays. The findings suggest that instead of turning into negative emotions, the positive emotions from heightened social interactions during long holidays persist. In turn, the persistent optimistic state positively affects underpricing.

The relation between mood and IPO long-run performance are less conclusive than those found in underpricing. Significant negative relationships are only found between high mood and 3-year CAR in Singapore and Thailand, but the effects are identified around different social mood settings. For Singapore, investors appear to be more optimistic on Fridays, while for Thailand, optimism is prominent prior to

a cultural or religious holiday. The lack of conclusive evidence for an association between mood and long-run IPO performance suggests that mood only have a temporary effect on investors optimism. As more information is available, investors rely more on information to value an asset. Overall, the findings in this study suggest that to some extent, cultural practices have an indirect influence on IPO underpricing and underperformance, although the evidence is less conclusive for the latter.

The implications of this study are particularly useful for corporate managers and individual investors. First, for managers of issuing firms wishing to signal the quality of their firms, high underpricing is associated with *positive quality* firms. Therefore, managers may choose to go public around the times of positive social mood, when investors are more willing to set a higher valuation on assets. On the other hand, if corporate managers choose not to *leave too much money on the table* and lower their cost of capital, they may prefer to go public around the times when social mood is low. Similarly, for investors wishing to invest in IPO for the long-run, the timing for investment could be a crucial factor. Investors may grab the advantage of the lower price of IPOs during which social mood is low and gain higher returns in the long-run.

One of the limitations of this study is that it does not consider the time factor in determining the extent to which the mood effect persists in IPO valuations. As the long-run results suggest, social mood does not play an important role in 3-year underperformance. As such, it is important to understand how long it takes for the social moods effect to disappear in the IPO prices. Future research may take this as a starting point in efforts to better understanding the role of human emotion in IPO valuations.

Appendix C

Cultural and Public Holidays in ASEAN-4 Countries

C.1. List of Public Holidays in ASEAN-4 Countries

Table C.1
Cultural and Public Holidays in ASEAN-4 Countries.

Holiday Name	Holiday Type	SG	MY	TH	ID
Non-cultural / religious	2015 Polling Day	*			
	Chulalongkorn Day			*	
	Constitution Day			*	
	Coronation Day			*	
	Father's Day			*	
	Federal Territory Day		*		
	Indonesian Independence Day				*
	Labor Day		*	*	
	Malaysia Day		*		
	Mid Year Bank Holiday			*	
	Mother's Day			*	
	National Day	*			
	New Year's Day	*	*		*
	Royal Ploughing Ceremony Day			*	
	SG50 Public Holiday	*			
	The King's Birthday observed			*	
	The Queen's Birthday			*	
	The Yang di-Pertuan Agong's Birthday			*	
Cultural	Chinese Lunar New Year's Day	*	*		*
	Songkran			*	
Religious	Asalha Bucha			*	
	Ascension Day of Jesus Christ				*
	Buddhist Lent Day			*	
	Chakri Day			*	
	Christmas Day	*	*		*
	Diwali/Deepavali	*	*		
	Eid-ul-Adha	*	*		*
	Eid-ul-Fitr	*	*		*
	Good Friday	*			*
	Makha Bucha			*	
	Maulid-ur-Rasul		*		*
	Muharram/Islamic New Year		*		*
	Thaipusam		*		
	Wesak Day	*	*		*

Chapter 4

Media Tones and IPO Underpricing

4.1. Introduction for the Chapter

The media plays an inevitable role in information dissemination. Beyond increasing the level of information, the articulation of media contents can also stimulate cognitive bias. Interestingly, Tetlock (2007), Tetlock et al. (2008), Loughran & McDonald (2011, 2016), among others, find that qualitative information such as media contents has explanatory power on stock market activities, above and beyond hard quantitative information. The findings suggest that qualitative information such as media contents are highly relevant for investment decisions. Thus, it is unsurprising that this area of research has gained importance and has been positively emerging in recent years, particularly in the light of humans' inevitable dependency on the media as a source of information.

In the financial domain, the media plays a pivotal role in conveying information to individual investors who lack sufficient knowledge about the financial markets. As individual investors are not expert, they rely on sources like newspapers, magazines, websites and internet posting boards as the sources of information. Newspapers have long played a crucial role as informant and promoter for financial products. Journalists are usually experts in the area they report and have direct access to first-hand information from corporations. Thus, news articles are deemed a reliable source of information. In addition, the information in the news

is compact and concise due to the limited printed space. As the target audiences are mainly end-readers, printed news is generally presented in a comprehensible manner. Thus, for individual investors that lack technical skills, the news makes a more appealing source of information as compared to internally sourced documents such as annual reports or IPO prospectuses.

For businesses, the articulation style of news about a firm can make or break its future stock performances. More importantly, for a firm issuing an initial public offering, newspapers can play a crucial role in carrying early impressions of the firm to the market. Not all IPO firms receive equal attention from the media. Journalists tend to be more attracted to firms that are deemed newsworthy, whether it is good or bad news. As well as promoting an IPO, journalists are also responsible for flagging up warning signs about problematic firms. In order to shape the readers' perceptions, different tones are used to send the intended messages to the readers. For example, if journalists perceive an IPO as a worthy investment, they may write the news in a positive tone. On the other hand, if they intend to send warning signs about an IPO firm, the tone may be more negative.

The central theme of this study revolves around how the media shape investors' valuation of IPOs through news tone, in particular, those that are written in the English language. The idea is motivated by the dynamics of language, where meanings words can change depending on the context it is used. A *context* can either refer to a country, a cultural group or even a specific topic of discussion. This study focuses on the English language as it is widely spoken worldwide, where the majority of its speakers are those whose English is not the first language (Jenkins 2014). As introduced in Section 1.3.3, English is widely spoken in South-east Asia. The English language is institutionalised in Singapore, Malaysia and the Philippines, meaning that it is widely used as the formal language for many official and business purposes. In other countries in this region, English is widely understood.

Despite the broad usage of the English language, the interpretation of a word can differ from one country to another. Language is very dynamic, where the interpretation of meaning can differ in different speakers' context. In Section 1.3.3, I mentioned about the obvious lexical differences between British and American English (Kirkpatrick 2011), where the same words can have different meanings, or different words are used to express a similar concept. As such, in countries where English is not a native language, the variation in interpretation of meanings of the

English language could be more prominent. Given that for bilingual persons, the conceptualisation of meanings is dependent on their proficiency in the language (Green 1998). Furthermore, cultural norms are found to play a role in language processing (Green 1998, Semin et al. 2002, Altarriba 2003).

Drawing from the above discussions, this study extends the debate on the influence of English media tone in the finance domain by focusing on the markets where English is not the native language but is widely used, such as the ASEAN region. As cultural and language are inevitably intertwined, this region makes a suitable testing ground, given its richness in cultural backgrounds. More specifically, Singapore and Malaysia have been chosen as the focal point of this study, owing to the fact that these two countries are highly literate in the English language¹, as well as being the largest stock markets in the region. Although sharing similar cultural backgrounds, these neighbouring countries have their own set of cultural practices and distinguishable variants of English languages. This mix of factors makes Singapore and Malaysia very interesting landscapes to pursue further research in this domain. The English language also has a strong presence in Thailand and Indonesia. However, the lack of availability of English language newspapers does not permit these two markets to be included in this study.

To further understand the role of media tone on IPO valuation in Singapore and Malaysia, this study seeks to answer the following research questions:

RQ1: How does media tone influence IPO underpricing in Singapore and Malaysia?

RQ2: Do different tones, namely positive, negative and uncertain influence IPO underpricing in different manners?

RQ3: Given the variations in English language and cultural practices in Singapore and Malaysia, do they affect IPO underpricing differently?

By answering the above questions, this study contributes to the literature in a multifold way. First, to the best of my knowledge, it is one of the earliest to test the role of tone using the most influential *dictionary* in the financial research domain,

¹According to The Education First English Proficiency Index, a professional body that produces the world's largest English language skills ranking, Singapore is ranked sixth in the world, while Malaysia ranks twelfth. In Asia, Singapore and Malaysia are on the first and second rank, respectively (source: <http://www.ef.co.uk>).

namely the Loughran & McDonald (2011)², in the Southeast Asian context. It is an important contribution as, to the best of my knowledge, this is one of the first studies to test the applicability of the Loughran & McDonald (2011) dictionary in a non-native English sphere. Secondly, this study produces a new dictionary that was built to tailor to the Southeast Asian context, thus supplementing the existing word lists. To the best of my knowledge, this is the first English-based dictionary that has been built in a context where English is not a native language.

Another significant contribution is that this is one of the pioneering comparative studies in this strand of research, that takes into consideration two varying cultural backgrounds, allowing for a direct and meaningful comparison of investors' reactions to media tone. As the dynamics of language is vigorously dependent on country and cultural contexts, the strengths of the contributions of this study lie on this viewpoint.

The next section of this chapter (Section 2) discusses related literature and identifies research gaps. Next, Section 3 discusses the appropriate data and methodology to answer the research questions, followed by Section 4 that discusses the empirical findings. Finally, Section 5 concludes this study.

4.2. Literature Review

In this section, the theories in relation to how media influence on stock market activities will be discussed. Besides, related evidence on the role of media on stock market activities is also discussed.

4.2.1 Theoretical Framework

This study is motivated by three streams of literature. The first stream of literature concerns the role of media tone on stock market activities from an investor sentiment point of view. The second stream of literature concerns information asymmetry that holds a contrasting point of view from the investor sentiment literature. These two streams of literature discuss how media tone influence stocks market activities. The third stream of literature concerns the use of language by

²I would like to thank Professor Tim Loughran and Professor Bill MacDonald for their valuable inputs for this study.

speakers from different cultures. This literature suggests that the way humans understand and perceive media contents depends partly on their linguistic skills and cultural practices. The literature of intercultural linguistic assists understanding of how human processes information when speaking a language other than their native. The framework of this study intertwines the ideas from the three literature, which is discussed further in this section.

4.2.1.1 Investor Sentiment vs Ex-Ante Uncertainty

Qualitative information has been known to serve as a proxy for sentiment (Tetlock 2007, Tetlock et al. 2008, Siganos et al. 2014, Loughran & McDonald 2016), and ex ante uncertainty (Hanley & Hoberg 2010a, Ferris et al. 2012, Loughran & McDonald 2013, Guldiken et al. 2017). The former relates to De Long et al. (1990)'s theory that the unpredictability of irrational investors' beliefs creates a risk in financial asset prices, thus significantly diverging from their fundamental values. As such, irrational investors can earn a higher expected return than rational investors do. The literature of textual sentiment broadly suggests that positive (negative) tone proxies for positive (negative) sentiment. In the presence of sentiment, asset prices move in the same direction as the sentiment. Positive (negative) sentiment causes stock price to increase (decrease) (Antweiler & Frank 2004, Davis & Tama-Sweet 2012, Siganos et al. 2014).

Contrastingly, the ex-ante uncertainty theory (Beatty & Ritter 1986) provide an opposite explanation. In the presence of negative or uncertainty tones in the news, the meaning of the news becomes more ambiguous, thus making it harder for investors to predict the future cash flow of stock. Consequently, they demand for compensation for holding the asset. This behaviour is more common among IPO stocks, and Loughran & McDonald (2013) suggest that negative, uncertainty and weak modal tones suit to be used to measure ex-ante uncertainty associated with IPO stocks.

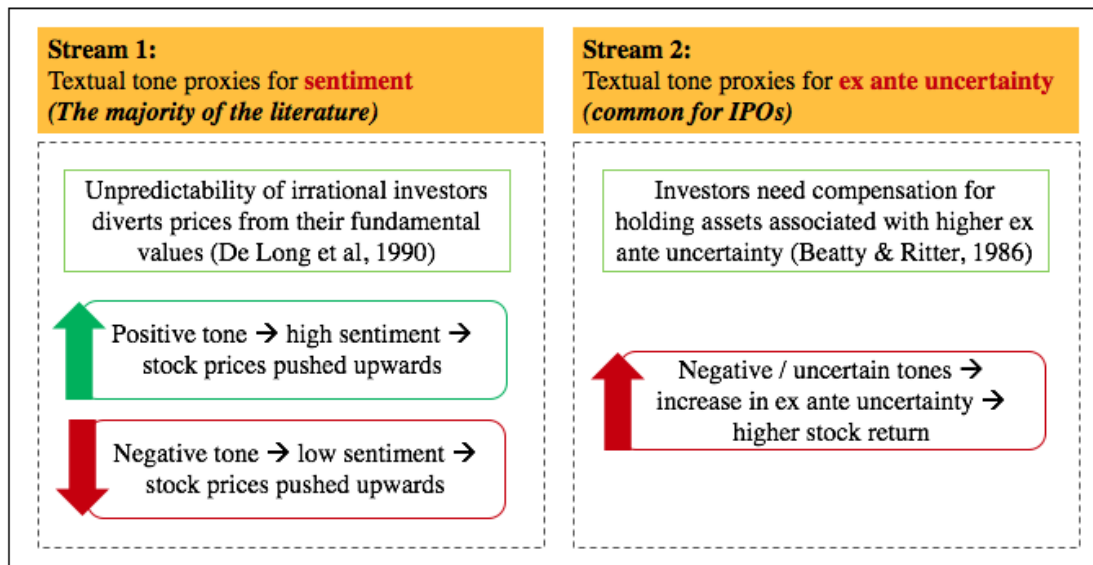


Figure 4.1:
**Role of Media Tone in Stock Market
 and Related Theories**

4.2.1.2 Intercultural Linguistic

To date, the study of textual analysis in the finance domain focus on the English language, in particular in the US where English is the native language. This study is motivated by a number of propositions from the intercultural linguistic literature. The first theory is the *Sapir-Whorf hypothesis* that suggests that humans thinking is strongly shaped by their primary language. An extended version of this hypothesis, the theory of *linguistic determinism* that suggests that language influences our ability to perceive and think about a word. If a language does not have a word for something, it makes it difficult for humans to notice it in a different language (Scollon 2012).

Secondly, as introduced in Section 1, Green (1998) proposes that for bilinguals, their conceptualisation of meanings is dependent on their proficiency in the language. Further, the author points out that:

‘Bilinguals use language differently, depending upon occasion and purpose, placing emphasis on the cultural impact of the linguistic setting.’

The above argument perfectly suits the Southeast Asian context, where English is mainly used in the business or official contexts, rather than as the main language for informal daily communications. As such, the way English is understood in this region may be different than in the spheres of native speakers. For some English speakers in this region, there may have rather limited vocabularies to express their intended messages. With regards to cultural setting, Semin et al. (2002) and Altarriba (2003) culture plays a role in how humans process the meaning of words. The former report that people in highly individualistic cultures tend to use concrete languages in expressing their emotions. Conversely, people in high collectivism cultures are more implicit in their expression of emotions.

Drawing from these theories, given the status of English language as an alternative language, mixed with the cultural differences between the East and the West, I postulate that there may be differences in how investors in the Southeast Asian region interpret the meaning of words in English language news. Before moving further to examining the impact of media tone on Southeast Asian IPOs, it is essential to first understand the role of the media as reported in the current literature, which will be discussed in the next section.

4.2.2 Media Tone and the Stock Market

The significant influence of textual content on the stock market activities have been well documented in the literature. The majority of the evidence suggests that qualitative information plays an important role in shaping investors' beliefs in a financial decision, thus making this niche area of study increasingly difficult to ignore. Tones have been found to provide incremental information content to the market, above and beyond quantitative information (Twedt & Rees 2012). Tones in texts have a significant influence on stock market activities, complementing the informational value of hard information. When textual tone is included in a prediction model, it tends to exhibit a greater predictive accuracy over hard information (Henry 2008, Tetlock et al. 2008, Li 2010, Demers & Vega 2011, Huang et al. 2014).

A considerable amount of literature has been published on the role of textual tones in finance, collectively suggesting that the tone used by the media to convey information can influence investors' financial decision-making. Researches focusing on textual tones are concerned about *how things are being said* rather than merely

what is being said. Tones in texts reflect a certain degree of positivity or negativity. In the more extreme end, some texts carry strong-weak and active-passive tones (Kearney & Liu 2014). The literature reports a nearly unified finding that suggests *how* things are being said is more important than *what* are being said in shaping investors' belief on asset prices. Overall, there is a tendency of direct influence on sentiment carried by media tone on stock market activities. Positive (negative) tone carries positive (negative) sentiment, consequently causing positive (negative) changes in stock market activities.

Table 4.1

Impact of Positive Sentiment Carried by Positive Media Tone on Stock Market Activities (Excluding IPOs).

Stock Market Activity	Author	Media Type	Method of Content Analysis
Stock market performance	Tetlock (2007)	News articles	Dictionary-based (GI-Harvard)
	Tetlock et al. (2008)	News articles	Dictionary-based (GI-Harvard)
	Jegadeesh & Wu (2013)	10-K	LM2011 and new dictionary using new term weighting scheme
	Siganos et al. (2014)		
Individual stock returns	Antweiler & Frank (2004)	Internet messages	Machine learning
	Feldman et al. (2010)	10-Ks and 10-Qs	Dictionary-based (GI-Harvard)
	Carretta et al. (2013)	News articles	Dictionary-based (GI-Harvard)
	Davis & Tama-Sweet (2012)	Earnings press releases	Dictionary-based (DICTION)
	Price et al. (2012)	Earnings conference calls	Dictionary-based (Henry, and GI-Harvard)
Abnormal returns	Henry (2008)	Earnings press releases	Dictionary-based - custom words
	Price et al. (2012)	Earnings conference calls	Dictionary-based (Henry, and GI-Harvard)
Operating performance	Davis & Tama-Sweet (2012)	Earnings press releases	Dictionary-based (DICTION)
Trading volume	Tetlock (2007)	News articles	Dictionary-based (GI-Harvard)
	Carretta et al. (2013)	News articles	Dictionary-based (GI-Harvard)
Stock return volatility	Antweiler & Frank (2004)	Internet messages	Machine learning

Positive media tone has been found to induce optimistic belief among investors about the future prospect of stock market or individual firms, leading them to shift their valuations upwards. As presented in Table 4.1, researchers have found that positive tone inflates the stock market performance (Tetlock 2007, Jegadeesh & Wu 2013, Siganos et al. 2014), individual stock returns (Antweiler & Frank 2004,

Feldman et al. 2010, Price et al. 2012, Zhang et al. 2012) as well as abnormal returns (Henry 2008, Price et al. 2012), operating performance (Davis et al. 2012); and trading volume (Carretta et al. 2011). Other than that, positive tone is found to reduce stock return volatility (Antweiler & Frank 2004) and predicting takeover success (Buehlmaier 2015). Interestingly, Doran et al. (2012) document that a positive conference call tone nearly offsets the damaging effects of negative earnings. In short, the literature suggests that positive media tone is economically beneficial for the stock markets.

Looking at it from the opposite spectrum, negative tone is reported to have an adverse effect on stock market activities, as shown in Table 4.2. In what is recognised as a highly influential study in this strand of literature, Tetlock (2007) reports that pessimism in newspaper articles³ causes downward pressure to the stock index prices, consequently pulling the return downwards. Importantly, Tetlock (2007) shows evidence that the magnitude of the adverse impact of media pessimism is stronger than the impact of soft information, implying that tone plays a crucial role in shaping investors' beliefs on the stock market.

The adverse impact of negative media tone extends to downward shifts of individual stock returns (Davis & Tama-Sweet 2012, Dougal et al. 2012, Engelberg et al. 2012), abnormal returns (Durnev & Mangen 2011), trading volumes (Tetlock 2007), operating performances (Davis & Tama-Sweet 2012), future earnings (Li 2006, Henry 2008, Tetlock et al. 2008, Chen et al. 2012, Sherif & Leitch 2017) and earnings liquidity (Li 2010). Further, negative media tone causes increase in stock return volatility (Kothari et al. 2009), idiosyncratic volatility (Demers & Vega 2011, Loughran & McDonald 2015) and analyst forecast dispersion (Davis & Tama-Sweet 2012). Taken together, these findings show that negative tones induce pessimism among investors, reducing their confidence towards a stock. Consequently, they will value the stock price downward, causing a decline in stock returns. The outcome implies that investors valuations significantly shifts when they are able to see the meanings or contexts of hard information.

³Tetlock (2007) examines the tone of the *Abreast the Market* articles in the Wall Street Journal newspaper, and finds that higher pessimism in the article is linked to lower returns on the Dow Jones index.

Table 4.2

Impact of Negative Sentiment Carried by Negative Media Tone on Stock Market Activities (Excluding IPOs).

Stock Market Activity	Author	Media Type	Method of Content Analysis
Stock market performance	Tetlock (2007)	News articles	Dictionary-based (GI-Harvard)
	Tetlock et al. (2008)	News articles	Dictionary-based (GI-Harvard)
Individual stock returns	Davis & Tama-Sweet (2012)	News articles about firms' earnings announcement	Dictionary-based (GI-Harvard)
	Engelberg (2008)		
Operating performance	Davis & Tama-Sweet (2012)	Earnings press release	Dictionary-based (LM2011, H-IV4, DICTION and introduction of new term weighting scheme)
Future earnings	Li (2006)	Earnings press releases	Dictionary-based - custom words
	Henry (2008)		
Earnings liquidity	Li (2010)	AR	Dictionary-based - specific words (risk and uncertain)
Return volatility	Kothari et al. (2009)	10-Ks and 10-Qs, news articles, analyst reports	Dictionary-based (GI-Harvard)
	Loughran & McDonald (2011)	10-Ks	Dictionary-based (GI-Harvard, DICTION and introduction of LM2011)(including new term weighting scheme)
Idiosyncratic volatility	Demers & Vega (2011)	Earnings press releases	Dictionary-based (GI-Harvard, DICTION and LM2011)
	Loughran & McDonald (2015)		
Analyst forecast dispersion	Davis & Tama-Sweet (2012)	10-Ks	Dictionary-based (LM2011, H-IV4, DICTION and introduction of new term weighting scheme)

Interestingly, evidence shows that negative tone has a stronger impact than positive tones in shaping investor' belief towards the future value of a stock (Tetlock 2007, Kothari et al. 2009, Loughran & McDonald 2011, Engelberg et al. 2012, Price et al. 2012, Huang et al. 2014, Henry & Leone 2015, Loughran & McDonald 2015). In fact, Loughran & McDonald (2015) report that negative news disseminated by the media has four times greater an impact as positive news. This suggests that investors place much more weight on pessimistic information rather than the optimistic ones (Kothari et al. 2009, Engelberg et al. 2012, Price et al. 2012, Huang et al. 2014, Henry & Leone 2015, Loughran & McDonald 2015).

In the IPO domain, textual analysis research is still in its infancy, but positively growing. To date, the role of textual tones in explaining IPO anomalies is still controversial due to the mixed findings in the literature, as shown in Table 4.3. While some findings support the theory of investor sentiment (De Long et al. 1990), the majority provide contradictory findings that are inclined towards supporting the information asymmetry model (Beatty & Ritter 1986). This includes Arnold et al. (2010), Hanley & Hoberg (2010*a*), Ferris et al. (2012), Loughran & McDonald (2013) and Feuerriegel et al. (2014) that report high underpricing when uncertainty or ambiguity are high in the media tone.

Hanley & Hoberg (2010*a*) and Brau et al. (2016) report that positive media tone reduces underpricing and lower offer price revision. The former establish that positive tone is a credible signal of lower riskiness of an offering. Thus, when investors perceive lower ex-ante uncertainties, they do not require a high rate of return. In the same vein, Arnold et al. (2010), Ferris et al. (2012), Loughran & McDonald (2013)⁴ find that underpricing increases with more usage of negative tone. Similarly, using the LM2011 uncertainty word list, Loughran & McDonald (2013) reports higher underpricing, aftermarket return volatility and absolute price revision among IPOs whose S-1 filing use more uncertainty⁵ tone. In addition, Loughran & McDonald (2013) report that negative and uncertain tones are positively linked to absolute offer revisions and subsequent return volatility around the 60-day period surrounding the IPOs).

Contrastingly, the more recent studies (Fuksa 2015, Brau et al. 2016, Bajo & Raimondo 2017, You et al. 2018) find direct linkage between tones and IPO underpricing, lending support the investment model De Long et al. (1990). Bajo & Raimondo (2017) and You et al. (2018) report higher underpricing among US IPOs when news about them is more positive.⁶ Using IPO prospectuses Fuksa (2015) finds similar evidence. In addition, the author also reports higher share turnover when document tone is positive, suggesting that positive tone induces overoptimism among investors, leading them to temporarily overestimate the future cash value of an IPO. To further validate the argument that tone can channel

⁴Arnold et al. (2010), Ferris et al. (2012), Loughran & McDonald (2013) use IPO prospectus while Feuerriegel et al. (2014) uses news.

⁵Interestingly, the authors find no linkage between positive, strong modal and litigious tones with IPO performances. The findings suggest that IPO investors are more prone to react to pessimistic tone, as they perceive higher ex-ante uncertainty, but less reactive to optimistic tone.

⁶Bajo & Raimondo (2017) report that the economic magnitude is likewise important as one standard deviation increase in the positive tone generates a 2.5% rise in the IPO underpricing.

sentiment among IPO investors, You et al. (2018) report that these IPOs underperform more severely than their counterparts whose IPO carry a negative tone, implying that investors initially overreact to the positive tone in the IPO prospectus. Finally, Guldiken et al. (2017) find that underpricing decreases when uncertainty increases. The rather limited and controversial evidence on the role of media tone on IPO activities warrants for more research in this niche area.

Tables 4.1 and 4.2 suggest that the literature almost conclusively testifies the predictive power of media tone on stock market activities, regardless of the media type⁷ and the method of content analysis⁸.

⁷Kearney & Liu (2014) identify three major sources of textual sentiments as follows: (1) internally-sourced; (2) media-sourced and (3) internet-sourced. With regard to (1), the examples are annual reports, earnings announcements and IPO prospectus. Examples of (2) include newspaper articles and magazines, while (3) includes internet message boards and social media posts.

⁸The two commonly used methods of content analysis are machine learning and dictionary-based methods. The former relies on statistical techniques to infer the content of documents and to classify them based on statistical inference (Li 2010) The main advantage of this technique is that it is able to handle a large amount of data, but can be intimidating to non-technical researchers who lack programming skills. The dictionary-based method is interchangeably known as *bag-of-words* method. For consistency, the term *dictionary-based* will be used throughout this study. This method is straightforward and more suitable for end users who lack programming skills. In the finance literature, this method is more commonly used than the machine learning technique (Loughran & McDonald 2016), and is sufficient for smaller size of data.

Table 4.3

Impact of Sentiment Carried by Media Tone on IPO Activities.

Tone	IPO Activity	Author	Media Type	Method of Content Analysis
Panel A: Findings supporting investor sentiment model				
Higher positive (optimism)	Higher: initial returns share turnover on listing day	Fuksa (2015)	IPO prospectus	Dictionary-based. Built a composite measure of IPO prospectus sentiment using MobySentiment (Fuksa 2015) & ANEW (Bradley & Lang 1999) dictionaries
Higher strategic tone (positive outlook)	Higher initial returns, Lower abnormal returns	Brau et al. (2016)	S-1 filings	Dictionary-based (Introduced new strategic wordlist)
Higher positive words	Higher initial returns Lower price revision (No significant relationship when using other LM2011 word lists)	Bajo & Raimondo (2017)	Newspaper & S-1 filings	Dictionary-based (LM2011)
Panel B: Findings supporting information asymmetric model				
High conservatism	Higher initial returns	Ferris et al. (2012)	IPO prospectus	Dictionary-based (GI-Harvard, DICTION and LM2011)
High negative & uncertainty (pessimism)	Higher initial returns, absolute offer price revisions, subsequent return volatility (60-day period following the IPO)	Loughran & McDonald (2013)	S-1 filings	Dictionary-based (LM2011)
High uncertainty	Higher initial returns	Feuerriegel et al. (2014)	S-1 filings	Dictionary-based (LM2011)

4.2.3 Reflections on the Literature

Based on the review of the literature, a clear knowledge gap has been identified. The majority of the studies in the role of media tone in the financial domain are focused on the US market, where English is the native language. Studies outside of the US use the respecting native languages, for example, You et al. (2018). However, these studies used translated word lists into the local languages, which are later used to gauge tones of documents in the respective languages.

To the best of my knowledge, similar studies focusing on markets where English is not the first language is still scarce. Therefore, how meanings of words are perceived by English speakers outside of the native speaker domain is still unknown. As suggested by Semin et al. (2002) and Altarriba (2003), meaning of words may differ given varying cultural contexts. Therefore, it is important to extend the knowledge in this area by focusing on a non-native English speaker sphere such as Southeast Asia. This study fills the knowledge gap by, to the best of my knowledge, is the first to consider this issue.

Secondly, although using the Loughran & McDonald (2011) word list to gauge media tone, You et al. (2018), translate the word lists into their native languages. Although the literature almost consistently reports the ability of the Loughran & McDonald (2011) dictionary in capturing tone in financial documents, the findings are only known to hold true in the markets such as the US, where English is the native language. To the extent of my knowledge, no studies have tested the general applicability of the original English version of the Loughran & McDonald (2011) dictionary outside of a native speaker domain, in particular in the Southeast Asia where English is widely used. It is important to test the extent to which the dictionary can capture media tone in a non-native context to determine whether similar expressions are used to report financial news in different markets.

Secondly, although using the Loughran & McDonald (2011) word list to gauge media tone, You et al. (2018), translate the word lists into their native languages. Although the literature almost consistently reports the ability of the Loughran & McDonald (2011) dictionary in capturing tone in financial documents, the findings are only known to hold true in the markets such as the US, where English is the native language. As far as my knowledge goes, no studies have tested the general applicability of the original English version of the Loughran & McDonald (2011) dictionary outside of a native speaker domain, in particular in the Southeast Asia

where English is widely used. It is important to test the extent to which the dictionary can capture media tone in a non-native context to determine whether similar expressions are used to report financial news in different markets.

Finally, existing studies tend to focus on a single market. A comparative study is useful as it enables meaningful comparison of investor behaviour around similar corporate events, given varying market and cultural contexts. Such scarcity in the literature creates an urgency for a comparative study with regards to the influence of media tone on IPO activities. Specifically, this study contributes to the body of knowledge by being one of the first comparative studies in the Southeast Asian region.

The most prominent literature findings are that media tone plays an important role in stock performance. The literature is almost conclusive that media tone strongly influence stock returns (Antweiler & Frank 2004, Feldman et al. 2010, Davis et al. 2012, Price et al. 2012, Carretta et al. 2013). Based on the strong evidence in the literature, the importance of media tone should extend to IPO underpricing. Thus, it is hypothesised that:

H1a:

There is a relationship between media tone and IPO underpricing in Southeast Asia.

However, in the IPO domain, the findings are still controversial. No conclusions can be made about whether the media tone carries sentiment or reduces ex-ante uncertainty. Therefore,

H1b:

If media tone carries sentiment in Southeast Asian IPOs, positive (negative) media tones will cause higher (lower) underpricing. If media tone reduces ex-ante uncertainty, positive (negative) media tones will cause lower (higher) underpricing.

Tetlock (2007), Kothari et al. (2009), Loughran & McDonald (2011), Engelberg et al. (2012) and Henry & Leone (2015) among others, report that negative tone has a greater impact than the positive tone in shaping investors' belief towards the future value of a stock. This suggests that investors are more responsive to

pessimistic than optimistic information. Therefore, I postulate that IPO investors in Southeast Asia are similarly sensitive to the presence of negative tone used by the media as compared to the positive tone. Thus, it is hypothesised that:

H2:

Negative tone has a stronger impact than positive tone on IPO underpricing in Southeast Asia.

Finally, drawing from the findings of Kirkpatrick (2011) lexical differences between English language variants, the same word can have different meanings, or different words are used for the same object or subject. For example, the word *chips* in the American context refers to ‘potato crisps’ in the British context. *Chips* in the British context are known as ‘french fries’ in America. A further example is *soccer* in America and *football* in Britain refers to the same sport. In America, *football* refers to the ‘American football’.

Further, Green (1998), Semin et al. (2002) and Altarriba (2003) highlight the importance of cultural impact in shaping humans’ interpretation of languages. Although Singapore and Malaysia are similar in terms of cultural backgrounds, there are distinctive cultural practices between the countries. Also, there are clear variations between the English spoken in Singapore (commonly known as *Singaporean English* and Malaysia (commonly known as *Malaysian English*, I postulate that there may be variations in how investors in Singapore and Malaysia interpret the meaning of words, thus leading to the final hypothesis:

H3:

There are variations in the way media tone influence IPO underpricing between Singapore and Malaysia.

The following section discusses the appropriate methodological approach to test the above hypotheses.

4.3. Models, Methodology and Data

4.3.1 Empirical Model

The main objective of this study is to determine the relationship between news tone and IPO initial returns among ASEAN countries, particularly Singapore and Malaysia. Interestingly, these countries score highest in the English Proficiency Index in Southeast Asia. Coincidentally, these are also the largest markets in the region. The main dependent variable for this study are IPO underpricing ($UNDP$). To test for the relationship between news tone and IPO underpricing, the following model is specified:

$$UNDP_{i,0} = \alpha + \sum \beta_{tone} TONE_{i,j} + \sum \beta_{ctrl} CTRL_{i,t} + \epsilon_{i,0} \quad (4.1)$$

where $UNDP_{i,0}$ is the underpricing or the return of IPO i at the end of first trading day, $\sum \beta_{moods} TONE_{i,j}$ represents the average score of news tone related to IPO i . Next, $\sum \beta_{ctrl} CTRL_{i,0}$ represents the control variables and $\epsilon_{i,1}$ is the error term.

The dependent variable ($UNDP_{i,1}$) is calculated using the consistent methodology as employed in Chapters 2 and 3, as follows:

$$UNDP_{i,1} = (P_{i,1} - P_{i,0})/P_{i,0} \quad (4.2)$$

where $P_{i,t1}$ is the closing price of IPO i at the end of the first trading day, and $P_{i,0}$ is the offer price of an IPO i .

The main dependent variable of this study is news tone $TONE_{i,j}$, which is the tone score of six word lists from the Loughran & McDonald (2011) (henceforth LM2011) dictionary, namely *positive*, *negative*, *uncertain*, *strong modal*, *weak modal* and *litigation*. In each regression model, $TONE_{i,j}$ is replaced with each of the main explanatory variables defined in Table 4.4. To establish the variables, there are a number of methodological concerns that need to be taken into account, which is discussed in detail in Section 4.3.4. Finally, for consistency, the control variables employed in this study follows those used in Chapter 3, presented in Table 3.2.

Table 4.4

Definitions of Main Independent Variables used in Determining the Relationship of News Tone and Underpricing in ASEAN

Variable	Definition	Measurement
<i>LMPOS</i>	Positive tone using the LM2011 positive word list. Positive words has the effect of optimistic outlook.	Number of positive words in document <i>i</i> / Total number of words in document <i>i</i> .
<i>LMNEG</i>	Negative tone using the LM2011 negative word list. The tone of negative words has a much more pervasive effect as they focus on risks.	Number of negative words in document <i>i</i> / Total number of words in document <i>i</i> .
<i>LMUNC</i>	Uncertainty tone using the LM2011 negative word list. The general notion of imprecision rather than exclusively focusing on the risk. <i>Uncertain</i> words convey the idea of <i>imprecision</i> . For example, 'I believe the profit increased' convey the meaning that the speaker <i>thinks</i> that the profit increased, rather than being actually <i>confident</i> about it.	Number of uncertain words in document <i>i</i> / Total number of words in document <i>i</i> .
<i>LMSM</i>	Strong modal tone using the LM2011 strong modal word list. <i>Strong modal</i> words give the impression of high level of confidence. The words in this list can be a subset of <i>positive</i> word list.	Number of strong modal words in document <i>i</i> / Total number of words in document <i>i</i> .
<i>LMWM</i>	Weak modal tone using the LM2011 weak modal word list. <i>Weak modal</i> words give an impression of lack of confidence. The words in <i>weak modal</i> list can be a subset of <i>uncertainty</i> words, implying a higher degree of uncertainty.	Number of weak modal words in document <i>i</i> / Total number of words in document <i>i</i> .
<i>LMLIT</i>	Litigation tone LM2011 weak modal word list. <i>Litigation</i> words tend to be used to represent regulatory and legal matters.	Number of litigation words in document <i>i</i> / Total number of words in document <i>i</i> .
<i>NEWPOS</i>	Positive tone using the ASEAN IPO news positive word list, that contains positive words not previously captured by the NEW ASEAN IPO dictionary.	Number of positive words in document <i>i</i> / Total number of words in document <i>i</i> .
<i>NEWNEG</i>	Negative tone using the ASEAN IPO news positive word list, that contains negative words not previously captured by the NEW ASEAN IPO dictionary.	Number of negative words in document <i>i</i> / Total number of words in document <i>i</i> .

4.3.2 Method of Estimation

In establishing the relationship between media tone and IPO underpricing, an ordinary least square (OLS) regression is used to estimate Equation 4.1, following Loughran & McDonald (2013) and Bajo & Raimondo (2017). In order to ensure that the regression models do not suffer from a heteroskedasticity problem and to improve the small-sample robust estimators for OLS. For each regression model, the two-sample *t*-test is used to determine whether the mean initial returns in Singapore IPOs are significantly different from their Malaysian counterparts.

4.3.3 Data

This study examines the influence of news tone on IPO initial returns for IPOs listed in Singapore and Malaysia between 2000 and 2013. The main aim is to test the applicability of the existing finance-specific dictionary outside of the context where English is a native language. Newspapers are chosen as they are a widely available source of information which is likely to be a choice of non-professional investors as compared to official documents such as IPO prospectus. Furthermore, the samples used in this study comprise of IPOs listed during the early 2000s, during which time the Internet was not as widely used as today as a source of news. Therefore, investors were still highly reliant on printed newspapers to access news.

To qualify as a sample, an IPO must have dedicated news about it in daily or weekly English language newspapers, three months to one day prior to its listing. The newspapers must be distributed at a national level. English newspapers are widely available in Singapore and Malaysia. Daily English newspapers were not available in Thailand until recently. Similarly, English newspapers focusing on business news are not as widely available in Indonesia. Due to these reasons, IPOs listed in Thailand and Indonesia are excluded from the sample. Thus, only IPOs listed in Singapore and Malaysia markets are selected. From this sample, IPOs that are from the financial services sector are excluded due to differences in reporting requirements. As this study is interested in the behaviour of uninformed investors, it only focuses on firms going public by way of initial public offerings. Privatisation IPOs, IPOs listed by bookbuilding pricing method, and IPOs that are offered to mainly institutional investors are also excluded from the sample. Finally, IPOs that do not have newspaper coverage between 3 months to one day prior to the listing are also excluded. The filtration results in the final samples of 376 IPOs that are listed on the Singapore Exchange, and 225 of IPOs listed on Bursa Malaysia.

As this study employs the same control variable as employed in Chapter 3, the only different data are the news clippings are the dictionaries. The news clippings are obtained from the Nexis news database, covering the period from September 1999 to December 2013. As the study period starts from January 2000, September 1999 is chosen to allow a full three months before listing of IPOs in January 2000. The LM2011 dictionary is obtained from the website created

by the authors. The most recent link at the time of this thesis is written is <https://sraf.nd.edu/textual-analysis/resources/>. The Brau et al. (2016) dictionary is obtained from the authors as an appendix to the source article.⁹ Finally, the Harvard-IV-4 dictionary is obtained from the General Inquirer Home page, accessible at <http://www.wjh.harvard.edu/inquirer/>. The construction of the primary variable involved a number of methodological issues and procedures, which are discussed in the following section.

4.3.4 Methodological Concerns

The use of qualitative data such as news tone requires translating the text into quantitative measures. The LM2011 dictionary consists of six word lists that have been designed to capture different attributes, namely *positive* (*LMPOS*), *negative* (*LMNEG*), *uncertainty* (*LMUNC*), *strong modal* (*LMSM*), *weak modal* (*LMWM*) and *litigation* (*LMLIT*). Tones of news related to an IPO are measured by the ratio of the number of words under each tone category, over the total number of words in all news articles related to that IPO. The calculation of tone scores for each IPO would first involve the following processes: (1) document mining; (2) document parsing; (3) document mapping; and (4) document scoring.

Based on the review of the literature, it is clear that the study of content analysis involves a number of methodological concerns. Particular attention must be paid to deciding the choices of the following elements: (1) Source of information; (2) Language of focus; (3) Content analysis method; (4) Dictionary or word lists; and (5) Weightings.

With regard to the information source, this study uses newspapers (Bajo & Raimondo 2017) as the source of information, mainly due to their conciseness and broader audience target as compared to IPO prospectus (Loughran & McDonald 2013, Brau et al. 2016). Due to the length and the technical nature of the information contained in them, IPO prospectuses are unappealing to individual investors who lack the skills to interpret them. Thus, individual investors may rely more on the news issued by reputable newspapers for more easily understandable information. In addition, due to the wide availability of newspapers, they are likely to

⁹I would like to express my appreciation to Professor Jim McQueen for his kindness in providing the strategic word lists that serve as an appendix to the published article.

be a choice of non-professional investors as compared to official documents such as IPO prospectus.

Another reason why newspapers are more appealing for individual investors is that they are free from managerial bias that may manipulate the contents of an IPO prospectus hoping to lure investors into purchasing the IPO stocks. Newspapers are written from an external point of view, and generally speaking, journalists are bound to report accurate news to maintain their reputation and credibility. As investors tend to rely mainly on newspapers, the tones of the texts may facilitate investors in forming their opinions about the quality of an IPO, and they may value it accordingly.

The next element to consider is the choice of language of focus. The existing dictionaries such as the LM2011, the Brau et al. (2016) strategic word list (henceforth BCM2016), the Harvard General Inquirer dictionary (henceforth HIV) and the DICTION dictionary, are built within the English language atmosphere. While there have been studies that use these dictionaries outside of the English speaking context by translating the words into the language of focus, this study uses the dictionary, particular LM2011, in its original language. This allows the examination of the applicability of this dictionary in a context where English is not a native language but widely used. In particular, this study focuses on the two markets where the English language has institutionalised presence, namely Singapore and Malaysia.

With regard to the methods of content analysis, the literature suggests two main methods, *vis machine learning* and *dictionary methods*. The latter requires the application of sophisticated algorithms and are more widely employed by researchers in the area of information technology. The majority of researchers from a finance background employ the latter, due to its straightforward nature and adequacy for small scale data. Thus, this study selects the dictionary method to calculate news tone.

Loughran & McDonald (2016) suggest that for researchers who opt to employ the dictionary-based method, the first step of the process would be to select the appropriate dictionary to tabulate the proportion of targeted tone. Drawing from the evidence from the literature that suggests the aptness of the LM2011 in

capturing tones in finance documents, this study uses the same dictionary.¹⁰ As there has not been previous evidence of the applicability of this dictionary within the ASEAN IPO context, this study tests the role of each of the word list in order to gain an appropriate understanding of the role of each word list in shaping investors' perception on IPO stocks.

Although there are a number of widely used dictionaries, general dictionaries are not appropriate for textual analysis in financial contexts. This problem can be largely mitigated by applying finance-specific word lists such as the LM2011 lists. To date, the LM2011 is deemed the most appropriate dictionary for the financial contexts. Researchers find that the LM2011 dictionary has more explanatory power as compared to other generic word lists. Loughran & McDonald (2011) find that around (73.8%) of the negative word counts in the *HIV* list are attributable to words that are typically not negative in a financial context. Thus, in the light of its accuracy for a financial context, this study applies the LM2011 dictionary as news tone measurement instrument.

The final element of concern is the choice of weightings employed to measure tone. One of the debates concerning the dictionary approach is the choice of weighting when calculating document tone. The Zipf's law suggests that a very small number of words will dominate the frequency counts. Given the importance of certain words, they can potentially have a large impact despite the small number of repetitions. As such, it is important to give the appropriate weightings to the words. Loughran & McDonald (2011) employ one of the most common term weighting schemes from the literature, the *term frequency-inverse document frequency* (tf.idf). The authors document regression results with a better fit than when the simple proportion is used. Although some papers such as Brown & Tucker (2011) have also applied the weighting, most papers employing the dictionary-based approach have not done so. The study of content analysis within the ASEAN context is still at its infancy. Given that this is one of the earliest, this study first focuses on the applicability of the LM2011 dictionaries. Based on the findings in the literature, raw weighting provides a reasonable fit on the models, so I argue that it is sufficient for this study.

¹⁰Loughran & McDonald (2016) provide a comprehensive critical review of the practicality of the existing dictionaries in the financial contexts.

After taking into account the methodological concerns in constructing the main dependent variable, the next step is calculating the tone score, which involves four stages, as illustrated in Figure 4.2 and explained below.

Stage 1: Document Mining

The first step in the data mining process is downloading the news from the Nexis database. Only newspapers that are written in English and circulated nationwide on a daily and weekly basis are selected. News that is selected must be dedicated to an IPO, and news that is merely an announcement in nature is excluded. The newspapers are selected by browsing the list of all English language news in Singapore and Malaysia on Nexis. Next, I checked which newspaper is published in a weekly and daily basis, and circulated nationwide. This results in the selection of *The Business Times Singapore*, *The Edge Singapore* and *The Straits Times (Singapore)* for Singapore, and *Business Times*, *The Edge Malaysia* and *New Straits Times (Malaysia)* for Malaysia.

Keywords such as *initial public offering*, *IPO* and *listing* are used to search for news articles. In addition to that, to avoid missing out any news, the name of each listing firm is used in the searches. The news is downloadable from the Nexus news database in portable document format (PDF). The news is segregated into firms. Only news that was published within three months and one day prior to listing are selected.

Stage 2: Document Parsing

The parsing process is done using the *R* statistical package, that requires the source documents to be in plain text format. Thus, all relevant PDF files are coded using the firm name and the number of articles before they are converted into plain text and ready for the parsing process. Raw documents contain elements that are meaningless for capturing the tone of the news, such as stop words, proper nouns, punctuations and numbers. The documents are parsed into a vector of tokens, that is, collections of characters occurring between word boundaries. These words need to be excluded to avoid potential errors in calculating news tones. The first

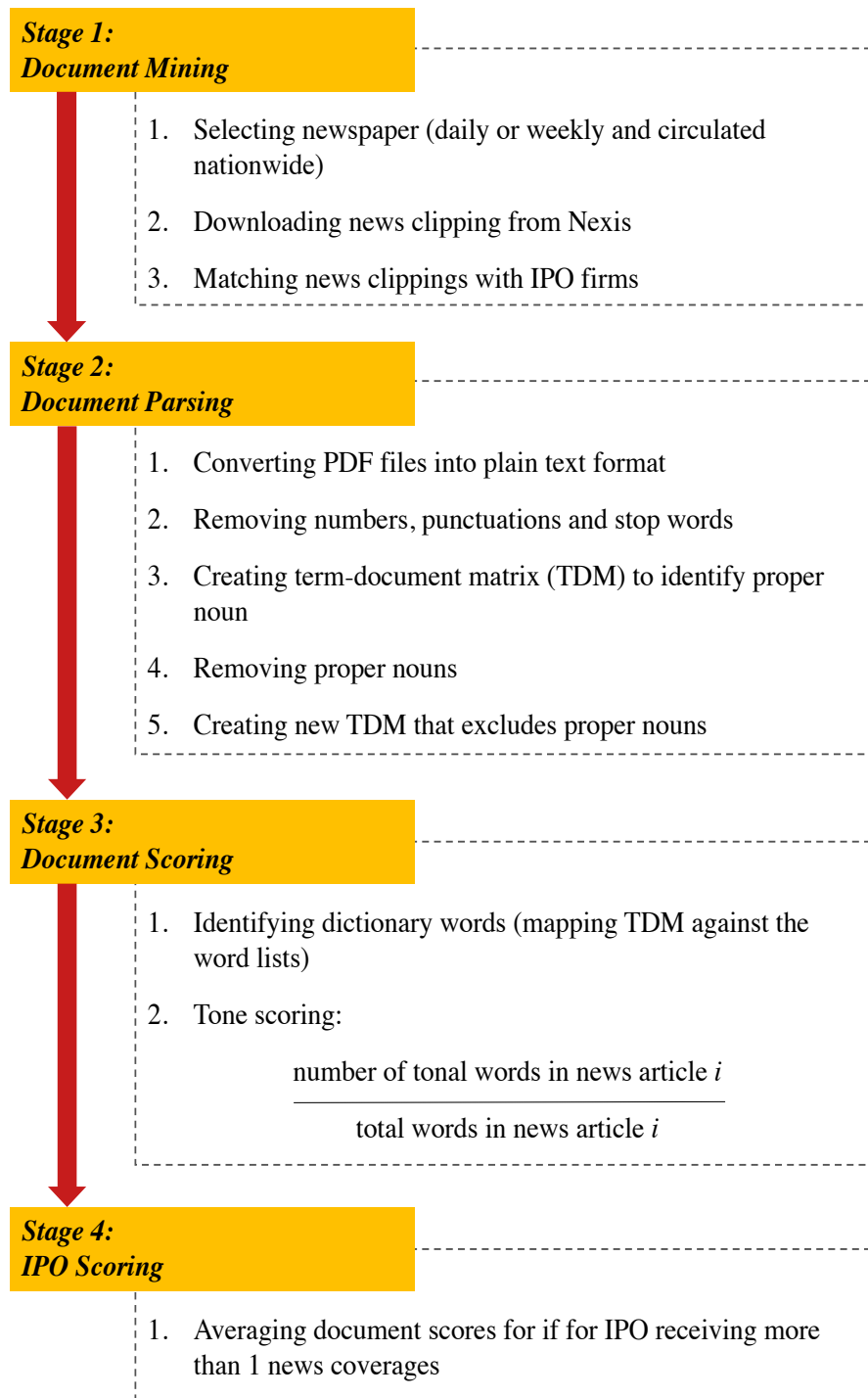


Figure 4.2:
Procedures to Construct Tone Variables.

step in the parsing process is the removal of numbers and punctuation, followed by stop words such as *and*, *for*, *of*, *but*, and *with*.

Following that, unnecessary words that include proper nouns are removed. This is achieved by first generating the term-document matrices that tabulate all the words appearing in each of the Singapore and Malaysia corpus and the frequency of their appearance in each document.

Words that need to be excluded are selected by going through the term-document-matrices. This manual process, although a somewhat tedious, is important to ensure that only meaningful words are included in tone scoring to avoid spurious results. Words with high frequency are also excluded, such as *prospectus*, *shareholder share*, *offering* and *issue*.

Stage 3: Document Scoring

Next, the words are mapped into each word list in the LM2011 dictionary according to the respective word lists that are meant to capture positive, negative, uncertainty, weak modal, strong modal and litigation sentiments. When the words are mapped, the tone score is then calculated by dividing the number of tonal words captured in a news clip by the total number of words in the news article. The process is repeated for each word list.

Stage 4: IPO Scoring

Finally, the final tone scores for each IPO is computed by calculating the average document score if an IPO receives more than one dedicated news around the three months prior to listing. The process is repeated for each tonal word list. This score is then used as the main variable in establishing the relationship between media tone and IPO underpricing in Singapore and Malaysia.

4.3.5 Construction of ASEAN IPO Word List

Following the mapping process explained in Section 4.3.4 (Stage 3), I intuitively identified words that may carry tone or sentiment, that may shape investors'

perception towards an IPO stock. The identification of these words is following a number of intuitive thinking based on a number of premises. First, there exists lexical differences between English language variants, where the same word can have different meanings or different words are used for the same object or subject (Kirkpatrick 2011). Second, culture may play a role in the usage of words (Green 1998, Semin et al. 2002, Altarriba 2003). Given the differences in cultural contexts between the West and the East, there may be differences in choices of words to express a sentiment. Thirdly, being a bilingual society, investors in Singapore and Malaysia may have limitations on vocabulary, particularly considering that some investors may only use English for business, rather than for daily conversations. Finally, the LM2011 dictionary was constructed in the 10-K (annual report) context (Loughran & McDonald 2011), which, except for the M&D section, are based mainly on historical events. As such, there is a possibility that some forward-looking words are excluded, as well as IPO-specific words. Examples of such words are *oversubscribed*, *undersubscribed*, which is IPO-specific, and may render meaning for IPO investors.

The new *ASEAN IPO* dictionary was constructed following a number of steps, as illustrated in Figure 4.3. The first step is identifying words that potentially carry tone or sentiment from the term-document matrices that have been constructed for each Singapore and Malaysia corpus, as explained in page 156. This step was taken following an intuitive judgement as a bilingual of Southeast Asian origin. Next, some words from the Loughran & McDonald (2011), Brau et al. (2016) and the *HIV* dictionaries are re-classified from positive to negative, and from negative to positive. Some words from the Loughran & McDonald (2011) *uncertainty* list were also reclassified as positive for this dictionary. For example, *believe*, which is classified as *uncertain* word, tend to have a positive meaning in the Singaporean and Malaysian contexts.

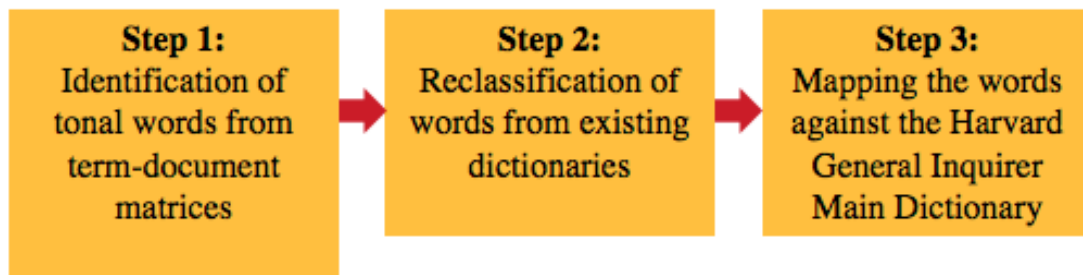


Figure 4.3:
Steps in Constructing the ASEAN IPO Dictionary

To avoid redundancy, words already included in the LM2011, BCM2016 and HIV dictionaries are excluded from the list, except for those that are re-classified.

To validate my intuitive judgement, the words are mapped against the *Harvard General Inquirer* (HGI) Dictionary Master Spreadsheet, that classifies words into *positive* and *negative*, as well as other types of sentiment. I noticed slight differences in word classifications between my intuitive mapping and the HGI master list. The list is then further validated through an online survey to 100 respondents from Malaysia and Singapore, to gauge their interpretation on the meanings of the words. To qualify as respondents, the following criteria must be fulfilled, where he or she must: (1) be of Singaporean or Malaysian nationality; (2) have working knowledge of the English language; (3) be familiar with one or more financial or investment products, such as mutual funds, stocks and bonds; (4) be at least 21 years old, which is age of majority to make an investment decision-making. To ensure the best efforts for controlling for the demographic has been done, the first section of the questionnaire focuses on respondents' demographic criteria. The patterns of the questionnaires respond show that some words that are perceived as positive (negative) in the US context have the opposite meaning in the Singaporean and Malaysian contexts. The patterns provide early insights that cultural differences and speakers' context may cause differences in the interpretation of a word's meaning. The process resulted in the identification 274 *positive* and 162 *negative* words.

4.4. Empirical Findings

4.4.1 Usage of Tonal Words in IPO-related News

I begin the empirical discussion by introducing the patterns of word usages in IPO-related news in Singapore and Malaysia. Figure 4.4 presents the illustrations of sentiment words as captured by the main instrument of interest, vis the LM2011 dictionary. The figure shows similarity in the *positive*, *negative* and *uncertainty* words used in the news in the two markets, but there are variations in the usage frequencies. In the figure, words with large fonts are more frequently used than the smaller ones. With regards to the proportion of words used, similar to Loughran & McDonald (2013), I find that a few words generate an unequal share of the word count frequencies. For example, among 4,610 LM2011 *positive* words captured in the Singapore news corpus, only 870 (18.9%) accounts for the top 10. On the other hand, the top 10 LM2011 *uncertain* words captured in the Singapore corpus accounts for 51.1%. As proposed by Loughran & McDonald (2011), although some words are repetitively used in the news, it does not necessarily manifest importance, hence do not influence investors' decision-making process.

A further examination shows that some words that are repetitively used are words that are norms for the context of IPO news. Such words are essentially informative in nature and does not carry a specific tone when used in IPO contexts. Most of these words are captured by the BCM2016 *positive* word list, such as *capital*, *launched*, *rights*¹¹, *employees*. Examples of other words include *trading*¹², *second*¹³, *general*¹⁴, *gross*¹⁵, *make*, *even*¹⁶, *need*. Some words such as *interest*, that are captured by the H4 *positive* word list, may render a negative meaning in finance. This finding further validates that the BCM2016 is not the most suitable word list for a finance context.

Although the LM2011 dictionary has been found to be the most suitable in a finance context, this is not without caveat. Words captured by the *negative* word list include *closed*, *closing*, that are mainly used for 'closing date' (for IPO

¹¹ *Rights* in this context may precede the word *issues*, so it is essentially *right issues*

¹² Used for 'end of trading day' or 'trading volume'.

¹³ *Second* is used as proper noun, namely the Second Board.

¹⁴ Used for 'annual general meeting'.

¹⁵ 'Gross profit'

¹⁶ 'Break even'

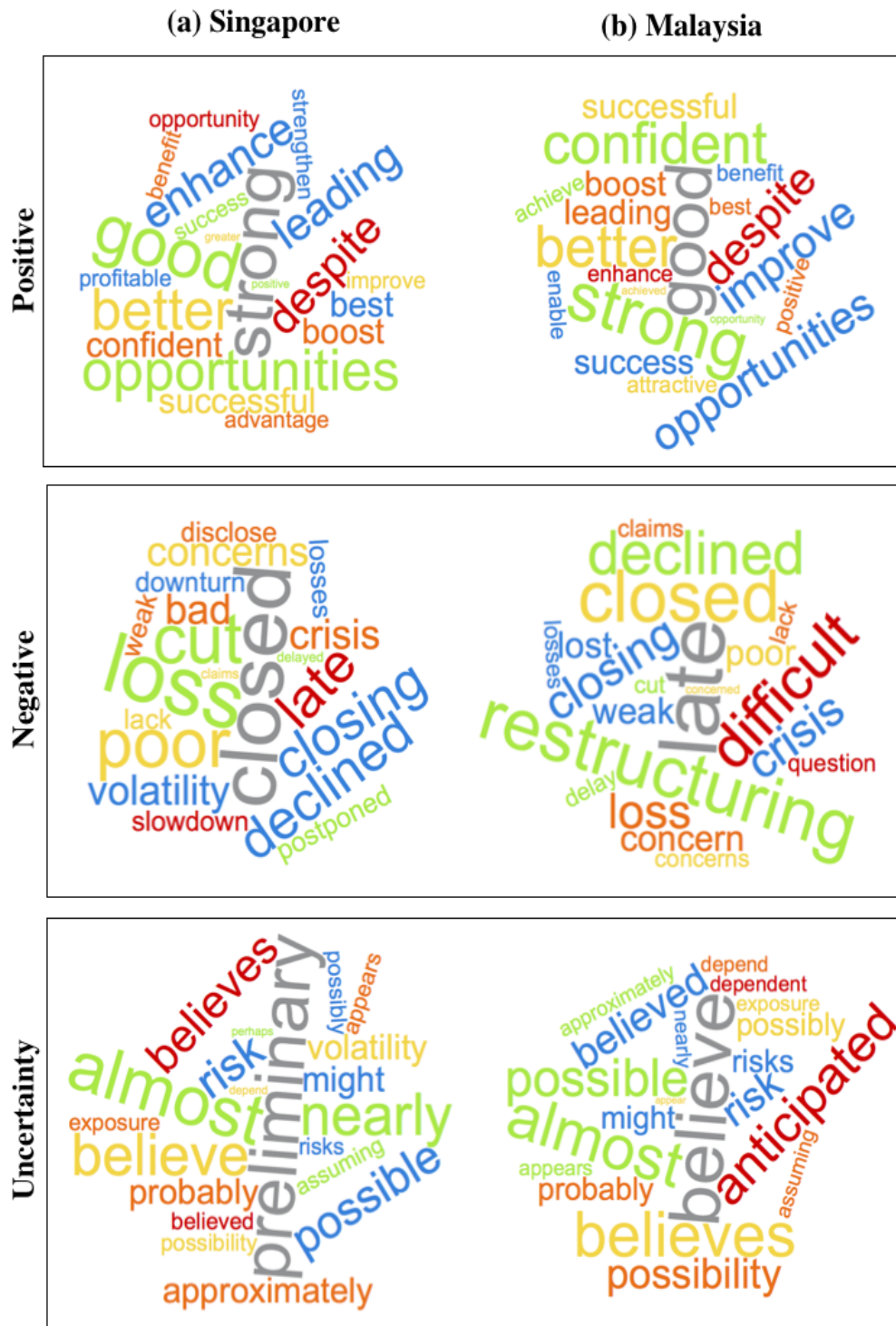


Figure 4.4:
Most Commonly Used Words Captured by the
Loughran & McDonald (2011) Dictionary

application), hence fluctuating the words' frequency in the corpora. Therefore, they may not be meaningful to drive investors' perception in the IPO context. In the *uncertainty* list, *preliminary* is identified as the top word used in Singapore newspapers, which may merely indicate 'early stage'. Another interesting finding is that for Malaysia corpus, all words in the *strong modal* list are redundant with positive words. All the *weak modal* and the *litigation* words that appear in Malaysia corpus are the same, the majority of which are redundant with those from the *uncertainty* list.

Next, Figure 4.5 presents the words captured by the newly constructed ASEAN IPO dictionary, which has been tailored to the context of IPO news in Singapore and Malaysia. The dictionary contains two word lists, vis *positive* and *negative*. As shown in the figure, there is a similarity in word usages, but there are clear variations in their frequency. Noticeably, IPO-related words such as *overallotment*, *oversubscribed* and *undersubscribed* are commonly captured by the word lists. I argue that these words carry weightage in shaping investors' perception as they imply the demand for an IPO. Another noticeable pattern is that the words *believe* and *believes* appear in the *positive* word list as opposed to in the *uncertainty* list under the LM2011 dictionary. My justification is that the words may imply 'positive outlook', as opposed to uncertainty. Overall, the varying patterns of word usages in Figures 4.4 and 4.5 indicate that contexts are important in influencing the choices of words and their meanings.

4.4.2 Characteristics of News Tones in Singapore and Malaysia

I continue the analysis by discussing the characteristics of media tone patterns in IPO related news in Singapore and Malaysia, for IPOs listed between the years 2000 and 2013. The results are presented in Table 4.5, that reports tone scores using each word list from the LM2011 and the ASEAN IPO News dictionaries. The sample filtration process explained in the previous Section 4.3.3 resulting in the final samples of 376 IPOs in Singapore and 225 Malaysian IPOs. The Singapore and Malaysia IPOs are mentioned in 817 and 453 dedicated news articles, respectively. On average, IPOs in Singapore and Malaysia receive 2.17 and 3.21 times of newspaper coverage, respectively, within three months prior to listing. Some IPOs receive high newspaper coverages, given that media providers usually focus on

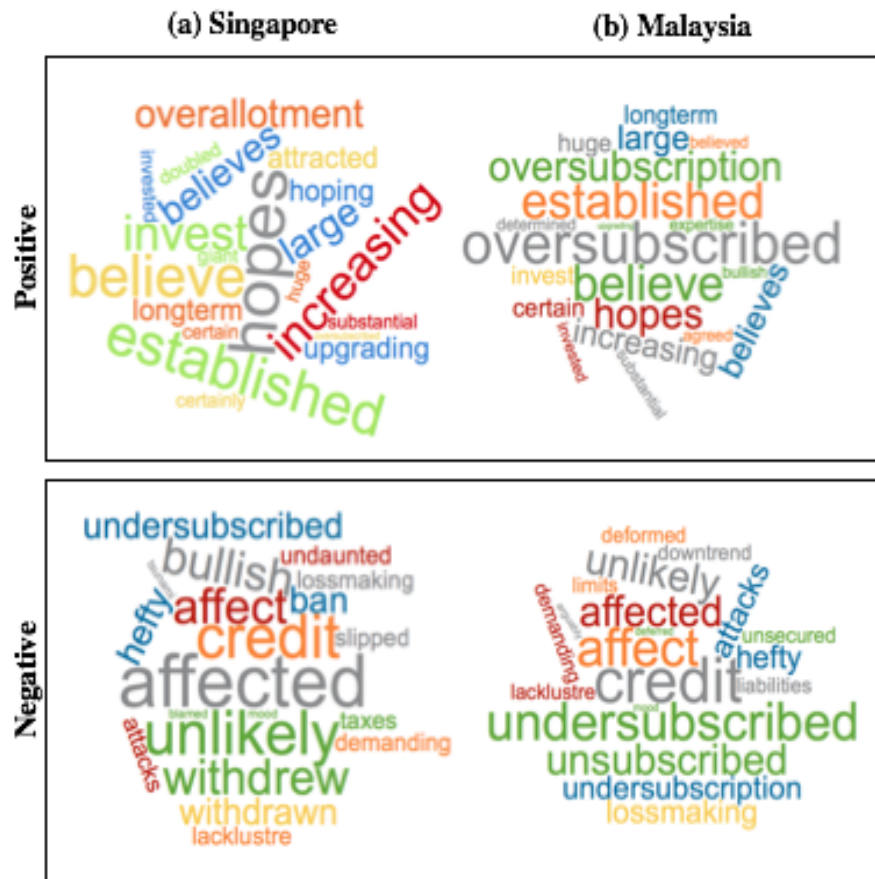


Figure 4.5:
Most Commonly Used Words Captured by
the ASEAN IPO News Wordlist

larger and more glamorous issues (Liu et al. 2014, Bajo & Raimondo 2017). The examples of such IPOs are *Felda Global Ventures Berhad*, which was the world's largest listing in 2012; and *IHH Healthcare Berhad*, a Malaysian corporation that took dual listings in the Singapore Exchange and Bursa Malaysia.

The main focus of this study is how tone influences IPO performance at the end of the first listing day. Panel A reports the average news tone scores using the LM2011 finance-specific dictionary, and Panel B reports the news tones the newly constructed ASEAN IPO News dictionary. Overall, the Table reports that for both dictionaries, mean scores for positive tone scores are higher than those of negative tone. As the results are consistent for both markets, it implies that the media in this region tend to report IPO-related news in an optimistic manner. Table 4.6 also reports a small degree of uncertainty in IPO news (1% for Singapore and 0.5% for Malaysia).

Table 4.5

Characteristics of News Tones for IPOs Listed in Singapore and Malaysia During 2000 to 2013.

	Mean	Std. Dev.	Min.	Max.
Panel A: Average newspaper tones for IPOs listed in Singapore				
<i>Tone measured using Loughran and McDonald (2011) Dictionary</i>				
Positive	0.035	0.031	0.000	0.290
Negative	0.013	0.037	0.000	0.440
Uncertainty	0.010	0.040	0.000	0.470
Strong Modal	0.004	0.044	0.000	0.500
Weak Modal	0.005	0.044	0.000	0.500
Litigation	0.005	0.048	0.000	0.570
<i>Tone measured using ASEAN IPO News Word Lists</i>				
Positive	0.010	0.020	0.000	0.240
Negative	0.003	0.018	0.000	0.220
Panel B: Average newspaper tones for IPOs listed in Malaysia				
<i>Tone measured using Loughran and McDonald (2011) Dictionary</i>				
Positive	0.017	0.012	0.000	0.080
Negative	0.007	0.008	0.000	0.050
Uncertainty	0.005	0.006	0.000	0.030
Strong Modal	0.000	0.002	0.000	0.010
Weak Modal	0.001	0.003	0.000	0.030
Litigation	0.001	0.003	0.000	0.030
<i>Tone measured using ASEAN IPO News Word Lists</i>				
Positive	0.014	0.011	0.000	0.060
Negative	0.001	0.003	0.000	0.010

Two possibilities can be associated with the tone characteristics of ASEAN news. First, a public listing usually marks a new milestone for a corporation, as IPOs commonly signal business expansions. Thus, as the media gets optimistic about the future outlook of IPO firms, they tend to report the news in a positive manner. Naturally, when humans are generally highly optimistic, it dampens the usage of uncertainty language. The second possibility can be interpreted from a linguistic and cultural point of view, that in a high context culture such as ASEAN, people tend to avoid using negative words to communicate negative messages. Instead, positive words are ‘pampered’ by negations (Loughran & McDonald 2016). The overall tone score is not entirely meaningful without the understanding of net tone score for the IPO news.

Therefore, I segregate the IPOs in each market according to their net tone score, to determine the tendency of reporting styles with regards to IPO-related news. As seen in Figure 4.6, there is a stark contrast between news reporting

styles by Singaporean journalists and their Malaysian counterparts. The tone of IPO-related news in Singapore tends to be negative, a characteristic similar to IPO-related news in the US (Bajo & Raimondo 2017). Meanwhile, IPO-related news in Malaysia tends to be written in a positive tone. The findings are consistent using both dictionaries. The findings imply that the Singaporeans are more straight-forward in communications. Diversely, the Malaysians appear to be more reserved in communications and tend to avoid high usage of outright negative words. Instead, a negative message may be enclosed between negation words (Loughran & McDonald 2016).

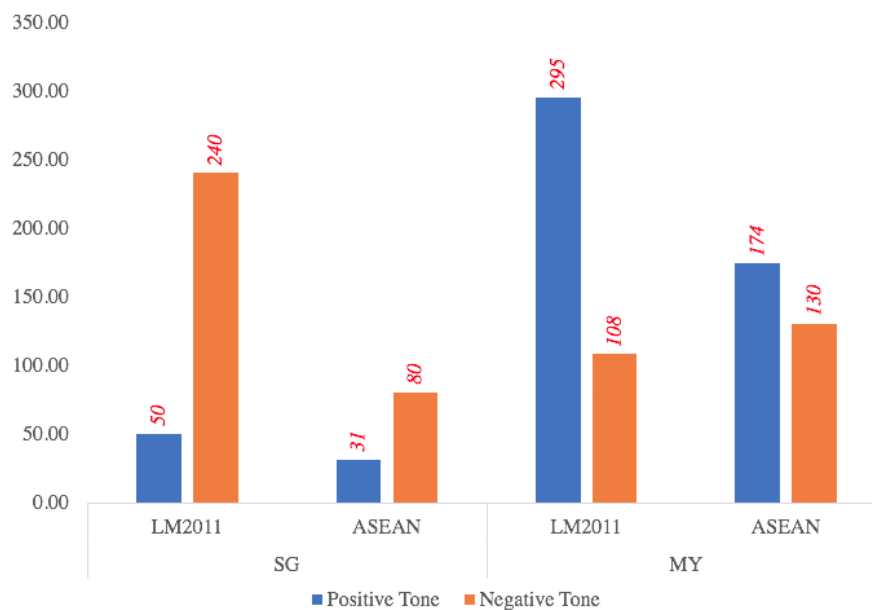


Figure 4.6:
Distribution of IPOs by Net Tone Score

The overall tone used in the news may have an influence on IPO underpricing, as implied in Figure 4.7(a). The figure shows that in general, IPO underpricing is higher when news carries a net positive tone, and lower when news carries a negative tone. The situation is particularly apparent in Malaysia, where there is a huge difference in underpricing between IPOs with net positive news tone and net negative news tone. When news is written in a generally negative tone, underpricing is marginal, at only around 1%. On the other hand, when news tone is generally positive, the underpricing is higher. The results are consistent across both dictionaries. For Singapore, the difference in underpricing levels is not as huge as in Malaysia. Although underpricing is higher when the net news tone

is negative when using the ASEAN IPO News dictionary, the difference is rather marginal.

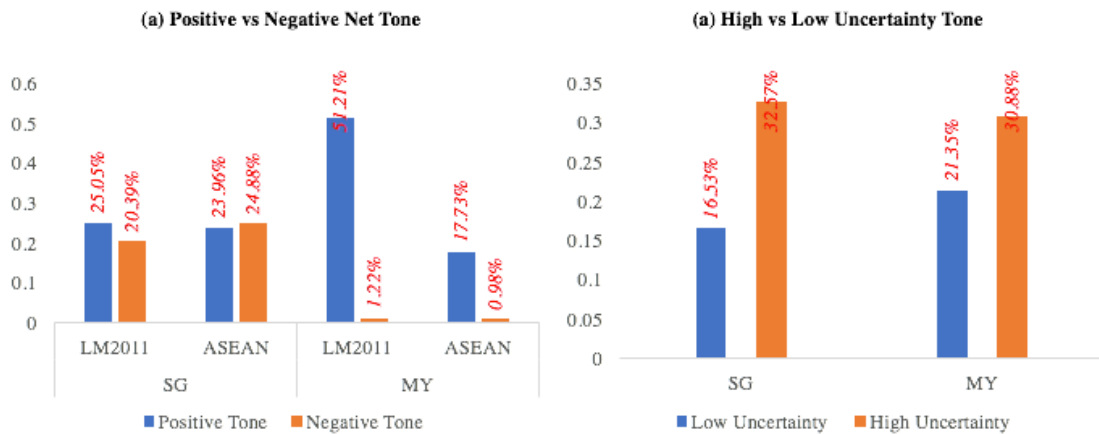


Figure 4.7:
IPO Underpricing by Net Tone Score

Following the small degree of uncertainty tone reported in 4.6, I segregate IPO underpricing in each market according to their level of uncertain tone in the news associated with the IPOs. This is to examine whether the differences in uncertainty tone score will cause a difference in underpricing. The segregation is based on the median uncertainty tone score, resulting in two groups for each market. If the uncertainty tone score is lower (higher) than the median, the IPOs belong into the *low (high) uncertainty* group. The segregation results in a compelling finding. As shown in Figure 4.7(b), IPOs whose news is high in uncertainty tone consistently exhibit higher underpricing. The findings lend initial support to Ferris et al. (2012), Loughran & McDonald (2013) and Feuerriegel et al. (2014) that report a significant positive link between uncertainty tone with underpricing.

4.4.3 Descriptive Statistics

Next, I examine the characteristics of listings in Singapore and Malaysia from 2000 to 2013, that received dedicated news coverage from the English language newspapers. Table 4.6 reports the summary statistics the commonly used control variables to explain *UNDP*. The Table suggests that IPO samples from both markets are quite similar in characteristics. Notably, IPOs in both markets in this sample are underpriced at almost similar rates, vis 24.06% and 26.84% for

Singapore and Malaysia, respectively. Consistent with the findings in the previous two empirical chapters in this study, underpricing in Malaysia is slightly higher than Singapore.

Firm size *FIRMSZ* and prior year stock market capitalisation *MKTCAP* are converted into US dollar for standardisation and to allow comparison. In US dollar terms, IPOs in Malaysia in this sample are smaller than their Singaporean counterparts. The numbers are sensible as Malaysian samples consist of a higher percentage of IPOs listed in the alternative market. IPO firms in both markets are relatively similar in terms of age. Mean *AGE* for Singapore IPOs is 6.9 years and 6.07 for Malaysian IPOs. *EPS* for Singapore and Malaysia are almost similar in average, at 1.31 and 1.79 times, respectively. Singapore and Malaysian IPO samples have mean *BTMV* of 1.90 and 1.79, respectively.

Further, Table 4.6 reports a similarity in the macroeconomic characteristics of the two markets. Mean *IPO3M* of 12.22 for Singapore and 7.02 for Malaysia suggests that the Singapore IPO market is more active than its neighbouring market. The table reports high skewness in *FIRMSZ*, *EPS* and *BTMV* suggesting that the normal distribution assumption of these variables is violated. To address the potential issue of heteroskedasticity, the variables are transformed into log.

The sample used in this study is a subset of that is used in the previous empirical studies in Chapters 2 and 3. From the overall sample, only IPOs that received dedicated news coverage are selected for this study. When the characteristics of IPO samples are compared between the those reported in Tables 3.3 and 4.6, I find that smaller and younger IPOs tend to attract journalists' attention, therefore receiving dedicated news. On the other hand, IPOs in Malaysia that receive dedicated news coverage are on average more established firms that have higher market capitalisations.

Table 4.6

Descriptive Statistics of IPOs Listed in Singapore and Malaysia During 2000-2013.

This table reports the descriptive statistics of the variables used to determine the relationship of media tone and IPO underpricing for IPOs listed in Singapore and Malaysia from January 2000 to December 2013. The dependent variable is *UNDP* (underpricing). *FIRMSZ* is the IPO firm market capitalisation on listing day, in million US Dollar. *AGE* is the firm age in year, counted from the year of incorporation to the listing year. *EPS* is the earning per share of IPO firm during the last financial year end prior to listing. *BTMV* is the book-to-market value, calculated as the reciprocal of the market-to-book value of IPO firms during the financial year prior to listing. *RM7D* and *RM30D* is the corresponding market return 7 and 30 days, respectively, prior to the listing of IPO *i*. The market return is represented by the main indices returns for each ASEAN-4 market. *MKTCAP* is the total market capitalisation in billion US Dollar of the stock market where IPO *i* is listed, during the year prior to listing. *GDP* is the growth rate of the gross domestic products of the market in which IPO *i* is listed, during the year prior to listing. *IPO3M* is the number of listing in the market where IPO *i* is listed, during 3 months prior listing.

	Mean	Std. Dev.	Min.	Max.	Skewness	Kurtosis
Panel A: Average newspaper tones for IPOs listed in Singapore						
<i>Panel A: Characteristics of Singapore IPOs (n=376)</i>						
<i>Dependent variable:</i>						
<i>UNDP</i>	0.248	0.604	-0.905	8.700	7.968	106.707
<i>IPO and issuing firm characteristics:</i>						
<i>FIRMSZ</i>	238.093	1807.405	2.226	33882.450	17.738	329.186
<i>AGE</i>	6.910	9.292	0.000	66.000	2.448	11.416
<i>EPS</i>	1.320	13.968	0.000	243.070	15.330	254.361
<i>BTMV</i>	1.900	16.606	-0.437	310.478	17.691	327.046
<i>Market characteristics:</i>						
<i>RM7D</i>	-0.003	0.030	-0.122	0.116	-0.031	4.696
<i>RM30D</i>	0.005	0.054	-0.183	0.221	0.003	-0.125
<i>MKTCAP</i>	300.10	188.21	101.49	765.08	1.018	2.792
<i>GDP</i>	5.952	3.399	-0.952	15.240	-0.042	3.634
<i>IPO3M</i>	12.223	6.339	0.000	30.000	0.669	3.613
<i>Panel B: Characteristics of Malaysia IPOs (n=225)</i>						
<i>Dependent variable:</i>						
<i>UNDP</i>	0.262	0.739	-0.667	8.618	7.212	76.658
<i>IPO and issuing firm characteristics:</i>						
<i>FIRMSZ</i>	197.251	701.633	2.273	7450.884	6.635	57.956
<i>AGE</i>	6.071	7.445	0.000	40.000	2.341	9.016
<i>EPS</i>	1.793	25.250	0.000	378.000	14.865	221.982
<i>BTMV</i>	0.722	0.452	0.011	4.479	2.840	23.010
<i>Market characteristics:</i>						
<i>RM7D</i>	-0.001	0.025	-0.111	0.059	-0.722	5.359
<i>RM30D</i>	0.005	0.043	-0.148	0.125	-0.345	3.576
<i>MKTCAP</i>					1.592	4.484
<i>GDP</i>	5.433	2.349	-1.514	8.859	-1.490	4.627
<i>IPO3M</i>	7.025	0.000	30.000		0.512	2.442

Prior to estimating the model using the OLS regression, I ran the Pearson

correlation analysis to determine whether the continuous variables used in this study are highly correlated to each other. Due to the high number of main explanatory variable, Table 4.7 only reports the correlations among *UNDP* and the tone variables. Panel A of Table 4.7 shows that the tones for Singapore are highly correlated. However, this is not the case for the Malaysian sample, as reported in Panel B. The high correlations suggest a potential issue of multicollinearity, in particular for the regression estimates for Singapore. Hence, each of the tone proxies is regressed separately against *UNDP*. No correlation coefficient above 0.70 is reported among the control variables. To further examine whether causal relationships exist between the tone variables with *UNDP*, data is analysed using the ordinary least squares (OLS) regressions.

Table 4.7
Correlations between Underpricing and Tone Variables.

	<i>UNDP</i>	<i>LMPOS</i>	<i>LMNEG</i>	<i>LMUNC</i>	<i>LMSM</i>	<i>LMWM</i>	<i>LMLIT</i>	<i>NEWPOS</i>	<i>NEWNEG</i>
Panel A: Correlations between Underpricing and Tone Variables for Singapore IPOs									
<i>UNDP</i>	1.000								
<i>LMPOS</i>	0.007	1.000							
<i>LMNEG</i>	-0.009	0.706***	1.000						
<i>LMUNC</i>	0.029	0.731***	0.954***	1.000					
<i>LMSM</i>	0.022	0.747***	0.960***	0.986***	1.000				
<i>LMWM</i>	0.011	0.747***	0.958***	0.989***	0.997***	1.000			
<i>LMLIT</i>	0.012	0.747***	0.959***	0.989***	0.997***	1.000	1.000		
<i>NEWPOS</i>	0.028	0.796***	0.890***	0.917***	0.928***	0.924***	0.926***	1.000	
<i>NEWNEG</i>	0.008	0.734***	0.964***	0.971***	0.982***	0.981***	0.982***	0.914***	1.000
Panel B: Correlations between Underpricing and Tone Variables for Malaysia IPOs									
<i>UNDP</i>	1.000								
<i>LMPOS</i>	-0.068	1.000							
<i>LMNEG</i>	0.025	0.104	1.000						
<i>LMUNC</i>	0.118	-0.026	0.295***	1.000					
<i>LMSM</i>	0.057	0.025	0.101	0.157*	1.000				
<i>LMWM</i>	0.013	-0.100	0.070	0.527***	0.178**	1.000			
<i>LMLIT</i>	0.013	-0.100	0.070	0.527***	0.178**	1.000	1.000		
<i>NEWPOS</i>	-0.066	0.215**	-0.050	-0.147*	0.094	-0.084	-0.084	1.000	
<i>NEWNEG</i>	-0.037	0.1168*	0.169*	0.045	0.050	0.080	0.080	0.1456*	1.000

4.4.4 Media Tones and IPO Underpricing

In this section, the link between *UNDP* and the tone used by the media to report IPO-related news is examined. Table 4.8 first reports the OLS regression results with *UNDP* as the dependent variable, regressed against all the control variables. *UNDP* is the initial return of an IPO, defined as the percentage change from its offer price to its closing price. The table shows that *UNDP* for Singapore

and Malaysia appear to be influenced by different factors. For both markets, four of the ten independent variables are statistically significant in explaining initial returns. *LNBTMV* and *LNSZ* are significant in explaining *UNDP* in both markets, indicating that firm size and IPO stock risk factors play important roles in shaping investors' valuation of IPO stocks. IPOs with lower book-to-market value and IPOs listed by smaller firms have lower underpricing. The results indicate that IPO firms in Malaysia do not signal their credibility through size.

For Singapore, market factors are significant in explaining underpricing. The positive sign of *LNMKKT* and *RM30D* coefficients shows that higher market capitalisation in the prior year and higher prior month market returns increase the initial returns. This suggests that when the stock market prospers, IPO investors also gained advantages in the form of higher IPO investment returns. For the Malaysian market, the regression shows that IPOs listed on the Second Board of the Bursa Malaysia tend to have lower underpricing. Finally, if there are higher volumes of IPOs in three months prior to a listing, underpricing reduces.

The regression analysis is repeated with each of the tone scores as the main independent variable, represented by the weighted average of the proportion of words that belong in a tone category, over the total words in the news. Following Loughran & McDonald (2013) and Bajo & Raimondo (2017), each tone category is regressed separately, and all regressions in this study include the control variables.

Table 4.8

Determinants of Initial Returns for IPOs Listed in Singapore and Malaysia.

This table reports the ordinary least squares regression results of control variables on underpricing. *UNDP* is IPO underpricing. *LNfirMSZ* is the natural log of IPO firm size. *AGE* represents the age of IPO firm in a year, calculated from the year of incorporation to the listing year. *LNeps* is the natural log of earnings per share for IPO firm. *LNbtMV* is the natural log of the book-to-market-value. *BRD* is the listing board dummy variable, where 1 represents IPOs listed on the alternative market and 0 otherwise. *MKTCAP* proxies for the natural log of the prior year total market capitalisation of the stock market on which the IPO is listed. *RM7D* and *RM30D* are the main market index returns for 7 and 30 days before listing, respectively. *GDP* represents the growth rate of the gross domestic product during the year prior to listing. *IPO3M* proxies for the number of new listings 3 months before the listing of IPO *i*. ***, ** and * indicate statistical significance at the 1, 5 and 10% respectively.

	(1)	(2)
	SG	MY
	<i>UNDP</i>	<i>UNDP</i>
<i>LNfirMSZ</i>	-0.183 ** (-2.389)	-0.133 *** (-3.983)
<i>AGE</i>	0.00258 (0.504)	0.002 (0.502)
<i>LNeps</i>	0.023 (1.390)	0.010 (0.388)
<i>LNbtMV</i>	-0.181 *** (-4.802)	-0.057 (-1.642)
<i>BRD</i>	-0.226 (-1.576)	-0.161 * (-1.864)
<i>MKTCAP</i>	0.207 *** (3.714)	-0.142 (-1.364)
<i>RM7D</i>	0.028 (0.033)	0.197 (0.151)
<i>RM30D</i>	1.437 ** (2.538)	1.268 (1.462)
<i>GDP</i>	-0.008 (-1.313)	0.012 (0.944)
<i>IPO3M</i>	-0.003 (-0.743)	-0.011 ** (-2.367)
Industry Fixed Effects	Yes	Yes
Year Fixed Effects	Yes	Yes
Constant	-1.400 ** (-2.240)	2.407 * (1.951)
Observations	323	193
Adjusted R^2	0.145	0.262

4.4.4.1 Main Explanatory Variables: Tone Captured Using the Loughran & McDonald (2011) Dictionary

The primary objective of this study is to test the applicability of LM2011 dictionary in a language and cultural contexts that are completely different from the US. Given that this is a pioneer study that focuses on ASEAN IPOs, the effect of tone as captured by the LM2011 word list on initial returns is currently unknown. Thus, all word lists in LM2011 is used as independent variables to explore such an effect. Notice the variations in tone effects on initial returns between the two markets. Tones that are significant in explaining underpricing in Singapore may not be significant for the Malaysian market.

When the news tone variables are included in the regression, the signs of the coefficients and their significance are as consistent as the results reported in Table 4.9. The only exception is that for Malaysia, when *LMPOS* is the main independent variable, *LNBTMV* loses its significance. To save space, only the relationship of the main dependent variables with *UNDP* are reported in this table. Each of the following regressions reported represents tone score using each of the word lists from the LM2011 as the main independent variable. Table 4.9 reports that only *LMUNC* has a positive and statistically significant coefficient value for both markets (*t*-statistics of 2.077 and 1.853 for Singapore and Malaysia, respectively). This implies that investors in these markets are reactive toward uncertain words. The more often uncertain words are used in the news, the higher underpricing will be. *LMSM* is only significant to explain *UNDP* for Singapore IPOs (*t*-statistics 1.734, $p < 0.01$), but not for Malaysia. For Singapore IPOs, initial returns increase with the presence of more strong modal words in news such as *best*, *always*, *must*, *never* and *lowest*. Next, the coefficient for *LMWM* and *LMLIT* significant and negatively related to *UNDP* for Malaysia, as reported in columns 5 and 6 in Panel B. The variables are not significant in explaining *UNDP* for Singapore. While for Malaysia, higher frequency of weak modal and litigation words in the news reduces underpricing, such words do not have an impact in Singapore.

As further shown in Table 4.9, the weak modal words captured in the Malaysia corpus are precisely the same as those captured by the litigation word list. Thus, it does not come as a surprise for the two regressions to yield the same results. Finally, when news tone is measured using the LM2011 dictionary, *LMPOS*,

LMNEG have not been found to have a significant link with *UNDP* for neither markets.

Table 4.9

Determinants of Initial Returns for IPOs Listed in Singapore and Malaysia Using the Loughran & McDonald (2011) Dictionary as Main Explanatory Variables

This table reports the ordinary least squares regression results of control variables on underpricing. *UNDP* is IPO underpricing. *BRD* is the listing board dummy variable where 1 represents IPOs listed on the main board and 0 otherwise. *AGE* is the age of IPO firm in year, calculated from the year of incorporation to the listing year. *LNEPS* is the natural log of earnings per share for IPO firm. *LNBTMV* is the natural log of book-to-market-value and *LNSIZE* is the natural log of IPO firm size. *LNMKT* is the natural log of the prior year total market capitalisation of the stock market on which the IPO is listed. *RM7D* is the main market index return 7 days prior to listing, and *RM30D* is the main market index return 30 days prior to listing. *GDP* represents the growth rate of the gross domestic product during the year prior to listing. *IPO3M* proxies for the number of new listings 3 months prior to the listing of IPO *i*. ***, ** and * indicate statistical significance at the 1, 5 and 10% respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	<i>UNDP</i>	<i>UNDP</i>	<i>UNDP</i>	<i>UNDP</i>	<i>UNDP</i>	<i>UNDP</i>
Panel A: Determinants of Underpricing for Singapore IPOs						
<i>LMPOS</i>	0.491 (0.712)					
<i>LMNEG</i>		0.454 (1.122)				
<i>LMUNC</i>			0.800** (2.077)			
<i>LMSM</i>				0.611* (1.734)		
<i>LMWM</i>					0.466 (1.485)	
<i>LMLIT</i>						0.435 (1.558)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Constant	-1.400** (-2.240)	-1.368** (-2.189)	-1.344** (-2.159)	-1.354** (-2.171)	-1.353** (-2.168)	-1.353** (-2.168)
Observations	323	323	323	323	323	323
Adjusted <i>R</i> ²	0.145	0.145	0.147	0.146	0.145	0.145

Table 4.9 (continued)

	(1)	(2)	(3)	(4)	(5)	(6)
	<i>UNDP</i>	<i>UNDP</i>	<i>UNDP</i>	<i>UNDP</i>	<i>UNDP</i>	<i>UNDP</i>
Panel B: Determinants of Underpricing for Malaysia IPOs						
<i>LMPOS</i>	-3.708 (-1.653)					
<i>LMNEG</i>		-1.731 (-0.519)				
<i>LMUNC</i>			10.210* (1.853)			
<i>LMSM</i>				8.615 (0.771)		
<i>LMWM</i>					-6.680* (-1.664)	
<i>LMLIT</i>						-6.680* (-1.664)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Constant	-1.400** (-2.240)	-1.368** (-2.189)	-1.344** (-2.159)	-1.354** (-2.171)	-1.353** (-2.168)	-1.353** (-2.168)
Observations	323	323	323	323	323	323
Adjusted R^2	0.145	0.145	0.147	0.146	0.145	0.145

4.4.4.2 Main Explanatory Variables: Tone Captured Using the New ASEAN IPO Dictionary

The initial analysis suggests that there are variations in investors perception towards the tones used by journalists to report news on new IPOs in the two largest capital markets of ASEAN. Noticeably, some words have been repeatedly used in the IPO-related news, but are not captured by the LM2011 dictionary. Given that the LM2011 dictionary was constructed on the basis on the 10-K (annual report) document context (Loughran & McDonald 2011) that reports historical events, it is quite easy to miss out words that are future-oriented. Thus, a new dictionary was constructed to determine what other words can possibly be deemed important by investors in IPO investment decision-making.

Table 4.10 reports the regression analyses results with *UNDP* as the dependent variable, and ASEAN dictionary word lists as the main independent variables in each of the four regressions. Columns 1 and 2 report the relationship news tones, captured by the ASEAN IPO word list and underpricing of Singaporean IPOs, while columns 3 and 4 report results of for Malaysian IPOs. From Table we can again notice some variations in how news tones shape investors' valuation on IPO stocks in the two markets. The only variable that is has significant relationship with *UNDP* for both markets is *NEWNEG* (*t*-statistics are 2.151 for Singapore, 1.769 for Malaysia). I report positive and significant coefficients for *NEWPOS* (*t*-statistics = 2.304, $p < 0.05$) for Singapore. However, this variable are not found to have statistical significance for Malaysia.

Table 4.10

Determinants of Initial Returns for IPOs Listed in Singapore and Malaysia Using ASEAN IPO News Dictionary as Main Explanatory Variables

This table reports the ordinary least squares regression results of control variables on underpricing. *UNDP* is IPO underpricing. *BRD* is the listing board dummy variable where 1 represents IPOs listed on the main board and 0 otherwise. *AGE* is the age of IPO firm in year, calculated from the year of incorporation to the listing year. *LNEPS* is the natural log of earnings per share for IPO firm. *LNBTMV* is the natural log of book-to-market-value and *LNSIZE* is the natural log of IPO firm size. *LNMKT* is the natural log of the prior year total market capitalisation of the stock market on which the IPO is listed. *RM7D* is the main market index return 7 days prior to listing, and *RM30D* is the main market index return 30 days prior to listing. *GDP* represents the growth rate of the gross domestic product during the year prior to listing. *IPO3M* proxies for the number of new listings 3 months prior to the listing of IPO *i*. ***, ** and * indicate statistical significance at the 1, 5 and 10% respectively.

	(1)	(2)	(3)	(4)
	SG		MY	
<i>NEWPOS</i>	0.367** (2.304)		-1.438 (-0.599)	
<i>NEWNEG</i>		0.300** (2.151)		16.55* (1.769)
Control Variables	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Constant	-1.356** (-2.174)	-1.356** (-2.172)	2.163* (1.791)	2.029* (1.667)
Observations	323	323	193	193
Adjusted R^2	0.146	0.146	0.253	0.266

4.4.4.3 Discussions on the Findings

Equipped with the above analysis, there are some notable findings. First, Singapore and Malaysian investors are unanimously wary about media pessimism, represented by the uncertainty and negative tones. This finding is similar to

Arnold et al. (2010) and Loughran & McDonald (2013) that report an increase in underpricing in the US IPOs when IPO documents contain higher pessimistic tones. The findings first suggest that investors in ASEAN never appeared to have high tolerance towards uncertainty. The more uncertainty words such as *almost*, *believe*, *possible*, *probably* and *risk* encountered in the news, the vaguer the news becomes, making it more difficult for investors to precisely assimilate the value-relevant information, thus generating more uncertainty about the future prospect of an IPO firm (Loughran & McDonald 2013).

The second notable finding is that negative tone is only significant in explaining underpricing when the ASEAN News negative word list is used. While Loughran & McDonald (2013) report a significant positive association between negative tone captured by the LM2011 word list and underpricing in the US, no significant link is reported for our samples. The findings imply that investors may pay extra attention to some words that are captured by the ASEAN News dictionary, that does not appear on the LM2011 dictionary. While tone may be important in shaping investors' beliefs, our findings suggest that the context in which the word lists are used is equally important. Thus, context appears to be a crucial factor to consider in content analysis studies.

For example, a closer examination on the term-document matrix shows that the LM2011 negative word list contains words such as *closed* and *closing*, which may have been used to convey information such as 'closing date' or 'the share application has now closed'. As such, although repeatedly used, it does not carry real meaning in IPO news context. Further, words like *concern* may have been used to express 'going concern', which is not negative in meaning. The ASEAN negative word list may have been more appropriate for this context as it contains words like *credit*, *affected*, *bearish*, *undersubscribed*, *undersubscription*. These words clearly carry negative meanings in the IPO context, thus implying riskiness in investing a particular IPO stock. As such, we argue that these words have a stronger role in shaping investors' perception of the future prospect of an IPO stock. When ex-ante uncertainty increases, the expected return is driven upwards, in line with investors' expectation to be compensated for the risk they bear from this investment.

The economic impact is higher for Malaysia than Singapore, where one standard deviation change in uncertain words moves underpricing up by 0.05%. The economic significance is smaller for Singapore, where one standard deviation change in

uncertain words only moves underpricing up by a mere 0.008%¹⁷. From a cultural point of view, given that Malaysians are more intolerant towards uncertainty than their Singaporean counterparts, they may tend to be more sensitive towards uncertainty words. Thus, it makes sense that uncertain words are more economically significant for Malaysia than it is for Singapore.

Thirdly, with regard to the weak modal and litigation word lists, for Malaysia, all the words captured using the two word lists are the same, explaining the same coefficient values for *LMWM* and *LMLIT*. Some weak modal words overlap with uncertainty words in the LM2011 dictionary. Weak modal words portray pessimism, a function that is similar to uncertainty words. Thus, if *LMUNC* is positively related to underpricing, logically, *LMWM* should have positive coefficient too. However, in the Malaysian context, weak modal words such as *almost*, *possible*, *might* and *possibly* and *nearly* may not render uncertainty. Instead, these words may render a positive outlook for Malaysian investors. They may see related IPOs as having positive future value, hence reducing the ex-ante uncertainty, which in turn reduces underpricing.

The fourth key finding is that for Singapore, positive tone has a significant relationship with underpricing, supporting Fuksa (2015), Bajo & Raimondo (2017) and You et al. (2018). Meanwhile, Hanley & Hoberg (2010b) and Brau et al. (2016) found that positive tone reduces underpricing. Interestingly, the significance only exists when the ASEAN News word list is used, but not the LM2011 word list. This further validates our earlier argument that the context in which a word list is used is important in measuring news tone. The significant positive relationship between *LMSM* and *UNDP* for Singapore IPO further validates our argument on the importance of context. Previous studies found insignificant relation between strong modal and underpricing (Loughran & McDonald 2013, Bajo & Raimondo 2017). In Singapore, words such as *best*, *always*, *must* and *clearly* in the news appear to induce confidence among investors, resulting in overvaluing the IPOs. Hence, underpricing increases.

Intriguingly, the results report that both pessimistic and optimistic tones have a positive influence on underpricing for Singapore and Malaysia, which gives rise to the following question: are optimistic and pessimistic tones not supposed to

¹⁷Following Loughran & McDonald (2013), the economic significance is calculated by multiplying the coefficient of the variable with its standard deviation.

have opposite meanings, thus having opposite effects on underpricing? Can news carry informational value *and* channel sentiment at the same time?

I suggest two possibilities that underlie these findings. The first explanation takes on the argument of Loughran & McDonald (2016)¹⁸. The authors suggest that positive words are not only used for positive statements but are also used along with negations to convey more indirect negative statement. We are in agreement with this argument, as *must* in the LM2011 strong modal word list may be used in ‘must not’, and *highest* could be used along negative words like ‘highest debt’ or ‘highest liability’. In high context cultures like Southeast Asian, indirect communications are more common than a straight-to-the-point message, mainly if it is negative.

Another possibility may arise from the classification of the words. In this context, words like *never* and *lowest*, are among the top ten most used under this category. Semantically, these words carry a negative meaning. Investors may actually have had a stronger response towards these words, thus driving the price upwards. However, as our study focuses on the word aggregate word list to gauge tone, it is not within its scope to determine which word has stronger weightage in determining their impact on investors’ perceptions. Overall, our findings suggest that in the context of Singapore and Malaysian IPOs, news tone play a role to signal ex-ante uncertainty on the IPO stocks. Besides, the context of usage is important in determining whether a word carries tone or not.

4.4.5 Robustness Test

4.4.5.1 News Tone Captured Using the Brau et al. (2016) Strategic Word Lists and Harvard General Inquirer Dictionary

As a robustness check to examine the applicability of most commonly used word list in a context where English is not the first language, similar regression analyses are conducted using BCM2016 and *HIV* dictionaries to measure news tones. In four separate regressions, *UNDP* remains as the dependent variable, and the main independent variables for each regression is BCM2016 positive and

¹⁸Loughran & McDonald (2016) provide a useful practical example of corporate manipulation using positive words to frame negative statements.

negative, and *HIV* positive and negative word lists. Table 4.11 reports the regression results for Singapore and Malaysia. Only *HPOS*, that represents a positive tone as captured by the *HIV* word lists, has a positive and significant relationship with *UNDP* for Singapore. All other tones are not important factors in explaining underpricing in either Singapore or Malaysia.

From a closer examination on words captured using the *HIV* positive word list, it is noticeable that the list captures words that are not meaningful within the finance contexts, including IPO. For example, *just* in this context may imply ‘a moment ago’, or ‘exactly’ rather than ‘justice’. *Main* in this context could largely mean ‘the main market’, referring to the market on which an IPO is listed. *Value* is frequently used in the corpus too as IPO-related news tends to report the market value of a firm. Similarly, *lead* tends to be used along with *underwriter*, as news tend to include information about lead underwriters in IPO-related news. Finally, *interest* may carry negative meaning when it refers to the charge associated with borrowing money, which is a norm in business-related news. Thus, this study agrees with Loughran & McDonald (2011) that suggest the *HIV* dictionary is not very suitable to capture for financial documents.

4.4.6 Principal Component Analysis on the Loughran & McDonald (2011) Word Lists

Table 4.7 reports substantial correlations between word lists, in particular for the Singaporean IPOs. Thus, the regression analyses are conducted separately using tone score using each word list as the main dependent variable. From the regression analysis, *LMUNC*, *LMSM*, *NEWPOS* and *NEWNEG* are found to be significant in explaining *UNDP* for Singapore. For Malaysia, *LMUNC*, *LMWM*, *LMLIT* and *NEWNEG* are significant. The results imply that investors in both countries react differently to words tones of IPO news.

Principal component analysis (PCA) is conducted separately for the two groups of samples, to check whether the word lists are measuring characteristics unique to their targeted sentiment or whether they proxy for the same attribute. The results are reported in Table 4.12. The first and second principal components are regressed against *UNDP* to determine whether uncertain, strong modal, new

Table 4.11

Determinants of Initial Returns for IPOs Listed in Singapore and Malaysia Using Brau, et al (2016) and Harvard-IV 4 Dictionary as Main Independent Variables

This table reports the ordinary least squares regression results of control variables on underpricing. *UNDP* is IPO underpricing. *BRD* is the listing board dummy variable where 1 represents IPOs listed on the main board and 0 otherwise. *AGE* is the age of IPO firm in year, calculated from the year of incorporation to the listing year. *LNEPS* is the natural log of earnings per share for IPO firm. *LNBTMV* is the natural log of book-to-market-value and *LNSIZE* is the natural log of IPO firm size. *LNMTKT* is the natural log of the prior year total market capitalisation of the stock market on which the IPO is listed. *RM7D* is the main market index return 7 days prior to listing, and *RM30D* is the main market index return 30 days prior to listing. *GDP* represents the growth rate of the gross domestic product during the year prior to listing. *IPO3M* proxies for the number of new listings 3 months prior to the listing of IPO *i*. Significance levels:

	(1)	(2)	(3)	(4)
	SG		MY	
Panel A: Determinants of Underpricing using BCM2016 Strategic Dictionary				
<i>BRAUPOS</i>	0.132 (0.379)		0.461 (0.587)	
<i>BRAUNEG</i>		0.386 (1.347)		-2.384 (-0.800)
Control Variables	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Constant	-1.430** (-2.283)	-1.410** (-2.259)	1.953 (1.631)	2.040* (1.729)
Observations	323	323	193	193
Adjusted R^2	0.145	0.146	0.290	0.290
Panel B: Determinants of Underpricing using Harvard General Inquirer				
<i>HPOS</i>	0.631* (1.666)		0.902 (0.631)	
<i>HNEG</i>		0.306 (1.350)		2.392 (0.775)
Control Variables	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Constant	-1.463** (-2.337)	-1.423** (-2.280)	1.869 (1.581)	1.764 (1.491)
Observations	323	323	193	193
Adjusted R^2	0.148	0.146	0.290	0.291

positive and new negative represent the same attribute, or they measure characteristics unique to their targeted sentiments. The principal components do not appear to be meaningful, as they are not significant in explaining underpricing.

When a principal component is built to exclude *LMUNC*, the first principle is significant in explaining underpricing. 97% of the variation in tone proxies is substantially explained by the first principal component, which suggests that systematic common components exist in tone measures. The PCA implies that

for Singaporean investors, uncertainty tone is perceived differently from a negative tone. While negative tone firmly implies that something is negative, uncertain tone makes it hard for investors to interpret the value of future cash flow of an IPO firm. The case is different for the Malaysia IPO sample, where PCA is not meaningful, hence implying that each of the tones represents a unique attribute.

Table 4.12

Robustness Test: Principal Component Analysis

This table reports the regressions with the first-day return, *UNDP*, as the dependent variables with the first and second principal components as explanatory variables, for IPOs listed in Singapore and Malaysia between 2000 and 2013. In columns 1 and 2, the principal components include uncertainty tone (*LMUNC*). In columns 3 and 4, uncertainty tone is excluded from the principal components. Significance levels: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

	Including <i>LMUNC</i>		Excluding <i>LMUNC</i>	
	SG (1)	MY (2)	SG (3)	MY (4)
First principal component	0.010 (1.177)	0.0310 (0.871)	0.009* (1.902)	0.010 (0.295)
Second principal component	0.078 (0.798)	0.163 (1.517)	-0.049 (-0.762)	0.154 (1.377)
Control Variables	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Constant	2.249** (2.114)	2.063** (2.375)	2.243** (2.116)	1.930** (2.143)
Observations	361	223	361	223
Adjusted R^2	0.074	0.106	0.073	0.096

4.5. Summary

This study examines how news tone influence investors' valuation on the first day returns on an initial public offering in the two major stock markets in ASEAN. The uniqueness of this study rests on it being one of the earliest to test the applicability of the LM2011 dictionary in a context where English is not a native language. Further, to the best of my knowledge, this is the first multi-country study on the role of media tone in IPO valuation, that allows comparison of the effect of word sentiment across different market contexts. This allows further understanding of how investors from different backgrounds perceive news tone and how it affects their valuation of IPOs.

The OLS regression results show that negative and uncertain tones are positively significant in determining IPO underpricing in Singapore and Malaysia, suggesting that investors interpret pessimistic tone as ex-ante risks rather than as a sentiment. As investors perceive an IPO stock as risky, they expect to be compensated by higher initial returns.

Interestingly, a negative tone is a significant factor that influences underpricing when the new ASEAN IPO news negative word list is used to measure the tone. When the Loughran & McDonald (2011) negative word list is used, the coefficient is not statistically significant. The heterogeneity in findings between Singapore and Malaysia IPO samples suggest that investors in different cultural contexts may interpret words differently. This result makes the vital point that contexts play a crucial role in shaping investors' interpretation of the news.

The implications of this study are particularly useful for corporate managers and individual investors, first, for managers of issuing firms wishing to optimise the money raised from the listing. As high underpricing is associated with high amount of money left on the table, managers shall be more aware of keeping a healthy financial performance and public image in order to attract positive coverage from the newspapers in order to avoid substantial money left on the table. Similarly, for investors wishing to invest in IPO for the long-run, they shall be aware that when an IPO receive negative or uncertain news, the future value of the IPO may be bleak, thus investors may receive low returns in the future.

One of the limitations of this study is that it does not consider the long-run effect of news tone; thus at this stage the effect of news tones on ASEAN IPO aftermarket performance is as yet unknown. Future research may take it as a starting point in efforts to better understand the role of news tone on IPO valuations.

Appendix D

ASEAN IPO News Dictionary

The ASEAN IPO Dictionary captures words that are not captured in the existing dictionaries, namely the Loughran & McDonald (2011), Brau et al. (2016) and the Harvard Inquiry Dictionaries.

D.1. Positive Word List

Table D.1
ASEAN IPO Dictionary - Positive Word List.

accumulation	billionaire	hype	heartened	promised	strive
accurately	boomed	immediate	honesty	proudest	subdued
achievable	booms	immediately	honour	prove	substantial
acknowledge	boosters	immense	honoured	proved	successfully
acknowledged	boosting	immensely	honours	proven	sure
acknowledges	boosts	impactful	hopefuls	quadruple	surely
adhere	braved	impeccable	hopes	quadrupled	surplus
accommodate	devoted	conform	lifted	possible	survived
accorded	devotions	conforms	longterm	possibilities	survivors
accordingly	doubled	consistently	luckier	possibility	sustainability
accords	auspiciously	favourable	maximised	positive	sustainable
accreditation	awakening	favourably	merits	potentials	thrives
accredited	belief	favoured	milestone	professional	thriving
accretion	belies	flamboyant	minimising	professional	triple
accretive	believe	flattering	miraculously	profit	triple
accumulate	believed	forte	monopolised	progression	tripled
accumulated	believes	fulfil	optimised	progressively	triumphantly
accumulating	believing	gag	overallocated	projections	upgraded
agree	breakeven	enticed	indiscriminate	repairs	wellbeing
agreed	breathhtaking	enticement	initiative	respected	whopping
agrees	broadened	enticing	initiatives	reviewing	widen
ambition	broadening	entitled	intangibles	reviving	wider
ambitions	bullishness	enviable	intensified	shine	willpower
ambitious	burgeoning	established	intensifies	shone	wins
admirably	bravely	increasing	hoping	recovers	
affordable	braves	increasingly	hospitality	rejuvenate	
agilent	braving	incremental	huge	rejuvenated	
accelerate	certainty	cognisance	large	overapplication	
accelerating	clarified	compelling	lavishly	stranded	
acceptances	convinced	competitiveness	leap	strategising	
accepted	decisive	compliant	leaped	oversubscribed	
accepting	demands	complied	leaps	oversubscription	
accepts	deserved	comply	leapt	paymaster	
accommodating	determined	complying	lesser	persuade	
appreciated	calmer	establishments	intensify	solvent	
appreciates	carefully	exactly	intensifying	spurred	
aspirants	certain	exceeded	interesting	steadier	
aspirational	certainly	exhilarating	invest	stellar	
abiding	aspirations	expertise	marketable	overallotment	
abreast	aspires	extraordinaries	maximise	overallotments	
aspiring	dramatically	exorbitant	increments	upgrades	
assurances	eagerly	expedite	independently	upgrading	
astounding	efficient	giant	invested	upkeeping	
attainable	empathised	glitzy	investability	upmarket	
attention	endeavour	goodwill	invests	uptrend	
attracted	endorsed	growths	jawdropping	upwards	
attracting	endorsement	guaranteed	justified	validates	
attractions	engaging	guarantees	keenness	value-added	
attractively	enormous	halal	knowledgeable	vigour	
attracts	entice	healthier	kudos	visible	

D.2. Negative Word List

Table D.2
ASEAN IPO Dictionary - Negative Word List.

abated	demanding	limiting	stumbled
abating	derail	limits	stumbling
aborted	derailed	loophole	tacky
aborting	devaluation	losers	tantalising
absentmindedness	dictated	loss-making	tarnishes
affect	disarray	meagre	taxes
affected	disgruntled	meltdown	tsunami
affecting	downtrend	mental	tumble
affects	drops	messy	tumbled
ailing	elusive	misconception	tumbling
alcoholic	emotional	misperception	tumultuous
allay	feared	misreported	unaccredited
allayed	foul	mood	undaunted
arguably	furiously	nervously	underapplication
attacks	greed	obscurity	underdeveloped
avoided	hardest	odd	underinvested
avoiding	hasten	oddly	underinvestment
avoids	heft	overdraft	underperformers
ban	heftier	passive	undersubscribed
battered	hefty	pessimist	undersubscription
bearish	hiccup	politicise	undersubscriptions
begrudge	hiccups	politicising	undeveloped
besieging	horribly	polluted	unflattering
bias	hurdle	pricey	uninspiring
blamed	hurdles	pricier	unlikely
blames	hurts	priciest	unprecedented
blaming	impacted	pricy	unprepared
blocked	indebted	psyche	unsecured
blocking	indebtedness	psychiatric	unspectacular
bored	insatiable	psychological	unsubscribed
boring	insists	quarantine	upsets
bothered	invasion	refuted	upsetting
breakout	invasive	refuting	victim
caveat	jaded	regrets	winding-up
complacent	lacklustre	regretted	withdraw
costlier	leakages	shrunk	withdrawal
credit	leaked	slipped	withdrawing
criticised	lethargic	slows	withdrawn
critics	lethargy	struggled	withdraws
deferred	liabilities	struggling	withdrew
deformed			

D.3. Example of R Codes Used for Document Parsing

1. Installing Packages and Loading Corpora

```
install.packages('SnowballC')
install.packages('wordcloud')
install.packages('RColorBrewer')
library(SnowballC)
library(RColorBrewer)
library(wordcloud)

cname <- file.path(' ', 'Desktop', 'SG')
cname
dir(cname)
library(tm)
docs <- VCorpus(DirSource(cname))
list(docs)
summary(docs)
as.list(docs)
inspect(docs)
```

2. Pre-Processing (e.g.: removing punctuation, numbers and stop words)

```
docs <- tm_map(docs,removePunctuation)
for (j in seq(docs)) { docs[[j]] <- gsub('/', ' ', docs[[j]])
docs[[j]] <- gsub('@', ' ', docs[[j]])
docs[[j]] <- gsub("'", ' ', docs[[j]])
docs[[j]] <- gsub(',', ' ', docs[[j]])
}

docs <- tm_map(docs, removeNumbers)
docs <- tm_map(docs, tolower)
docs <- tm_map(docs, removeWords, stopwords('english'))
docs <- tm_map(docs, removeWords, calendar)
docs <- tm_map(docs, removeWords, currency)
```



```
docs <- tm_map(docs, removeWords, geography)
docs <- tm_map(docs, removeWords, IPO)
docs <- tm_map(docs, removeWords, propernoun)
```

3. Creating Term-Document Matrix

```
tdm <- TermDocumentMatrix(docs)
tdm
m <- as.matrix(tdm)
dim(m)
write.csv(m, file='TDM_SG_2018.csv')
```

4. Mapping Words in Corpus to Dictionary Words

```
tdm <- TermDocumentMatrix(docs, list(dictionary = LM_Positive))
tdm
m <- as.matrix(tdm)
dim(m)
write.csv(m, file='SG_LMPos_2018.csv')
```

Chapter 5

Conclusion

5.1. Introduction

This final chapter provides a summary of the empirical findings related to the thesis. It presents the implications of the research, for academia and practitioners. It also discusses the limitations of the results and highlights potential areas of future research.

5.2. Summary of the Main Findings

This thesis provides collective evidence of the behaviour of initial public offerings investors in the four main capital markets among the ASEAN member states. The economic integration efforts among culturally diverse countries make ASEAN an interesting focal point of the study. In essence, this study focuses on the roles of overconfidence behaviour, social moods and language effects in investment decision making, and provides evidence that behavioural and cognitive factors play a role in such process. Sections 5.2.1, 5.2.2 and 5.2.3 summarises the main findings of each empirical chapter, which is also tabulated in Table 5.1 at the end of this chapter.

5.2.1 Overconfidence and IPO Performances

The first empirical chapter focuses on overconfidence behaviour among IPO investors in ASEAN, a multicultural region with different economic settings. First, this study reports significant underpricing in all ASEAN-4 markets, where the highest underpricing is found in Indonesia, followed by Thailand. Underpricing levels in Singapore and Malaysia are quite similar. Secondly, using the event-study methodology, the findings of this study lend support to the literature that overconfidence exists among investors. Interestingly, this study finds varying patterns of overconfidence among the ASEAN-4 markets. Investors in Singapore and Malaysia are found to almost instantaneously adjust their IPO valuations to incorporate publicly available information. However, return reversals take longer in Thailand, and are almost non-existent in Indonesia within the time-frame of 3 years after-market. The findings suggest that overconfidence is stronger in markets where information dissemination is less effective. In the case of Thailand and Indonesia, investors may suffer from self-attribution bias, where they are continuously overconfident with their own private information as their valuation persistently yield positive returns. From one angle, the non-existence of underperformance within 3-year aftermarket suggests that Indonesian investors virtually underreact to publicly available information in valuing IPO stocks. However, from an opposite angle, the insufficiency of information, that suggests high information asymmetry in the market, may have forced the investors to rely on their own private information.

The calendar-time results further support the findings of significant underperformance in Singapore and Malaysia, and significant overperformance in Thailand. The findings consistently suggest underreaction among Indonesian IPO investors. Interestingly, the cross-sectional findings suggest that underperformance is not as easily generalisable as underpricing. I report heterogeneity in results when IPOs are segregated according to time, firm and IPO characteristics, validating the notion that it is harder to evaluate long-run performance than underpricing. Importantly the findings in this chapter suggest that investor overconfidence behaviour pattern can easily vary given different market and social factors.

5.2.2 Social Moods and IPO Performances

The second empirical chapter examines the influence of social moods on IPO performances, accounting for the effect of moods surrounding pre- and post-holiday periods. The general finding is that IPOs listed around pre-holiday periods are more highly underpriced as compared to those listed after holidays. This is because prior to a holiday, humans are surrounded by a positive mood that enhances optimism. When investors are optimistic, they have a higher willingness to take risks, hence may overvalue an IPO stock. On the other hand, a post-holiday period is surrounded by pessimism, as human are still recovering from the holiday blues. When investors are pessimistic, their willingness to take risks reduces, thus they are more careful in valuing IPO stock, pulling the price downwards.

The finding further suggests that the turn of the week, that is, Fridays and Mondays, does not affect human moods. Another important finding of this thesis is that investors exhibit extended positive moods following a long holiday. The positive mood that built up before a festive period prolongs and persists, thus positively affecting underpricing for IPOs listed around the post-festive period. This thesis also suggests that social moods have various effect on investors valuation between the ASEAN-4 markets.

The evidence is less conclusive for long-run performance. I find that social mood only significantly influences IPO 3-year underperformance in Thailand and Indonesia, but not Singapore and Indonesia. The finding suggests that moods only temporarily affects investors' optimism in the latter two markets. Consistent with the findings in the first empirical chapter, these findings suggest that investors in these market adjust their beliefs almost immediately upon the availability of information.

5.2.3 Media Tones and IPO Underpricing

In the third and final empirical chapter, I examine the relationship between media tone and IPO underpricing, in particular in Singapore and Malaysia. This study serves as an important contribution to the literature by being one of the earliest to test the applicability of the existing English language word lists outside the native English speaking sphere. I find that to some extent the media plays a role in the investment decision-making process through the tone used in

disseminating news. Investors are more reactive towards uncertainty and negative tones as compared to the positive tone. Uncertain and negative tones are significantly positive in determining initial returns in Singapore and Malaysia. Notably, ASEAN investors interpret pessimistic tones as ex-ante uncertainty rather than as negative sentiment. Thus, their valuations are moved upwards as they expect to be compensated more from the risks borne by them.

Importantly, from this study, it is noticeable that speakers' and subject contexts are crucial in shaping investors' perception towards the meanings of words. For example, some words carry negative meanings in the context of IPO news but are not captured by existing word lists that were built in 10-K (annual report) context. The new dictionary constructed in this study appears to capture the negative tone in the IPO-related news, implying that context is crucial in shaping investors' perception of the meaning of a word.

5.3. Implications of the Study

The findings of this study have implications, particularly in the light of the economic integration among ASEAN member states. The findings may, therefore, be useful for academic scholars, industry practitioners, investors and policymakers.

For academics who are concerned with the effect of human behaviours in financial decision making, this study suggests that human behaviours are heterogeneous. Thus, there is a not single behavioural characteristic that collectively represents various groups of humans. As asymmetric information tends to be a persistent issue among individual investors, this thesis suggests that the level of information efficiency can shape investors' cognitive behaviour. This thesis also provides a further understanding of a salient human characteristic, overconfidence, and its role in financial decision making.

This thesis is relevant for policymakers, particularly those focusing on regional economic integration efforts that are actively taking place among ASEAN state members. The findings of this thesis may enhance their knowledge about investor behaviours across the region. They may consider the variations in investor behaviour and the mechanics of the stock markets when introducing new strategies to better streamline the regional policies.

Industry practitioners, particularly firm managers who wish to signal the quality of their firms through IPOs, may choose to go public around the times of positive social moods, as initial returns tend to be higher around these periods. High underpricing signals that a firm is of good quality. On the other hand, if corporate managers choose to lower their cost of capital, they may prefer to go to the public around the times of lower social moods. Further, the finding of the second empirical chapter suggests that the media plays a role in determining stock prices. Thus, it would be beneficial for firm managers to keep a healthy financial performance and the public image of their firms, to attract positive coverage from the media.

Furthermore, the results suggest that there are new opportunities to create more lucrative investment products that use strategies that take into consideration human mood or media contents. To some extent, the conflicting results between the markets afford more opportunities for financial consultants to extend their consultation services and expertise to investors by recommending a portfolio that optimises profits by investing in particular markets or industry during particular times.

Similarly, investors may benefit from this thesis through an understanding of IPO stock behaviours in the four ASEAN markets. As such, they can create an optimal portfolio by taking into consideration the different risk exposures in each market. The findings can assist investors to identify which characteristics are associated with more over-performance or underperformance, which is informative to them when formulating their investment strategies.

5.4. Limitations of the Study

The findings and implications of this thesis should be considered in the context of the following limitations. To date, there are five active IPO markets in the region, namely Singapore, Malaysia, Thailand, Indonesia and the Philippines. However, the public availability on the Philippines IPO is still limited, thus the sample with complete data may not be sufficient for econometric analysis. Further, the English language newspapers are not as widely available in Thailand and Indonesia as in Singapore and Malaysia. These situations deter the full comparability of investor behaviours, which was the primary interest of this study. In the

first empirical study, this thesis does not address whether return reversals occur in Thailand and Indonesia IPOs beyond the horizon of three years aftermarket. By addressing this, researchers can further understand whether investors incorporate publicly available information or whether they are purely intuitive when making investment decisions.

The second empirical study does not address to what extent a social mood effect persists in IPO valuations. Mood is a temporary state of emotion that will disappear after a certain period. By understanding this, managers may be better equipped with information on the appropriate timing to list an IPO. The nature of the third empirical study is that it is a lexical study, that focuses on the meaning of individual words; thus does not count for negations. When negations are taken into consideration, the meaning of a word may change, thus may alter investors' perception towards an IPO. Also, this empirical chapter does not examine the long-run effect of media on IPO performance. Thus, it is still unclear whether the media plays a role in long-term performance. Finally, for the third empirical chapter, the correlation coefficients between tone factors are high. The inclusion of all variables in a single model may cause the issue of multicollinearity.

The findings and implications of this thesis should be considered in the context of the following limitations. To date, there are five active IPO markets in the region, namely Singapore, Malaysia, Thailand, Indonesia and the Philippines. However, the public availability on the Philippines IPO is still limited; thus the findings may not contribute to meaningful comparisons. These situations deter the full comparability of investor behaviours, which was the primary interest of this study. In the first empirical study, this thesis does not address whether return reversals occur in Thailand and Indonesia IPOs beyond the horizon of three years aftermarket. By addressing this, researchers can further understand whether investors incorporate publicly available information or whether they are purely intuitive when making investment decisions.

The second empirical study does not address to what extent a social mood effect persists in IPO valuations. Mood is a temporary state of emotion that will disappear after a certain period. By understanding this, managers may be better equipped with information on the appropriate timing to list an IPO. The nature of the third empirical study is that it is a lexical study, that focuses on the meaning of individual words; thus does not count for negations. When negations are taken into consideration, the meaning of a word may change, thus may alter investors'

perception towards an IPO. Also, this empirical chapter does not examine the long-run effect of media on IPO performance. Thus, it is still unclear whether the media plays a role in long-term performance. Finally, for the third empirical chapter, the correlation coefficient between tone factors are high. The inclusion of all variables in a single model may cause the issue of multicollinearity. Thus it will not be possible to determine which tone has higher explanatory power in explaining underpricing.

5.5. Directions for Future Research

The examination of the performance of IPOs from the aspects of overconfidence, social moods and media tone are emerging areas for research, particularly the latter two areas. Thus, the insights of this study provide several areas to investigate in future research. A further extension of the long-run performance of IPOs might be to consider a more prolonged period after going public. This would allow researchers to see whether the self-attribution bias is a long-term cognitive bias in the less developed IPO market examined in this thesis. New studies may also examine the extent to which mood affects IPO valuation through a time-series analysis. As mood is a temporary behavioural state that affects stock valuation, it would be useful to study in which mood settings price reversal occurs most quickly. A similar study can be done on media tone. Such a study will allow researchers to understand how long it takes for the market to absorb information from newspapers fully. In the third empirical study, this thesis employs the existing dictionary to gauge newspaper tone, as well as constructing a new dictionary in the English language. The uniqueness of ASEAN is that the societies are multilingual. Thus, the final recommendation is that future research may compare the effect of media on IPO performance using dictionaries constructed in native languages. This is particularly important as researchers could broaden the research to include investors who are not frequent users of the English language.

Table 5.1
Summary of Empirical Studies.

Research Scope	Main Findings	Conclusion
Overconfidence behaviour among investors, manifested by return reversal. Where persistent overconfidence exists, return momentum exists.	<ul style="list-style-type: none"> - Significant underpricing in all ASEAN-4 markets - Significant underperformance for Singapore and Malaysia (return reversal occurs). - Significant overperformance for Thailand market (return momentum occurs). - Higher underpricing and underperformance among smaller and younger firms and when IPO size is smaller. Underperformance exists for the majority of sector groupings. 	<ul style="list-style-type: none"> - Abnormally high return on the first day implies overconfidence. As information asymmetry is high. - Overconfidence exists among investors in Singapore and Malaysia. - Return momentum implies that investors in Thailand and Indonesia are more persistently overconfident (higher degree of overconfidence). - Investors are more overconfident when information asymmetry is higher. - Underperformance is not as generalised as underpricing.
Role of social mood on IPO performances when emotion levels vary.	<ul style="list-style-type: none"> - Positive (negative) emotion leads to higher (lower) underpricing. - Opposite direction of relationship around long cultural or religious holiday periods. - No conclusive evidence of the role of social mood and underperformance. 	<ul style="list-style-type: none"> - Positive (negative) emotion induces investors' optimism (pessimism), thus reducing (increasing) risk-aversion. When risk-aversion is high (low), investors tend to value IPO stocks away from (closer to) their intrinsic value. - Investors anticipation of long cultural or religious holidays cause them to be inattentive on investments, thus reducing the demand which reduces IPO returns. Positive mood persists following a long holiday; thus investors are willing to take higher risks. - Social mood plays a role in determining IPO underpricing, but not a strong measure for 3-year abnormal return.
Role of media tone in shaping investors' perception on IPO performance.	<ul style="list-style-type: none"> - Higher uncertain and negative tones are associated with higher underpricing. - Negative tone measured by the new ASEAN IPO news dictionary has a significant influence on underpricing, but not when measured using the Loughran and McDonald (2011) dictionary. 	<ul style="list-style-type: none"> - Investors in Singapore and Malaysia are sensitive towards uncertainty. It is harder for them to value an IPO when news imply uncertainty on the future value of an IPO. - Media tone carries information rather than sentiment, thus reducing ex-ante uncertainty. - Context is important in shaping how investors perceive the meaning of a word.

Bibliography

- Acker, D. & Duck, N. W. (2008), 'Cross-cultural overconfidence and biased self-attribution', *The Journal of Socio-Economics* **37**(5), 1815–1824.
- Agathee, U. S., Sannassee, R. V. & Brooks, C. (2014), 'The long-run performance of IPOs: the case of the stock exchange of Mauritius', *Applied Financial Economics* **24**(17), 1123–1145.
- Aggarwal, R. & Rivoli, P. (1990), 'Fads in the initial public offering market?', *Financial Management* **19**(4), 45–57.
- Ahmad-Zaluki, N. A. (2012), 'The pre- and post-IPOs gender composition of board of directors in Malaysia', *Gender in Management: An International Journal* **27**(7), 449–462.
- Ahmad-Zaluki, N. A., Campbell, K. & Goodacre, A. (2007), 'The Long Run Share Price Performance of Malaysian Initial Public Offerings (IPOs)', *Journal of Business Finance & Accounting* **34**(1-2), 78–110.
- Ahmad-Zaluki, N. A., Campbell, K. & Goodacre, A. (2011), 'Earnings management in Malaysian IPOs: The East Asian crisis, ownership control, and post-IPO performance', *The International Journal of Accounting* **46**(2), 111–137.
- Ahmad-Zaluki, N. A. & Kect, L. B. (2012), 'The investment performance of MES-DAQ Market initial public offerings (IPOs).', *Asian Academy of Management Journal of Accounting & Finance* **8**(1).
- Akhigbe, A., Borde, S. F. & Whyte, A. M. (2003), 'Does an industry effect exist for initial public offerings?', *Financial Review* **38**(4), 531–551.
- Al-Hajieh, H., Redhead, K. & Rodgers, T. (2011), 'Investor sentiment and calendar anomaly effects: A case study of the impact of Ramadan on Islamic Middle

- Eastern markets', *Research in International Business and Finance* **25**(3), 345–356.
- Al-Ississ, M. (2010), 'The impact of religious experience on financial markets', *International Review of Financial Analysis* **17**(3), 461–474.
- Al-Khazali, O. (2014), 'Revisiting fast profit investor sentiment and stock returns during Ramadan', *International Review of Financial Analysis* **33**, 158–170.
- Al-Shiab, M. S. (2013), IPOs long term performance of MENA countries, in 'International Conference on Accounting and Finance (AT). Proceedings', Global Science and Technology Forum, p. 48.
- Alanazi, A. S. & Al-Zoubi, H. A. (2015), 'Extreme IPO underpricing and the legal environment in wealthy emerging economies', *Journal of Multinational Financial Management* **31**, 83–103.
- Alanazi, A. S., Liu, B. & Forster, J. (2011), 'The financial performance of Saudi Arabian IPOs', *International Journal of Islamic and Middle Eastern Finance and Management* **4**(2), 146–157.
- Ali, S. & Akbar, M. (2009), 'Calendar effects in Pakistani stock market', *International Review of Business Research Papers* **5**(1), 389–404.
- Allen, F. & Faulhaber, G. R. (1989), 'Signalling by underpricing in the IPO market', *Journal of Financial Economics* **23**(2), 303–323.
- Alpert, M. & Raiffa, H. (1982), *A Progress Report on the Training of Probability Assessors*, Cambridge University Press.
- Altarriba, J. (2003), 'Does cariño equal "liking"? a theoretical approach to conceptual nonequivalence between languages', *International Journal of Bilingualism* **7**(3), 305–322.
- Álvarez, S. & González, V. M. (2005), 'Signalling and the Long-run Performance of Spanish Initial Public Offerings (IPOs)', *Journal of Business Finance & Accounting* **32**(1-2), 325–350.
- Antweiler, W. & Frank, M. Z. (2004), 'Is all that talk just noise? The information content of internet stock message boards', *The Journal of Finance* **59**(3), 1259–1294.

- Areni, C. S. & Burger, M. (2008), 'Memories of "bad" days are more biased than memories of "good" days: past Saturdays vary, but past Mondays are always blue', *Journal of Applied Social Psychology* **38**(6), 1395–1415.
- Ariel, R. A. (1990), 'High stock returns before holidays: Existence and evidence on possible causes', *The Journal of Finance* **45**(5), 1611–1626.
- Arnold, T., Fische, R. P. & North, D. (2010), 'The Effects of Ambiguous Information on Initial and Subsequent IPO Returns', *Financial Management* **39**(4), 1497–1519.
- Bajo, E. & Raimondo, C. (2017), 'Media sentiment and IPO underpricing', *Journal of Corporate Finance* **46**, 139–153.
- Baker, M. & Wurgler, J. (2007), 'Investor sentiment in the stock market', *Journal of Economic Perspectives* **21**(2), 129–152.
- Barber, B. M. & Lyon, J. D. (1997), 'Detecting long-run abnormal stock returns: The empirical power and specification of test statistics', *Journal of Financial Economics* **43**(3), 341–372.
- Barberis, N., Shleifer, A. & Vishny, R. (1998), 'A model of investor sentiment', *Journal of Financial Economics* **49**(3), 307–343.
- Baron, D. P. (1982), 'A model of the demand for investment banking advising and distribution services for new issues', *The Journal of Finance* **37**(4), 955–976.
- Baron, D. P. & Holmström, B. (1980), 'The investment banking contract for new issues under asymmetric information: Delegation and the incentive problem', *The Journal of Finance* **35**(5), 1115–1138.
- Beatty, R. P. (1989), 'Auditor reputation and the pricing of initial public offerings', *Accounting Review* **64**(4), 693–709.
- Beatty, R. P. & Ritter, J. R. (1986), 'Investment banking, reputation and the underpricing of initial public offerings', *Journal of Financial Economics* **15**(1-2), 213–232.
- Beatty, R. P. & Welch, I. (1996), 'Issuer expenses and legal liability in initial public offerings', *The Journal of Law and Economics* **39**(2), 545–602.
- Belghitar, Y. & Dixon, R. (2012), 'Do venture capitalists reduce underpricing and underperformance of IPOs?', *Applied Financial Economics* **22**(1), 33–44.

- Benveniste, L. M. & Spindt, P. A. (1989), 'How investment bankers determine the offer price and allocation of new issues', *Journal of Financial Economics* **24**(2), 343–361.
- Bergsma, K. & Jiang, D. (2015), 'Cultural New Year holidays and stock returns around the world', *Financial Management* **45**(1), 3–35.
- Berk, A. S. & Peterle, P. (2015), 'Initial and Long-Run IPO Returns in Central and Eastern Europe', *Emerging Markets Finance and Trade* **51**(Sup6), S42–S60.
- Berument, M. H. & Dogan, N. (2012), 'Stock market return and volatility: day-of-the-week effect', *Journal of Economics and Finance* **36**(2), 282–302.
- Bessler, W. & Thies, S. (2006), 'Initial public offerings, subsequent seasoned equity offerings, and long-run performance: Evidence from IPOs in Germany', *Journal of Entrepreneurial Finance* **11**(3), 1–37.
- Bhana, N. (1994), 'Public holiday share price behaviour on the Johannesburg Stock Exchange', *Investment Analysts Journal* **23**(39), 45–49.
- Białkowski, J., Etebari, A. & Wisniewski, T. P. (2012), 'Fast profits: Investor sentiment and stock returns during Ramadan', *Journal of Banking & Finance* **36**(3), 835–845.
- Birru, J. & Wang, B. (2016), 'Nominal price illusion', *Journal of Financial Economics* **119**(3), 578–598.
- Boulton, T. J., Smart, S. B. & Zutter, C. J. (2010), 'IPO underpricing and international corporate governance', *Journal of International Business Studies* **41**(2), 206–222.
- Bouman, S. & Jacobsen, B. (2002), 'The Halloween indicator, 'sell in May and go away': Another puzzle', *The American Economic Review* **92**(5), 1618–1635.
- Bradley, M. M. & Lang, P. J. (1999), Affective norms for English words (ANEW): Instruction manual and affective ratings, Technical report, Citeseer.
- Brau, J. C., Cicon, J. & McQueen, G. (2016), 'Soft Strategic Information and IPO Underpricing', *Journal of Behavioral Finance* **17**(1), 1–17.
- Brau, J. C., Couch, R. B. & Sutton, N. K. (2012), 'The Desire to Acquire and IPO Long-Run Underperformance', *Journal of Financial and Quantitative Analysis* **47**(03), 493–510.

- Brennan, M. J. & Franks, J. (1997), 'Underpricing, ownership and control in initial public offerings of equity securities in the UK', *Journal of Financial Economics* **45**(3), 391–413.
- Brown, S. J. & Warner, J. B. (1980), 'Measuring security price performance', *Journal of Financial Economics* **8**(3), 205–258.
- Brown, S. V. & Tucker, J. W. (2011), 'Large-sample evidence on firms' year-over-year MD&A modifications', *Journal of Accounting Research* **49**(2), 309–346.
- Buehlmaier, M. M. (2015), 'The role of the media in takeovers: Theory and evidence', *Available at SSRN 1673164* .
- Carretta, A., Farina, V., Graziano, E. A. & Reale, M. (2013), Does investor attention influence stock market activity? The case of spin-off deals, *in* 'Asset Pricing, Real Estate and Public Finance over the Crisis', Springer, pp. 7–24.
- Carretta, A., Farina, V., Martelli, D., Fiordelisi, F. & Schwizer, P. (2011), 'The impact of corporate governance press news on stock market returns', *European financial management* **17**(1), 100–119.
- Cason, H. (1931), 'General curves and conditions of feeling.', *Journal of Applied Psychology* **15**(2), 126–148.
- Chemmanur, T. & Yan, A. (2017), 'Product market advertising, heterogeneous beliefs, and the long-run performance of initial public offerings', *Journal of Corporate Finance* **46**, 1–24.
- Chen, H., De, P., Hu, Y. & Hwang, B. (2012), 'Customers as advisors: the role of social media in financial markets', *Management Science* **54**(3), 477–491.
- Chi, J. & Padgett, C. (2006), 'Operating performance and its relationship to market performance of Chinese initial public offerings', *Chinese Economy* **39**(5), 28–50.
- Chorruk, J. & Worthington, A. C. (2010), 'New evidence on the pricing and performance of initial public offerings in Thailand, 1997–2008', *Emerging Markets Review* **11**(3), 285–299.
- Chouliaras, A. S. (2016), 'The Effect of Information on Financial Markets: A Survey', *Available at SSRN* .

- Chui, A. C., Titman, S. & Wei, K. J. (2010), 'Individualism and momentum around the world', *The Journal of Finance* **65**(1), 361–392.
- Costa, B. A., Crawford, A. & Jakob, K. (2013), 'Does culture influence IPO underpricing?', *Journal of Multinational Financial Management* **23**(1-2), 113–123.
- Czerwonka, M. (2017), 'Anchoring and overconfidence: The influence of culture and cognitive abilities', *International Journal of Management and Economics* **53**(3), 48–66.
- Daniel, K. & Hirshleifer, D. (2015), 'Overconfident investors, predictable returns, and excessive trading', *Journal of Economic Perspectives* **29**(4), 61–88.
- Daniel, K., Hirshleifer, D. & Subrahmanyam, A. (1998), 'Investor psychology and security market under- and overreactions', *the Journal of Finance* **53**(6), 1839–1885.
- Davis, A. K., Piger, J. M. & Sedor, L. M. (2012), 'Beyond the numbers: Measuring the information content of earnings press release language', *Contemporary Accounting Research* **29**(3), 845–868.
- Davis, A. K. & Tama-Sweet, I. (2012), 'Managers' use of language across alternative disclosure outlets: earnings press releases versus MD&A', *Contemporary Accounting Research* **29**(3), 804–837.
- De Bondt, W. F. & Thaler, R. (1985), 'Does the stock market overreact?', *The Journal of Finance* **40**(3), 793–805.
- De Bondt, W. F. & Thaler, R. H. (1995), 'Financial decision-making in markets and firms: A behavioral perspective', *Handbooks in Operations Research and Management Science* **9**, 385–410.
- De Long, J. B., Shleifer, A., Summers, L. H. & Waldmann, R. J. (1990), 'Noise trader risk in financial markets', *Journal of Political Economy* **98**(4), 703–738.
- DellaVigna, S. (2009), 'Psychology and economics: Evidence from the field', *Journal of Economic Literature* **47**(2), 315–372.
- DellaVigna, S. & Pollet, J. M. (2009), 'Investor inattention and Friday earnings announcements', *The Journal of Finance* **64**(2), 709–749.
- Demers, E. & Vega, C. (2011), 'Linguistic tone in earnings announcements: News or noise', *FRB International Finance Discussion Paper* **951**.

- Dolvin, S. D. & Fernhaber, S. A. (2014), 'Seasonal Affective Disorder and IPO underpricing: implications for young firms', *Venture Capital* **16**(1), 51–68.
- Dolvin, S. D. & Pyles, M. K. (2007), 'Seasonal affective disorder and the pricing of IPOs', *Review of Accounting and Finance* **6**(2), 214–228.
- Doran, J. S., Peterson, D. R. & Price, S. M. (2012), 'Earnings conference call content and stock price: the case of REITs', *The Journal of Real Estate Finance and Economics* **45**(2), 402–434.
- Dougal, C., Engelberg, J., Garcia, D. & Parsons, C. A. (2012), 'Journalists and the stock market', *The Review of Financial Studies* **25**(3), 639–679.
- Durnev, A. & Mangen, C. (2011), 'The real effects of disclosure tone: Evidence from restatements', *Available at SSRN 1650003* .
- Dzhabarov, C. & Ziemba, W. T. (2010), 'Do seasonal anomalies still work?', *Journal of Portfolio Management* **36**(3), 93.
- Eckbo, B. & Norli, Ø. (2005), 'Liquidity risk, leverage and long-run IPO returns', *Journal of Corporate Finance* **11**(1-2), 1–35.
- Edmans, A., Garcia, D. & Norli, Ø. (2007), 'Sports sentiment and stock returns', *The Journal of Finance* **62**(4), 1967–1998.
- Ekkayokkaya, M. & Pengniti, T. (2012), 'Governance reform and IPO underpricing', *Journal of Corporate Finance* **18**(2), 238–253.
- Engelberg, J. (2008), Costly information processing: Evidence from earnings announcements, *in* 'AFA 2009 San Francisco Meetings Paper'.
- Engelberg, J. E., Reed, A. V. & Ringgenberg, M. C. (2012), 'How are shorts informed?: Short sellers, news, and information processing', *Journal of Financial Economics* **105**(2), 260–278.
- Espenlaub, S., Gregory, A. & Tonks, I. (2000), 'Re-assessing the long-term underperformance of UK Initial Public Offerings', *European Financial Management* **6**(3), 319–342.
- Fabozzi, F. J., Ma, C. K. & Briley, J. E. (1994), 'Holiday trading in futures markets', *The Journal of Finance* **49**(1), 307–324.

- Fama, E. F. (1998), 'Market efficiency, long-term returns, and behavioral finance', *Journal of Financial Economics* **49**(3), 283–306.
- Fama, E. F. & French, K. R. (1993), 'Common risk factors in the returns on stocks and bonds', *Journal of Financial Economics* **33**(1), 3–56.
- Fama, E. F. & French, K. R. (1996), 'Multifactor explanations of asset pricing anomalies', *The Journal of Finance* **51**(1), 55–84.
- Fan, J. & Xiao, J. J. (2005), 'A cross-cultural study in risk tolerance: Comparing Chinese and Americans', *Available at SSRN 939438* .
- Feldman, R., Govindaraj, S., Livnat, J. & Segal, B. (2010), 'Management's tone change, post earnings announcement drift and accruals', *Review of Accounting Studies* **15**(4), 915–953.
- Ferris, S. P., Hao, Q. & Liao, M.-Y. (2012), 'The effect of issuer conservatism on IPO pricing and performance', *Review of Finance* **17**(3), 993–1027.
- Feuerriegel, S., Schmitz, J. T. & Neumann, D. (2014), 'What Matters Most? How Tone in Initial Public Offering Filings and Pre-IPO News Influences Stock Market Returns', *Available at SSRN 2499573* .
- Fishe, R. P., North, D. & Smith, A. (2014), 'Words that Matter for Asset Pricing: The Case of IPOs', *Available at SSRN 2413934* .
- Forgas, J. P. (1995), 'Mood and judgment: the affect infusion model (AIM).', *Psychological Bulletin* **117**(1), 39.
- French, K. R. (1980), 'Stock returns and the weekend effect', *Journal of Financial Economics* **8**(1), 55–69.
- Fuksa, M. (2015), 'Sentiment and the Performance of Initial Public Offerings', *Available at SSRN 2243379* .
- Gao, N. & Jain, B. A. (2011), 'Founder CEO management and the long-run investment performance of IPO firms', *Journal of Banking and Finance* **35**(7), 1669–1682.
- Gao, Y. (2010), 'What comprises IPO initial returns: Evidence from the Chinese market', *Pacific-Basin Finance Journal* **18**(1), 77–89.

- Gompers, P. A. & Lerner, J. (2003), 'The really long-run performance of initial public offerings: The pre-NASDAQ evidence', *The Journal of Finance* **58**(4), 1355–1392.
- Green, D. W. (1998), 'Mental control of the bilingual lexico-semantic system', *Bilingualism: Language and Cognition* **1**(2), 67–81.
- Grether, D. M. (1980), 'Bayes rule as a descriptive model: The representativeness heuristic', *The Quarterly Journal of Economics* **95**(3), 537–557.
- Griffin, D. & Tversky, A. (1992), 'The weighing of evidence and the determinants of confidence', *Cognitive Psychology* **24**(3), 411–435.
- Grinblatt, M. & Hwang, C. Y. (1989), 'Signalling and the pricing of new issues', *The Journal of Finance* **44**(2), 393–420.
- Guldiken, O., Tupper, C., Nair, A. & Yu, H. (2017), 'The impact of media coverage on IPO stock performance', *Journal of Business Research* **72**, 24–32.
- Guo, H., Brooks, R. & Shami, R. (2010), 'Detecting hot and cold cycles using a Markov regime switching model—Evidence from the Chinese A-share IPO market', *International Review of Economics & Finance* **19**(2), 196–210.
- Haniffa, R. & Hudaib, M. (2006), 'Corporate Governance Structure and Performance of Malaysian Listed Companies', *Journal of Business Finance & Accounting* **33**(7-8), 1034–1062.
- Haniffa, R. M. & Cooke, T. E. (2002), 'Culture, corporate governance and disclosure in Malaysian corporations', *Abacus* **38**(3), 317–349.
- Hanley, K. W. & Hoberg, G. (2010a), 'The Information Content of IPO Prospectuses', *Review of Financial Studies* **23**(7), 2821–2864.
- Hanley, K. W. & Hoberg, G. (2010b), 'The information content of ipo prospectuses', *Review of Financial Studies* **23**(7), 2821–2864.
- Henry, E. (2008), 'Are investors influenced by how earnings press releases are written?', *Journal of Business Communication* **45**(4), 363–407.
- Henry, E. & Leone, A. J. (2015), 'Measuring qualitative information in capital markets research: Comparison of alternative methodologies to measure disclosure tone', *The Accounting Review* **91**(1), 153–178.

- Hirshleifer, D., Jian, M. & Zhang, H. (2016), 'Superstition and financial decision making', *Management Science* **64**(1), 235–252.
- Hirshleifer, D. & Shumway, T. (2003), 'Good day sunshine: Stock returns and the weather', *The Journal of Finance* **58**(3), 1009–1032.
- Ho, H. (2016), 'A Comparative Study of Initial Public Offerings in Hong Kong, Singapore and Malaysia', *Nang Yan Business Journal* **4**(1), 1–12.
- Hofstede, G. (1980), 'Understanding cultural differences', *Sage, Beverly Hills, GA. Business, Management and Education* **20**(2), 10.
- Hofstede, G. (2001), *Culture's consequences: Comparing values, behaviors, institutions and organizations across nations*, Sage publications.
- Huang, A. H., Zang, A. Y. & Zheng, R. (2014), 'Evidence on the information content of text in analyst reports', *The Accounting Review* **89**(6), 2151–2180.
- Ibbotson, R. G. (1975), 'Price performance of common stock new issues', *Journal of Financial Economics* **2**(3), 235–272.
- Ibbotson, R. G., Sindelar, J. L. & Ritter, J. R. (1994), 'The market's problems with the pricing of initial public offerings', *Journal of Applied Corporate Finance* **7**(1), 66–74.
- Isen, A. M., Nygren, T. E. & Ashby, F. G. (1988), 'Influence of positive affect on the subjective utility of gains and losses: it is just not worth the risk.', *Journal of Personality and Social Psychology* **55**(5), 710.
- Isen, A. M. & Patrick, R. (1983), 'The effect of positive feelings on risk taking: When the chips are down', *Organizational Behavior and Human Performance* **31**(2), 194–202.
- Jegadeesh, N. & Titman, S. (1993), 'Returns to buying winners and selling losers: Implications for stock market efficiency', *The Journal of finance* **48**(1), 65–91.
- Jegadeesh, N. & Wu, D. (2013), 'Word power: A new approach for content analysis', *Journal of Financial Economics* **110**(3), 712–729.
- Jenkins, J. (2014), *Global Englishes: A Resource Book for Students*, Routledge.

- Jenkinson, T., Ljungqvist, A., Ljungqvist, A. P. et al. (2001), *Going public: The theory and evidence on how companies raise equity finance*, Oxford University Press on Demand.
- Jlassi, M., Naoui, K. & Mansour, W. (2014), 'Overconfidence behavior and dynamic market volatility: evidence from international data', *Procedia Economics and Finance* **13**, 128–142.
- Johnson, N. J. (1978), 'Modified t-tests and confidence intervals for asymmetrical populations', *Journal of the American Statistical Association* **73**(363), 536–544.
- Jones, T. L. & Ligon, J. A. (2009), 'The day of the week effect in IPO initial returns', *The Quarterly Review of Economics and Finance* **49**(1), 110–127.
- Judge, W. Q., Witt, M. A., Zattoni, A., Talaulicar, T., Chen, J. J., Lewellyn, K., Hu, H. W., Shukla, D., Bell Robert, R. G., Gabrielsson, J., Lopez, F., Yamak, S., Fassin, Y., McCarthy, D., Rivas, J. L., Fainshmidt, S. & Van Ees, H. (2015), 'Corporate governance and IPO underpricing in a cross-national sample: A multilevel knowledge-based view', *Strategic Management Journal* **36**(8), 1174–1185.
- Kahneman, D., Slovic, S. P., Slovic, P. & Tversky, A. (1982), *Judgment under uncertainty: Heuristics and biases*, Cambridge University Press.
- Kahneman, D. & Tversky, A. (1973), 'On the psychology of prediction.', *Psychological review* **80**(4), 237.
- Kamstra, M. J., Kramer, L. A. & Levi, M. D. (2000), 'Losing sleep at the market: The daylight saving anomaly', *The American Economic Review* **90**(4), 1005–1011.
- Kamstra, M. J., Kramer, L. A. & Levi, M. D. (2003), 'Winter blues: A sad stock market cycle', *The American Economic Review* **93**(1), 324–343.
- Kaplanski, G. & Levy, H. (2010), 'Exploitable predictable irrationality: the FIFA World Cup effect on the US stock market', *Journal of Financial and Quantitative Analysis* **45**(2), 535–553.
- Kaplanski, G. & Levy, H. (2012), 'Real estate prices: An international study of seasonality's sentiment effect', *Journal of Empirical Finance* **19**(1), 123–146.

- Kaustia, M. & Rantapuska, E. (2016), 'Does mood affect trading behavior?', *Journal of Financial Markets* **29**, 1–26.
- Kearney, C. & Liu, S. (2014), 'Textual sentiment in finance: A survey of methods and models', *International Review of Financial Analysis* **33**, 171–185.
- Keef, S. P., Keefe, M. O. & Khaled, M. S. (2015), 'Seasonal affective disorder and IPO underpricing: Updated evidence.', *Journal of Neuroscience, Psychology, and Economics* **8**(2), 78.
- Keef, S. P. & Khaled, M. S. (2011), 'Are investors moonstruck? Further international evidence on Lunar phases and stock returns', *Journal of Empirical Finance* **18**(1), 56–63.
- Keloharju, M., Linnainmaa, J. T. & Nyberg, P. (2016), 'Return seasonalities', *The Journal of Finance* **71**(4), 1557–1590.
- Khurshed, A., Mudambi, R. & Goergen, M. (1999), 'On the long-run performance of IPOs', *ISMA Centre, University of Reading* .
- Kirkpatrick, A. (2011), 'English as an Asian lingua franca and the multilingual model of ELT', *Language Teaching* **44**(2), 212–224.
- Kirkulak, B. (2008), 'The initial and long-run returns of Japanese venture capital-backed and non-venture capital-backed IPOs', *International Journal of Managerial Finance* **4**(2), 112–135.
- Kirkulak, B. & Davis, C. (2005), 'Underwriter reputation and underpricing: Evidence from the Japanese IPO market', *Pacific-Basin Finance Journal* **13**(4), 451–470.
- Kliger, D., Gurevich, G. & Haim, A. (2012), 'When chronobiology met economics: Seasonal affective disorder and the demand for initial public offerings.', *Journal of Neuroscience, Psychology, and Economics* **5**(3), 131.
- Kling, G. & Gao, L. (2005), 'Calendar effects in chinese stock market', *Annals of Economics and Finance* **6**(1), 75–88.
- Komenkul, K. (2015), Under-Pricing and Long-Run Performance of Initial Public Offering in Developing Markets: the Case of Thailand, PhD thesis, Heriot-Watt University.

- Komenkul, K. & Kiranand, S. (2017), ‘Aftermarket performance of Healthcare and Biopharmaceutical IPOs: Evidence from ASEAN countries’, *INQUIRY: The Journal of Health Care Organization, Provision, and Financing* **54**, 1–11.
- Komenkul, K., Sherif, M. & Xu, B. (2017), ‘IPOs’ signalling effects for speculative stock detection: evidence from the Stock Exchange of Thailand’, *Applied Economics* **49**(31), 3067–3085.
- Komenkul, K. & Siriwattanakul, D. (2016), ‘How the unremunerated reserve requirement by the Bank of Thailand affects IPO underpricing and the long-run performance of IPOs’, *Journal of Financial Regulation and Compliance* **24**(3), 317–342.
- Kothari, S., Li, X. & Short, J. E. (2009), ‘The effect of disclosures by management, analysts, and business press on cost of capital, return volatility, and analyst forecasts: A study using content analysis’, *The Accounting Review* **84**(5), 1639–1670.
- Kothari, S. P. & Warner, J. (2006), ‘Econometrics of event studies’, *Handbook of Empirical Corporate Finance* **1**, 3–36.
- Kothari, S. & Warner, J. B. (1997), ‘Measuring long-horizon security price performance’, *Journal of Financial Economics* **43**(3), 301–339.
- Kothari, S. & Warner, J. B. (2007), Econometrics of event studies, in ‘Handbook of Empirical Corporate Finance’, Elsevier, pp. 3–36.
- Lakonishok, J. & Levi, M. (1982), ‘Weekend effects on stock returns: a note’, *The Journal of Finance* **37**(3), 883–889.
- Lakonishok, J. & Maberly, E. (1990), ‘The weekend effect: Trading patterns of individual and institutional investors’, *The Journal of Finance* **45**(1), 231–243.
- Langer, E. J. & Roth, J. (1975), ‘Heads I win, tails it’s chance: The illusion of control as a function of the sequence of outcomes in a purely chance task.’, *Journal of Personality and Social Psychology* **32**(6), 951.
- Li, F. (2006), ‘Do stock market investors understand the risk sentiment of corporate annual reports?’, Available at SSRN 898181 .

- Li, F. (2010), 'The information content of forward-looking statements in corporate filings—a naïve Bayesian machine learning approach', *Journal of Accounting Research* **48**(5), 1049–1102.
- Liu, J. & Marsh, I. W. (2019), 'The Impact of Public Mood on the Cross-Section of Stock Returns', *Available at SSRN 3170954* .
- Liu, L. X., Sherman, A. E. & Zhang, Y. (2014), An Attention Model of IPO Underpricing, With Evidence on Media Coverage, Technical report, Technical Report. DePaul University.
- Ljungqvist, A. P., Jenkinson, T. & Wilhelm, W. J. (2000), *Has the introduction of bookbuilding increased the efficiency of international IPOs?*, Vol. 2484, Centre for Economic Policy Research.
- Locke, S. M. & Gupta, K. (2009), 'The return to initial public offerings: a Sino-Indian comparison', *Venture Capital* **11**(3), 255–277.
- Loewenstein, G. F., Weber, E. U., Hsee, C. K. & Welch, N. (2001), 'Risk as feelings.', *Psychological Bulletin* **127**(2), 267—286.
- Logue, D. E. (1973), 'On the pricing of unseasoned equity issues: 1965-1969', *Journal of Financial and Quantitative Analysis* **8**(01), 91–103.
- Loughran, T. & McDonald, B. (2011), 'When is a liability not a liability? Textual analysis, dictionaries, and 10-Ks', *The Journal of Finance* **66**(1), 35–65.
- Loughran, T. & McDonald, B. (2013), 'IPO first-day returns, offer price revisions, volatility, and form S-1 language', *Journal of Financial Economics* **109**(2), 307–326.
- Loughran, T. & McDonald, B. (2015), 'The use of word lists in textual analysis', *Journal of Behavioral Finance* **16**(1), 1–11.
- Loughran, T. & McDonald, B. (2016), 'Textual analysis in accounting and finance: A survey', *Journal of Accounting Research* **54**(4), 1187–1230.
- Loughran, T. & Ritter, J. R. (1995), 'The new issues puzzle', *The Journal of Finance* **50**(1), 23–51.
- Loughran, T., Ritter, J. R. & Rydqvist, K. (1994), 'Initial public offerings: International insights', *Pacific-Basin Finance Journal* **2**(2), 165–199.

- Lowry, M. & Schwert, G. W. (2002), 'IPO market cycles: Bubbles or sequential learning?', *The Journal of Finance* **57**(3), 1171–1200.
- Lyn, E. O. & Zychowicz, E. J. (2003), 'The performance of new equity offerings in Hungary and Poland', *Global Finance Journal* **14**(2), 181–195.
- Lyon, J. D., Barber, B. M. & Tsai, C.-L. (1999), 'Improved methods for tests of long-run abnormal stock returns', *The Journal of Finance* **54**(1), 165–201.
- Malkiel, B. G. & Fama, E. F. (1970), 'Efficient capital markets: A review of theory and empirical work', *The Journal of Finance* **25**(2), 383–417.
- Maximilian, J. & Gupta, J. (2018), 'Market performance of sponsor-backed initial public offerings: An empirical analysis of the German market', *Journal of Economics and Public Finance* **4**(1), 31.
- McGuinness, P. B. (2016), 'Post-IPO performance and its association with subscription cascades and issuers' strategic-political importance', *Review of Quantitative Finance and Accounting* **46**(2), 291–333.
- Miller, E. M. (1977), 'Risk, uncertainty, and divergence of opinion', *The Journal of Finance* **32**(4), 1151–1168.
- Mitchell, M. L. & Stafford, E. (2000), 'Managerial decisions and long-term stock price performance', *The Journal of Business* **73**(3), 287–329.
- Moshirian, F., Ng, D. & Wu, E. (2010), 'Model specification and IPO performance: New insights from Asia', *Research in International Business and Finance* **24**(1), 62–74.
- Mumtaz, M. Z., Smith, Z. A. & Ahmed, A. M. (2016), 'The aftermarket performance of initial public offerings in Pakistan', *The Lahore Journal of Economics* **21**(1), 18–33.
- Nisbett, R. E. & Masuda, T. (2003), 'Culture and point of view', *Proceedings of the National Academy of Sciences* **100**(19), 11163–11170.
- Nofsinger, J. R. (2005), 'Social mood and financial economics', *The Journal of Behavioral Finance* **6**(3), 144–160.
- Odean, T. (1998), 'Are investors reluctant to realize their losses?', *The Journal of Finance* **53**(5), 1775–1798.

- Pantzalis, C. & Ucar, E. (2014), 'Religious holidays, investor distraction, and earnings announcement effects', *Journal of Banking & Finance* **47**, 102–117.
- Perfect, S. B. & Peterson, D. R. (1997), 'Day-of-the-week effects in the long-run performance of initial public offerings', *Financial Review* **32**(1), 49–70.
- Picou, A. (2006), 'Stock returns behavior during holiday periods: evidence from six countries', *Managerial Finance* **32**(5), 433–445.
- Prechter, R. R. (1999), *The wave principle of human social behavior and the new science of socionomics*, Vol. 1, New Classics Library.
- Price, S. M., Doran, J. S., Peterson, D. R. & Bliss, B. A. (2012), 'Earnings conference calls and stock returns: The incremental informativeness of textual tone', *Journal of Banking & Finance* **36**(4), 992–1011.
- Reimann, M. & Bechara, A. (2010), 'The somatic marker framework as a neurological theory of decision-making: Review, conceptual comparisons, and future neuroeconomics research', *Journal of Economic Psychology* **31**(5), 767–776.
- Ritter, J. R. (1984), 'The Hot Issue Market of 1980', *Journal of Business* **57**(2), 215–240.
- Ritter, J. R. (1991), 'The long-run performance of initial public offerings', *The Journal of Finance* **46**(1), 3–27.
- Ritter, J. R. (2003), 'Differences between European and American IPO markets', *European Financial Management* **9**(4), 421–434.
- Ritter, J. R. (2011), 'Initial public offerings: Tables updated through 2010', *Unpublished working paper* .
- Ritter, J. R. (2013), Initial Public Offerings: Updated Statistics, Technical report, Working paper, University of Florida.
- Ritter, J. R. & Welch, I. (2002), 'A review of IPO activity, pricing, and allocations', *The Journal of Finance* **57**(4), 1795–1828.
- Rock, K. (1986), 'Why new issues are underpriced', *Journal of Financial Economics* **15**(1), 187–212.

- Saade, S. (2015), 'Investor sentiment and the underperformance of technology firms initial public offerings', *Research in International Business and Finance* **34**, 205–232.
- Sahoo, S. & Rajib, P. (2011), 'Risk proxies and ipo underpricing: an empirical investigation.', *IUP Journal of Applied Finance* **17**(4).
- Schuster, J. A. (2003), 'Ipos: Insights from seven european countries'.
- Scollon, R. (2012), *Analyzing public discourse: Discourse analysis in the making of public policy*, Routledge.
- Semin, G. R., Görts, C. A., Nandram, S. & Semin-Goossens, A. (2002), 'Cultural perspectives on the linguistic representation of emotion and emotion events', *Cognition & Emotion* **16**(1), 11–28.
- Sherif, M. & Leitch, D. (2017), 'Twitter mood, CEO succession announcements and stock returns', *Journal of Computational Science* **21**, 1–10.
- Shiller, R. J. (1995), 'Conversation, information, and herd behavior', *The American Economic Review* **85**(2), 181–185.
- Siganos, A., Vagenas-Nanos, E. & Verwijmeren, P. (2014), 'Facebook's daily sentiment and international stock markets', *Journal of Economic Behavior & Organization* **107**(Part B), 730–743.
- Slovic, P., Finucane, M., Peters, E. & MacGregor, D. G. (2002), 'Rational actors or rational fools: Implications of the affect heuristic for behavioral economics', *The Journal of Socio-Economics* **31**(4), 329–342.
- Statman, M. (2008), 'What is behavioral finance', *Handbook of finance* **2**(9), 79–84.
- Stone, A. A., Schneider, S. & Harter, J. K. (2012), 'Day-of-week mood patterns in the United States: On the existence of 'Blue Monday', 'Thank God it's Friday' and weekend effects', *The Journal of Positive Psychology* **7**(4), 306–314.
- Stoughton, N. M. & Zechner, J. (1998), 'IPO-mechanisms, monitoring and ownership structure', *Journal of Financial Economics* **49**(1), 45–77.
- Stulz, R. M. & Williamson, R. (2003), 'Culture, openness, and finance', *Journal of Financial Economics* **70**(3), 313–349.

- Su, C. & Bangassa, K. (2011), 'The impact of underwriter reputation on initial returns and long-run performance of Chinese IPOs', *Journal of International Financial Markets, Institutions and Money* **21**(5), 760–791.
- Tekçe, B. & Yılmaz, N. (2015), 'Are individual stock investors overconfident? evidence from an emerging market', *Journal of Behavioral and Experimental Finance* **5**, 35–45.
- Tetlock, P. C. (2007), 'Giving content to investor sentiment: The role of media in the stock market', *The Journal of Finance* **62**(3), 1139–1168.
- Tetlock, P. C., Saar-Tsechansky, M. & Macskassy, S. (2008), 'More than words: Quantifying language to measure firms' fundamentals', *The Journal of Finance* **63**(3), 1437–1467.
- Thaler, R. H. (2005), *Advances in behavioral finance*, Vol. 2, Princeton University Press.
- Thaler, R. H. & Ganser, L. (2015), *Misbehaving: The making of behavioral economics*, WW Norton New York, NY.
- Tinic, S. M. (1988), 'Anatomy of initial public offerings of common stock', *The Journal of Finance* **43**(4), 789–822.
- Tversky, A. & Kahneman, D. (1980), 'Causal schemas in judgments under uncertainty', *Progress in Social Psychology* **1**, 49–72.
- Twedt, B. & Rees, L. (2012), 'Reading between the lines: An empirical examination of qualitative attributes of financial analysts' reports', *Journal of Accounting and Public Policy* **31**(1), 1–21.
- Ucar, E. (2015), 'Local Culture and Dividends', *Financial Management* **45**(1), 105–140.
- Urquhart, A. & McGroarty, F. (2014), 'Calendar effects, market conditions and the Adaptive Market Hypothesis: Evidence from long-run US data', *International Review of Financial Analysis* **35**, 154–166.
- Utamaningsih, A. (2017), 'The Influence of Underpricing to IPO Aftermarket Performance: Comparison between Fixed Price and Book Building System on the Indonesia Stock Exchange', *International Journal of Economics and Financial Issues* **7**(4), 157–161.

- Utamaningsih, A., Tandelilin, E., Husnan, S. & Sartono, R. A. (2013), 'Asymmetric information in the IPO underwriting process on the Indonesia Stock Exchange: Pricing, initial allocation, underpricing and price stabilization', *Journal of Indonesian Economy and Business* **28**(3), 311–321.
- Vakrman, T. & Kristoufek, L. (2015), 'Underpricing, underperformance and overreaction in initial public offerings: Evidence from investor attention using online searches', *SpringerPlus* **4**(1), 84.
- Welch, I. (1989), 'Seasoned offerings, imitation costs, and the underpricing of initial public offerings', *The Journal of Finance* **44**(2), 421–449.
- Welch, I. (1996), 'Equity offerings following the IPO theory and evidence', *Journal of Corporate Finance* **2**(3), 227–259.
- Wright, G. N. & Phillips, L. D. (1980), 'Cultural variation in probabilistic thinking: Alternative ways of dealing with uncertainty', *International Journal of Psychology* **15**(1-4), 239–257.
- Yaakub, N., Sherif, M. & Haniffa, R. (2018), 'The Post-issue Market Performance of Initial Public Offerings: Empirical Evidence from the Malaysian Stock Markets', *Journal of Emerging Market Finance* **17**(3S), 376S–414S.
- Yang, A. S. (2016), 'Calendar trading of Taiwan stock market: A study of holidays on trading detachment and interruptions', *Emerging Markets Review* **28**, 140–154.
- Yates, J. F., Lee, J.-W., Shinotsuka, H., Patalano, A. L. & Sieck, W. R. (1998), 'Cross-cultural variations in probability judgment accuracy: Beyond general knowledge overconfidence?', *Organizational Behavior and Human Decision Processes* **74**(2), 89–117.
- You, J., Coakley, J., Firth, M., Fuertes, A.-M. & Shen, Z. (2018), 'Driving the presence of investor sentiment: The role of media tone in IPOs', *Available at SSRN 321073*.
- Yousop, N. L. B. M., Sipon, Z. & Yoke, C. S. K. (2014), 'Lunar Effect: Analysis on Emerging Countries Stock Returns, Prior and During Financial Crisis', *Journal of Emerging Economies and Islamic Research* **2**(2), 1–15.
- Zarzeski, M. T. (1996), 'Spontaneous harmonization effects of culture and market forces on accounting disclosure practices', *Accounting Horizons* **10**(1), 18–37.

Zhang, J., Davis, A., Ge, W. & Matsumoto, D. (2012), The effect of managerial “style” on the tone of earnings conference calls, *in* ‘CAAA Annual Conference’.