

**Bangor University**

## **DOCTOR OF PHILOSOPHY**

### **Essays on the determinants and effectiveness of SEC reviews of IPO registration statements**

Tran, Vy

*Award date:*  
2021

*Awarding institution:*  
Bangor University

[Link to publication](#)

#### **General rights**

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal ?

#### **Take down policy**

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

**Essays on the determinants and effectiveness of SEC reviews of IPO  
registration statements**

**Vy Ngoc Khanh Tran**



PRIFYSGOL  
**BANGOR**  
UNIVERSITY

Bangor Business School

March 2021

This thesis is submitted to Bangor University in fulfilment of the requirements for the degree  
for Doctor of Philosophy (Accounting and Finance)

Supervisors:

Dr. Danial Hemmings

Professor Aziz Jaafar

## Declaration

I hereby declare that this thesis is the results of my own investigations, except where otherwise stated. All other sources are acknowledged by bibliographic references. This work has not previously been accepted in substance for any degree and is not being concurrently submitted in candidature for any degree unless, as agreed by the University, for approved dual awards.

---

Yr wyf drwy hyn yn datgan mai canlyniad fy ymchwil fy hun yw'r thesis hwn, ac eithrio lle nodir yn wahanol. Caiff ffynonellau eraill eu cydnabod gan droednodiadau yn rhoi cyfeiriadau eglur. Nid yw sylwedd y gwaith hwn wedi cael ei dderbyn o'r blaen ar gyfer unrhyw radd, ac nid yw'n cael ei gyflwyno ar yr un pryd mewn ymgeisiaeth am unrhyw radd oni bai ei fod, fel y cytunwyd gan y Brifysgol, am gymwysterau deuol cymeradwy.

## Abstract

This thesis examines the determinants and effectiveness of SEC reviews of IPO registration statements (i.e. S-1 filings) for firms going public on U.S. capital markets between 2005 and 2017. This investigation is important because market participants rely on the information conveyed by S-1 filings and SEC comment letters when making formative investment decisions. High information asymmetry around an IPO motivates going-public firm to opportunistically disclose misleading information, therefore assessing the effectiveness of SEC reviews in monitoring the quality of IPO disclosures is of utmost importance. Specifically, this thesis comprises three empirical studies examining: (1) how the extensiveness of SEC reviews varies according to IPO firms' characteristics; (2) the extent that SEC reviews have been impacted by the de-burdening provisions of the 2012 JOBS Act, the most significant development of the last decade in terms of the regulation of IPO firms; and (3) how effective SEC reviews are at targeting IPO firms with poor earnings quality.

In terms of the relationship between the IPO firms' characteristics and SEC S-1 review, the first empirical chapter provides evidence that bigger, older firms, firms with more segments, lower growth rates, engaging in M&A, using less external financing, reporting profits, having greater probabilities of bankruptcy and not audited by high-quality auditors are likely to experience more extensive SEC reviews. This study also identifies that the remediation costs covered by IPO firms are higher if they receive comments on core accounting, non-core accounting, business and disclosure issues, as compared with other issues (e.g., offering-related issues or corporate governance issues), and they are highest for firms receiving comments on core accounting issues. In addition, the increase in SEC review extensiveness for bigger firms, firms using more external financing and having greater financial distress are identified to be greater during the global financial crisis.

In terms of SEC reviews under the Jumpstart Our Business Startups (JOBS) Act, the second empirical chapter documents substantial de-burdening of SEC reviews for emerging growth companies (EGCs) going public under the Act. Moreover, this study also identifies that the reduction in SEC review extensiveness after the JOBS Act enactment is less pronounced in more concentrated markets, where proprietary costs of disclosure, and thus potential information problems, are greater. It is also observed that the SEC focus proportionately more

on non-core accounting and offering issues, but less on general business and disclosure issues, under the JOBS Act.

Concerning the effectiveness of SEC reviews in addressing poor earnings quality, the third empirical chapter provides evidence that IPO firms with greater accruals-based earnings management (AEM) and discretionary-expense-based real earnings management (REM) are likely to experience more extensive SEC reviews, suggesting they are effective at addressing poor earnings quality. SEC reviews continue to be effective at uncovering the aforementioned forms of earnings management under the JOBS Act since the SEC tend to focus more on accounting -related contents in EGC IPOs' registration statements. However, this study finds no evidence supporting the effectiveness of SEC reviews in detecting sales-based REM, either before or after the enactment of the JOBS Act.

## **Acknowledgement**

Undertaking this PhD has been a truly life-changing experience for me and it would not have been possible to do without the support and guidance that I received from many people.

I would like to first say a very big thank you to my supervisors, Dr Danial Hemmings and Professor Aziz Jaafar for your continuous support, patience, motivation, and immense knowledge. Without your guidance and constant feedback, this PhD would not have been achievable. You have given me enormous freedom to pursue my research intellectually. There have been numerous occasions where I remember feeling disheartened and stumped about the direction of my research, but inevitably, a meeting with you would reinvigorate my enthusiasm and raise my spirits immeasurably. I wholeheartedly thank you for inspiring and encouraging me throughout not only my PhD journey but also my personal life.

In addition, I would like to thank Bangor University for giving me support and valuable opportunities to publish my research at a number of journal and conferences. This thesis has benefited from many helpful comments from reviewers of the Journal of Accounting and Public Policy and participants at the Bangor Business School Brown Bag Seminars (Bangor, 2021), the 1st Welsh Postgraduate Researcher Conference (Cardiff, 2019), the British Accounting and Finance Association (BAFA) Annual Conference (Birmingham, 2018), the 40th Intercollegiate Accounting and Finance Colloquium at Gregynog (Newtown, 2017).

Last but not the least, I would like to say a heartfelt thank you to my parents, Tran Van Son and Phan Ngoc Huong, for always believing in me, supporting me in every decision, guiding me through my life and study and encouraging me to follow my dreams. And my brother, Tran Phan Son Giang, for supporting me financially and emotionally, who sacrificed his dream to guarantee my future. And my sister-in-law, Tran Thi Thu Nga, for being my beautiful and kind-hearted sister. And my nephew, Tran Giang Dang Khoa, for being the best friend that I have ever had in my life. And finally, to Van Hung Quyen, who has been by my side throughout this PhD, sharing every up and down moment of it, supporting me in both academic and personal life, loving me unconditionally, and without whom, I would not have had the courage to pursue this challenging journey. I honestly believe that I have the best family in the world and I am forever grateful. I love you with all of my heart!

# Table of Contents

List of Tables .....	xi
List of Figures.....	xi
List of Appendices .....	xii
Abbreviations.....	xiii
1. Introduction.....	p.1
1.1. Background.....	p.1
1.2. Objectives .....	p.4
1.3. Motivations.....	p.5
1.4. Summary of main findings .....	p.7
1.5. Contributions .....	p.11
1.6. Thesis structure .....	p.16
2. Literature review .....	p.19
2.1. Introduction .....	p.19
2.2. Institutional background.....	p.20
2.2.1. The U.S IPO market.....	p.20
2.2.2. IPO registration statement.....	p.23
2.2.3. The regulatory architecture of the U.S. IPO market .....	p.26
2.2.4. SEC review process .....	p.31
2.2.5. SEC comment letter .....	p.37
2.3. Theoretical framework .....	p.43
2.3.1. How the SEC carry out their mission of investor protections? .....	p.43
2.3.1.1. Public interest theory .....	p.43
2.3.1.2. Criticism of public interest theory .....	p.46
2.3.2. “De-burdening” the IPO process: Can the JOBS Act redirect the SEC review? p.47	

2.3.2.1.	Iron Triangles theory.....	p.47
2.3.2.2.	The Chicago theory of regulation – Capture theory .....	p.49
2.3.2.3.	Congressional dominance theory.....	p.51
2.3.3.	Why does earnings management occur? .....	p.53
2.3.3.1.	Agency theory .....	p.53
2.3.3.2.	Signalling theory.....	p.54
2.3.3.3.	Positive accounting theory .....	p.55
2.3.3.4.	Threshold management theory .....	p.56
2.3.3.5.	Entrenchment theory.....	p.57
2.3.3.6.	Revelation theory.....	p.58
2.4.	Prior empirical findings.....	p.60
2.4.1.	Determinants of SEC review .....	p.60
2.4.2.	Benefits and costs of the JOBS Act .....	p.62
2.4.3.	Earnings management incentives in the IPO context .....	p.64
2.5.	Conclusion.....	p.65
3.	The effects of IPO firms’ characteristics on SEC reviews of IPO registration statements	p.69
3.1.	Introduction .....	p.69
3.2.	Literature review.....	p.74
3.3.	Research design .....	p.81
3.3.1.	Sample selection .....	p.81
3.3.2.	Coding of SEC comment letters .....	p.82
3.3.3.	Key variables .....	p.90
3.3.3.1.	SEC review process .....	p.90
3.3.3.2.	IPO firms’ characteristics.....	p.91
3.3.4.	Empirical tests .....	p.93
3.4.	Sample descriptive statistics.....	p.95



3.4.1.	Sample distribution .....	p.95
3.4.2.	Descriptive statistics of SEC review attributes.....	p.99
3.4.3.	Descriptive statistics for IPO firm characteristics .....	p.108
3.4.4.	Correlation matrix of SEC review attributes and IPO firms' characteristics. p.110	
3.5.	Multivariate analysis .....	p.113
3.6.	Additional tests .....	p.117
3.6.1.	Issue types and the costs of remediation .....	p.117
3.6.2.	Impact of the financial crisis .....	p.120
3.7.	Conclusion .....	p.123
4.	De-burdening the IPO approval process: SEC reviews under the JOBS Act.....	p.127
4.1.	Introduction .....	p.127
4.2.	Literature review .....	p.129
4.2.1.	“De-burdening” provisions under the JOBS Act.....	p.129
4.2.2.	The JOBS Act and informational problems .....	p.130
4.3.	Research design .....	p.132
4.3.1.	Sample selection .....	p.132
4.3.2.	Key variables .....	p.133
4.3.3.	Control variables.....	p.134
4.3.4.	Empirical tests .....	p.135
4.4.	Summary statistics .....	p.136
4.5.	Empirical results .....	p.140
4.5.1.	Impact of the JOBS Act on SEC reviews.....	p.140
4.5.2.	The moderating role of industry concentration .....	p.144
4.6.	Additional test.....	p.146
4.7.	Conclusion .....	p.148
5.	Do SEC reviews effectively address earnings quality? Evidence from IPO registration statements .....	p.151

5.1.	Introduction .....	p.151
5.2.	Literature review.....	p.156
5.2.1.	Earnings management around IPOs.....	p.156
5.2.2.	SEC reviews and the IPO information environment .....	p.157
5.2.3.	SEC reviews under the JOBS Act.....	p.161
5.3.	Research design .....	p.163
5.3.1.	Sample selection .....	p.163
5.3.2.	Variables.....	p.163
5.3.2.1.	SEC review attributes .....	p.163
5.3.2.2.	Earnings management measures.....	p.164
5.3.2.3.	Control variables.....	p.168
5.3.3.	Empirical tests .....	p.170
5.4.	Descriptive statistics .....	p.172
5.5.	Empirical results .....	p.181
5.6.	Conclusion.....	p.190
6.	Summary and Conclusion.....	p.193
6.1.	Introduction .....	p.193
6.2.	Summary of the main findings .....	p.195
6.3.	Implications .....	p.200
6.4.	Limitations and suggestions for future research.....	p.203
	References .....	p.206
	Appendices .....	p.230
Appendix 1.	Variable definition .....	p.230
Appendix 2.	Supplemental tables for Chapter 2.....	p.235
Appendix 3.	Supplemental tables for Chapter 3.....	p.247
Appendix 4.	Supplemental tables for Chapter 4.....	p.260
Appendix 5.	Supplemental tables for Chapter 5.....	p.265

## List of Tables

Table 1.1. A summary of contributions.....	14
Table 2.1. Jumpstart Our Business Startups Act (JOBS Act) provisions under the “IPO on-ramp” for emerging growth companies (EGCs).....	29
Table 2.2. Most common first letter IPO issues between 2013 and 2015.....	39
Table 3.1. Sample selection.....	82
Table 3.2. Coding scheme of the SEC comment letters.....	86
Table 3.3. N-fold Cross-Validation Test (N=10).....	89
Table 3.4. Sample distribution.....	97
Table 3.5. Descriptive statistics for SEC review attributes.....	103
Table 3.6. Descriptive statistics of IPO firms' characteristics.....	109
Table 3.7. Pearson correlation matrix of SEC review attributes and IPO firms' characteristics.....	112
Table 3.8. Multivariate analysis -Negative binomial regression.....	116
Table 3.9. Sensitivity of the cost of remediation to comment types.....	119
Table 3.10. The sensitivity of SEC reviews to IPO firms' characteristics during financial crisis 2008-2009.....	122
Table 4.1. Sample selection.....	133
Table 4.2. Descriptive statistics.....	138
Table 4.3. Effects of JOBS Act on SEC review attributes.....	141
Table 4.4. Differences in the effects of the JOBS Act on SEC review attributes between EGC IPOs and non-EGC IPOs.....	143
Table 4.5. Moderating effect of the Herfindahl index on impact of JOBS Act on SEC review.....	145
Table 4.6. Impact of JOBS Act 2012 on types of issues of initial S-1 filings mentioned in SEC comment letters.....	147
Table 5.1. Distribution of IPOs by time and industry.....	173
Table 5.2. Descriptive statistics.....	178
Table 5.3. SEC reviews on S-1 filings and IPO firms' earnings management.....	183
Table 5.4. SEC reviews on S-1 filings and IPO firms' earnings management in pre- and post-JOBS Act period.....	187
Table 6.1. Summary of empirical findings.....	198
Table 6.2. Summary of policy implications.....	202

## List of Figures

Figure 1.1. Structure of thesis.....	p.18
Figure 2.1. An IPO process .....	p.23
Figure 2.2. The structure of S-1 filing.....	p.24
Figure 2.3. Organizational hierarchy of an office in Division of Corporation Finance.....	p.31
Figure 2.4. The process of SEC review on IPO registration statements .....	p.33
Figure 2.5. The average timeline of SEC reviews on IPO registration statements.....	p.35
Figure 2.6. Optimal level of welfare of control .....	p.44
Figure 2.7. Iron Triangle of United States politics .....	p.48
Figure 2.8. Legislator preferences .....	p.50
Figure 3.1. Statistical coding technique with the application of machine learning algorithm .....	p.84
Figure 3.2. Distribution of the sample over time .....	p.98
Figure 3.3. Duration of SEC reviews by year.....	p.106
Figure 3.4. The number of comment letters by year.....	p.106
Figure 3.5. The number of comments by year.....	p.107
Figure 3.6. The number of themes by year.....	p.107
Figure 4.1. Sample distribution by year. ....	p.137

## List of Appendices

Appendix 1.1. Definition of variables.....	230
Appendix 2.1. Comparison of public filing and confidential submission.....	235
Appendix 2.2. Example of an SEC comment letter on Netlist, Inc.'s IPO registration statement .....	237
Appendix 3.1. Coding scheme of the SEC comment letters .....	247
Appendix 3.2. Coding data preparation .....	254
Appendix 3.3. Computation.....	255
Appendix 3.4. Descriptive statistics of SEC review attributes by reviewers .....	257
Appendix 3.5. Impact of financial crisis 2008 - 2009 on the number of SEC comments.....	259
Appendix 4.1. Impact of the JOBS Act on SEC reviews (sales growth is included as a control variable).....	260
Appendix 4.2. Marginal effects of JOBS Act on SEC review attributes .....	261
Appendix 4.3. Marginally moderating effect of the Herfindahl index on impact of JOBS Act on SEC review .....	262
Appendix 4.4. Descriptive statistics for the percentage of each theme mentioned in SEC comment letters in pre- and post-JOBS Act period .....	263
Appendix 4.5. Marginal impact of the JOBS Act 2012 on the types of issues of initial S-1 filings mentioned in SEC comment letters.....	264
Appendix 5.1. Impact of the JOBS Act on IPO firms' earnings management activities.....	265
Appendix 5.2. The marginal effects of IPO firms' earnings management on the extensiveness of SEC reviews .....	266

## Abbreviations

ADR	American Depositary Receipts
AEM	Accruals-based earnings management
AMEX	American Stock Exchange
BSM	Balance-sheet method
CBOE	Chicago Board Options Exchange
CCC	CIK Confirmation Code
CD&A	Compensation Discussion and Analysis
CEO	Chief Executive Officer
CFM	Statement-of-cash-flows method
CIK	Central Index Key
CME	Chicago Mercantile Exchange
EGCs	Emerging Growth Companies
EDGAR	Electronic Data Gathering, Analysis, and Retrieval system
ENC	Electronic Communications Network
EPS	Earnings per share
FDIC	Federal Deposit Insurance Corporation
FINRA	Financial Industry Regulatory Authority

GAAP	Generally Accepted Accounting Principles
IPO	Initial Public Offering
ITC	International Trade Commission
JOBS	Jumpstart Our Business Startups
LDA	Latent Dirichlet Allocation
M&A	Mergers and Acquisitions
MS4X	Miami Stock Exchange
NYSE	New York Stock Exchange
OCC	Office of the Comptroller of the Currency
OTC	Over The Counter
OTCBB	Over The Counter Bulletin Board
PCAOB	Public Company Accounting Oversight Board
PwC	PricewaterhouseCoopers
PMAC	Password Modification Access Code
PPE	Property, Plant and Equipment
REM	Real earnings management
RFD	Regulation Fair Disclosure
ROA	Return on Assets

SEC	U.S. Securities and Exchange Commission
SIC	Standard Industrial Classification
SIPC	The Securities Investor Protection Corporation
SOX	Sarbanes-Oxley Act
SRO	Self-regulatory Organization



# 1. Introduction

## 1.1. Background

Through conducting an initial public offering (IPO), firms become publicly listed on a stock exchange for the first time, and in doing so are closely-watched and scrutinised. There is therefore an imperative for IPO firms to rapidly reform many aspects of their operations, including the quality of their reporting activities, since most of their reporting documents are made available to potential investors. Conducting an IPO can attract considerable public attention, which, on the one hand, helps to attract investors as well as new customers, employees and other partners (Alhadab & Clacher, 2018; Ball & Shivakumar, 2008).<sup>1</sup> On the other hand, IPO regulation is necessary due to the high degree of public attention, in order to protect the public, and creates high regulatory costs for firms going public.<sup>2</sup> Specifically, IPO firms must provide additional and frequent reports to investors and the national securities regulators, in accordance with the listing rules and regulations. Faced with pressures from public awareness, the reporting burden and regulatory scrutiny, and a desire to conduct the offering on favourable terms, IPO firms might be incentivised to conduct some questionable reporting practices, e.g. engage in earnings management, in order to meet their offering targets (Alhadab & Clacher, 2018; Li & Liu, 2017).

Although the amount of time taken to complete an IPO varies, the process of conducting an IPO in U.S. capital markets usually comprises four main phases. These include the pre-filing phase, the SEC review process, the marketing/execution phase, and the post-effective phase. The IPO registration statement (i.e. S-1 filing) is the very first document required by regulation in the IPO process.<sup>3</sup> The registration statement typically offers the first detailed public account of the IPO company, regarding their business, offering (e.g. price and the amount of shares to be issued), corporate governance and financial status. Only after the registration statement has received regulatory approval can the IPO be completed.

---

<sup>1</sup> Consequently, the IPO firm can benefit from raising capital which may be used to fund their capital expenditure and pay back their current debts, along with the expansion in their market shares.

<sup>2</sup> For example, U.S. IPO firms are regulated by the Securities Act of 1933 and the Securities Exchange Act of 1934 and monitored by the Securities and Exchange Commission (SEC).

<sup>3</sup> S-1 is the general statement of IPO registration requested by the SEC for all firms initially selling securities to the public. Form S-1 contains information about the intended usage of capital proceeds, the existing business strategy and competitive strengths, a concise prospectus of the offering, the pricing structure and any dilution if applicable.

Regulatory oversight of U.S. IPOs is performed by the U.S. Securities and Exchange Commission (SEC). The SEC is an autonomous administrative body of the U.S. federal government. It was founded by Congress in 1934 and considered as the first federal regulatory body of U.S stock markets. The key responsibilities of the SEC are protecting investors, ensuring the equal and orderly operation of stock markets and promoting the creation of capital resources. SEC reviews, conducted by the SEC's Division of Corporate Finance, are a monitoring mechanism with the goal of identifying and addressing material deficiencies in the information quality of IPO registration statements in order to make certain that "investors have access to high-quality disclosure materials that are useful to investment decision making" (SEC, 2019). A discussion by Bayless (2000), SEC Chief Accountant - Division of Corporation Finance, emphasises the accomplishments of SEC reviews in detecting a wide variety of informational issues in registration statements, resulting in several amendments to the files before the IPO is considered effective. However, there are several questions and even criticisms regarding the efficacy of SEC reviews. For instance, in July 2014, US Senator Robert P. Casey wrote to SEC Chair Mary Jo White, requesting the Commission to devote more time and resources to reviewing Chinese IPOs. Burton (2019), Senior Fellow in Economic Policy at The Heritage Foundation, criticises the SEC for wasting money on non - essential administration, service, and auxiliary operations instead of vital tasks (e.g. monitoring corporate disclosures). Furthermore, Johnston and Petacchi (2017) argue that SEC reviews may be biased owing to political connections with the filer that reduce the effectiveness of SEC reviews. Likewise, Bozanic et al. (2017) concur that corporate managers may abuse their privileged status over the SEC to justify their disclosures against SEC critical analysis. In response to the passage of the JOBS Act in 2012, the New York Times (2012) excoriated the Act for limiting sufficient regulatory authority by the SEC and thus undermining essential investor protections, reducing regulatory compliance and disrupting the efficiency of the capital market. Therefore, there is strong motivation to research the effectiveness of SEC reviews.

In this thesis, the term 'SEC review' relates to communications between SEC reviewers and filing firms, comprising multiple rounds of comment letters by the SEC and responses from the filing firms. Not until the SEC close their review, when they are satisfied that all of their concerns have been addressed, can the IPO be declared effective and be completed. SEC reviews have long been considered as a powerful and influential monitoring mechanism in U.S stock markets since 1934 when it was created by Congress (SEC, 1936). The SEC's oversight of corporate disclosures is regularly seen as the basis of U.S. securities markets (Levitt, 1998).

Understanding the SEC review process is important as it could assist investors in assessing the value and reliability of information contained in IPO disclosures and SEC comment letters in terms of informing their investment decisions. This understanding can also inform policymakers and help improve the functioning of U.S securities markets and future SEC reviews.

The reporting requirements of the SEC continue to change in length and scope with the discharge of recent regulations and accounting standards. Recent developments such as the enactment of the Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank Act) in 2010, the decision by the SEC to publicly disclose SEC review correspondence letters in 2005, and the enactment of the Jumpstart Our Business Startups Act (JOBS Act) in 2012 underline a call for the evaluation the SEC's oversight duties. DealBook (2010) states that the Dodd-Frank Act restricts the reach and capabilities of the SEC. According to Aguilar (2010), the Dodd-Frank Act has significant influence on the SEC, specifically, in altering the SEC's organisational structure as well as their enforcement and monitoring mechanisms.

As of May 2005, following a formal order in writing, all correspondence letters between the SEC and IPO firms have been made publicly accessible via the SEC's Electronic Data Gathering, Analysis, and Retrieval (EDGAR) database. The objective of the SEC, through the broader public dissemination of these documents, is to increase the transparency of their review process and also to make conversations between them and registrants accessible to a wider audience. These letters offer a valuable opportunity to examine the SEC's oversight in U.S. stock markets. Moreover, in April 2012, the JOBS Act was signed into law to help revitalise the IPO market, particularly for emerging growth companies (EGC).<sup>4</sup> Under the “de-burdening” provisions of the Act, EGCs are exempted from a number of public disclosures, accounting, auditing, and corporate governance requirements. In conjunction with the enactment of the JOBS Act, the SEC has started to speed up the IPO approval process (Dambra et al., 2015).

Many existing studies investigate how firm characteristics affect the extent to which SEC reviews are conducted. However, these studies primarily focus on SEC reviews of annual filings (e.g., 10-K, 20-F, 40-F), 8-K filings. These findings based on annual reports or other filings may not generalise to S-1 filings as S-1 filings provide information that is more unique

---

<sup>4</sup> EGC status is given to companies having total annual gross revenues less than \$1 billion.

to the securities offering. Thus far, the research on SEC S-1 reviews mainly examine the impact of factors other than firms characteristics such as uncertainty and industry/market characteristics (Colaco et al., 2018), SEC workload (Köchling et al., 2021), the JOBS Act (Agarwal et al., 2017), underwriting, accounting and legal fee (Li and Liu, 2017). Firm characteristics are found to be among the most material factors in studies on other filing types. For example, Cassell et al. (2013) find that the receipt of a comment letter on 10-K filings, the number of comment issues, and the cost of remediation are significantly impacted by firm characteristics (e.g. profitability, complexity, strong governance and the engagement of Big 4 auditors), but not or weakly impacted by external factors such as the stock return volatility or industry characteristics (e.g. the litigious industry). Duro et al. (2017) and Heese et al. (2017) also identify that firm characteristics have significant effect on the probability of receiving comment letters on 10-K filings. Therefore, it is deserving to examine the impact of firm characteristics on SEC review of S-1 filings.

In addition, most studies evaluating themes in SEC comment letters use manual coding, resulting in a limited sample size. Expanding the sample size may help increase the power of empirical tests as well as the possibility to generalise the findings. This study, therefore, employs the Naïve Bayes machine learning algorithm, which is a combination of manual and computer-aid coding, to classify issue types mentioned in 710 initial SEC comment letters containing 21247 comments. This method is less costly and potentially less subjective than solely manual coding and can also be conducted on a large sample size.

## **1.2. Objectives**

The overarching focus of this thesis is to examine the determinants and effectiveness of SEC reviews of IPO registration statements. In doing so, three key research questions are formed: (1) How do the characteristics of IPO firms affect the extensiveness of SEC reviews?; (2) How does the extensiveness of SEC reviews change under “de-burdening” provisions of the JOBS Act; and (3) Do SEC reviews effectively address the quality of earnings reported in IPO registration statements?<sup>5</sup>

The first research objective, addressed in the first empirical chapter, is to investigate how the extensiveness of SEC reviews, as indicated by IPO duration, and the number and scope of

---

<sup>5</sup> The SEC review is more “extensive” which means that the SEC tend to spend more time reviewing IPO registration statements, issue more comment letters, develop more comments in each letter and address more types of informational issues with the IPO registration statement.

comments mentioned in SEC comment letters, varies with IPO firm characteristics. Specifically, six characteristics of IPO firms are examined, including; company size, company age, business complexity, financial health, audit quality and corporate governance. Multivariate analyses with negative binomial regressions are used to analyse the association between the extensiveness of SEC S-1 reviews and the characteristics of IPO firms. Furthermore, the chapter examines how the cost of remediation covered by a going-public firm is influenced by the types of issues addressed in the SEC comments and whether the 2008-2009 global financial crisis moderates the association between SEC reviews and IPO firm characteristics.

The second research objective, addressed in the second empirical chapter, is to examine how the “de-burdening” provisions of the JOBS Act have affected the extensiveness of the SEC review process. In addition, the moderating effect of industry concentration on the impact of the JOBS Act on SEC review extensiveness is also investigated in the chapter, in order to explore how the SEC respond to information uncertainty resulting from the proprietary cost of disclosure in highly-concentrated industries. Trends in the nature and themes of SEC comments under the JOBS Act are also examined.

The third research objective, addressed in the third empirical chapter, is to analyse whether the extensiveness of SEC reviews increases when financial information presented in the IPO registration statement displays signs of earnings manipulation. In particular, the third empirical chapter examines whether going-public firms with greater income-increasing accrual-based earnings management (AEM) and real earnings management (REM) draw more SEC regulatory attention. In addition, the chapter examines how the sensitivity of SEC reviews to income-increasing earnings management by IPO firms has been changed since the passage of the JOBS Act.

### **1.3.Motivations**

While a broad variety of research identifies the features of companies that impact the level of SEC scrutiny (Baugh et al., 2017; Cassell et al., 2013; Duro et al., 2017; Heese et al., 2017; Wang, 2016), they typically focus on SEC reviews of annual reports (e.g. 10-K, 20-F, 40-F), 8-K reports, proxy statement filings and filings other than IPO registration statements (e.g. S-1 filings). These findings may not directly apply to SEC oversight of S-1 filings as IPO prospectuses are much more specific disclosures, providing details on the initial sale of

securities and information on firms that have not reported publicly before. This thesis focuses on analysing SEC reviews of IPO registration statements because, by concentrating on IPO firms, the study can capture the firms' first structured effort to reveal information publicly as well as their first chance to reassure investors and the SEC on their compliance and disclosure efficiency. There is high uncertainty around firms conducting IPOs, therefore, the SEC plays a larger role in influencing the quality of information in IPO firms' disclosures (e.g. they conduct reviews of every IPO registration statement, rather than a sample as for annual reports). Previous studies examining SEC reviews in the IPO context include Agarwal et al. (2017), Colaco et al. (2018) and Ertimur & Nondorf (2006), which examine the determinants of SEC reviews of IPO registration statements. However, these studies focus narrowly on the effect of managerial expertise and corporate governance (Ertimur & Nondorf, 2006), uncertainty and industry/market characteristics (Colaco et, 2018), and the 'style' of SEC comment letters, e.g. tone, percentage of quantitative items (Agarwal et al, 2017). Motivated by the gap in the literature, this thesis focuses on the extensiveness of the SEC review process and examines the impact of a wider range of IPO firm characteristics on SEC reviews.

The second empirical chapter moreover examines the impact of the JOBS Act on SEC reviews. Although the JOBS Act explicitly removes some limitations and conditions on pre-IPO disclosures, Chaplinsky et al. (2017) claim that it can also limit the scope of regulators to address informational problems. Moreover, in accordance with the objective of the Act to ease the reporting burdens on IPO firms, the SEC may voluntarily reduce the breadth of their reviews. On the other hand, as the JOBS Act increased ambiguousness and aggravated information deficiencies (Barth et al., 2017; Chaplinsky et al., 2017; Gupta & Israelsen, 2015), the SEC may increase their oversight levels so as to protect investors from potentially incorrect or distorting disclosures. There is a gap in the literature systematically examining the de-burdening of SEC reviews under the JOBS Act. Very few studies examine the impact of the JOBS Act on SEC reviews, and those studies are narrowly based around changes in tone (Agarwal et al., 2017) and focus (Agarwal et al., 2017; Lowry et al., 2020) of SEC comment letters rather than the extensiveness of SEC reviews under the JOBS Act. It is important to investigate the degree to which the JOBS Act (if at all) de-burdened the SEC review process to better clarify the success of the Act. This should be of interest to market participants (e.g. investors) in obtaining information from SEC comment letters for their assessment of IPO firms' disclosure quality.

The SEC have long been concerned that deterioration in the standard of financial statements due to aggressive earnings management may have a negative effect on investment decisions (Levitt, 1998). Assessing the efficacy of SEC reviews of IPO registration statements in addressing earnings quality, specifically, is essential as little other information about IPO firms exists for investors to verify the information against. Investors are also generally dependent on SEC comment letters to determine the quality of IPO firms' earnings and the integrity of their financial reporting (Johnston & Petacchi, 2017). Vigorous debates have ensued on the efficacy of the SEC's oversight of IPO registration statements. On the one hand, the literature reports that SEC reviews can effectively address the informational deficiencies of IPO firms' financial reports (Bayless, 2020), uncover reporting issues around IPOs (Colaco et al., 2018; Ertimur & Nondorf, 2006; Lowry, 2020; Schuldt & Vega, 2018) and enhance the quality of IPO information environments (Ertimur & Nondorf, 2006; Gupta & Israelsen, 2015; Li & Liu, 2017; Lowry, 2020; Schuldt & Vega, 2018). On the other hand, the effectiveness of SEC reviews has been a pressing policy concern and is believed to be hindered by some extrinsic factors such as political connections with registrants (Johnston & Petacchi, 2017) and the passing of the JOBS Act in 2012 (Chaplinsky et al., 2017; New York Times, 2012). Among the aforementioned studies, only Schuldt & Vega (2018) directly investigate the effectiveness of SEC reviews in evaluating earnings quality in IPO registration statements, using discretionary revenues as a proxy of earnings management and focusing on the period 2004 to 2009. It is, therefore, necessary to examine if and to what degree the efficacy of SEC oversight in the IPO approval process has been compromised by recent regulatory changes such as the Dodd-Frank in 2010 and the JOBS Act in 2012. Furthermore, the utilization of a wider variety of earnings management indicators, such as accruals-based and real earnings management, is needed to provide a broader view of the degree to which SEC reviews are susceptible to distinct forms of earnings management engaged by going-public firms.

#### **1.4. Summary of main findings**

This thesis empirically examines the determinants and the effectiveness of SEC reviews of U.S. IPO registration statements during the period 12<sup>th</sup> May 2005 to 31<sup>st</sup> December 2017. First, this thesis investigates the sensitivity of SEC reviews to IPO firm characteristics in the first empirical chapter. The attributes of SEC reviews employed in this thesis consist of (1) the duration of SEC review process, (2) the number of comment letters, (3) the number of

comments, and (4) the number of issue types/themes mentioned in the SEC comment letters.<sup>6</sup> A wide range of IPO firm characteristics are examined including (1) company size, (2) company age, (3) business complexity as indicated by sales growth, the number of segments and engagement in restructuring or M&A activities, (4) financial health as indicated by the leverage ratio, the probabilities of bankruptcy, profitability, and the amount of capital raised from outside sources, (5) auditor quality, and (6) CEO-chairperson separation. The results reveal that larger firms attract longer SEC review periods, more comment letters, more comments and comments on a wider range of themes. This study also observes that older IPO firms experience longer SEC review duration and receive more comment letters. SEC review extensiveness is also identified to be greater for IPO firms carrying on more complex business operations. In particular, IPO firms having more business segments are likely to receive SEC comments on a wider range of themes. Firms conducting M&A transactions not only attract more comments but also a wider range of themes addressed in the SEC comment letters. Although IPO firms with a lower growth rate of sales might have less complexity (Baugh et al., 2017; Cassell et al., 2013 and Duro et al., 2017), the results identify longer SEC reviews are experienced by these firms, perhaps due to the SEC's concern about sales-decreasing manipulation by firms in order to ensure eligibility for the EGC status under the JOBS Act.

IPO firms with fragile financial health, who have higher probabilities of bankruptcy, or firms with potential misstatements in the reporting of financial health, who use less external financing or report positive earnings, are also observed to experience more extensive SEC reviews as indicated by longer SEC review processes. IPO firms having higher probabilities of bankruptcy are also identified to receive more comment letters, more comments and more themes addressed in SEC letters. High quality auditors (i.e. the 'big 4') appear to help reduce the extensiveness of SEC reviews as indicated by shorter SEC reviews and fewer themes addressed.

In general, this thesis provides evidence that greater SEC S-1 review extensiveness is likely to be experienced by bigger and older firms, firms carrying out more business segments, achieving lower growth rates, engaging in M&A transactions, having less external funds, reporting profits, experiencing greater probabilities of bankruptcy and not audited by high-

---

<sup>6</sup> Employing a machine-learning coding technique to classify the text of SEC comment letters with the support of Naïve Bayes Algorithm, SEC comments in relation to S-1 filings are examined across seven dimensions: (1) core-accounting issues; (2) non-core-accounting issues; (3) offering issues; (4) business issues; (5) corporate governance issues; (6) disclosure issues; and (7) other issues.



quality auditors (e.g. Big 4).<sup>7</sup> In addition, IPO firms are identified to cover higher the costs of remediation if they receive comments on core accounting issues, non-core accounting issues, business issues and disclosure issues in which the comments on core accounting issues cost the IPO firms most. This thesis also observes the moderating effect of the 2008-2009 global financial crisis in increasing the sensitivity of SEC review extensiveness to IPO firm size, external financing and bankruptcy probability.

Second, this thesis examines the impact of the “de-burdening” provisions of the JOBS Act on SEC reviews of IPO registrations statements, in the second empirical chapter. Focusing on a sample of U.S. EGC IPOs between 2005 and 2017, main results indicate that the number of comment letters issued by the SEC as well as the number of comments and the number of issues mentioned in each SEC comment letter for S-1 filings prepared by EGC IPOs decrease after the passing of the JOBS Act in 2012; by on average 62.60%, 120.77% and 71.72%, respectively. This chapter also identifies a substantial decrease in the length of time that the SEC spend reviewing EGC IPO S-1 filings under the JOBS Act by as much as 63.28%, albeit this reduction is also experienced by non-EGC IPOs. On the whole, the findings shed light on the substantial de-burdening of the SEC regulatory oversight of EGC IPOs’ approval processes.

It has been argued that industries with high concentration are most likely to benefit from the JOBS Act’s de-risking provisions, by reducing the unnecessary reporting of proprietary information (Dambra et al., 2015). Firms in high concentration industries are also more likely to conduct earnings management activities (Cheng et al. (2013), suggesting higher information uncertainty as well as lower quality of earnings information. As such, they may attract more extensive SEC scrutiny (Chen & Johnston, 2010; Colaco et al., 2018; Ertimur & Nondorf, 2006), especially under the JOBS Act. Supporting this argument, the reduction in the number of SEC comment letters and the number of issue types mentioned in each SEC comment letter after the JOBS Act are identified to be less pronounced when market concentration is high. This implies the SEC seek to protect investors from the misleading disclosures in cases where the proprietary costs of disclosure are high. Considering the other

---

<sup>7</sup> This study considers the Big 4 as the representative of the group of high quality auditors. According to Alhadab & Clacher (2018), when compared to other audit companies, a Big 4 auditor has superior technology and more experience in detecting major informational flaws. Khurana & Raman (2004) suggest that concerns about reputation may offer motivation for Big 4 auditors to conduct higher quality audits. Big 4 auditors have higher reputational capital at stake in every customer scenario and, as a result, incur proportionally greater reputational costs from audit loss than non-Big 4 auditors (DeFond et al., 2002). The theory “reputation/deep-pockets” developed by (Klein & Leffler, 1981) supports that Big 4 auditors will thus provide greater audit quality in order to minimise potential costs involved with audit loss.

attributes of SEC review extensiveness, this study additionally highlights that after the JOBS Act, the SEC is likely to proportionally pay more attention to non-core accounting issues and offering issues, but less attention to business issues and disclosure issues.

Third, this thesis examines the effectiveness of SEC reviews in addressing deficiencies in the earnings quality of IPO firms, within the third empirical chapter. Regarding the proxies of earnings quality, this study employs two metrics extensively used in prior studies, namely, measures of AEM and REM through sales-based and discretionary-expense-based manipulation. Supporting the effectiveness of SEC reviews in monitoring the information quality of IPO disclosures, the results provide evidence that the SEC are likely to spend more review time, issue more comment letters, address more themes, and especially, more core-accounting-related comments for IPO firms displaying greater income-increasing AEM. Furthermore, the IPO firms engaging in greater income-increasing discretionary-expense-based REM are identified to be subject to longer SEC reviews.

Nevertheless, SEC reviews appear only partially effective in uncovering IPO firms' earnings management as the results contrarily show that the SEC are likely to spend longer, rather than a shorter time, and address more non-core-accounting-related issues, instead of core-accounting-related issues in comment letters to IPO firms having lower income-increasing earning management on the basis of sales manipulation. These findings support the arguments of Cohen et al. (2008) and Graham et al. (2005) that auditors, investors and regulators tend to have difficulty in detecting sales-based manipulation. The possible explanation would be that IPO firms are usually characterised by high sales growth, thereby masking upward sales distortions (Alhadab & Clacher, 2018 and Gounopoulos & Pham, 2017).

In addition, the chapter examines whether the enactment of the JOBS Act in 2012 influenced the effectiveness of SEC reviews in monitoring the earnings quality of IPO firms. The findings show that under the JOBS Act, EGC IPOs with greater income-increasing AEM and discretionary-expense-based REM are likely to receive SEC comment letters that address a broader range of issues. EGC IPOs engaging in more income-increasing earnings management through discretionary-expenses manipulations are also observed to receive more core-accounting-related comments after the passing of the JOBS Act. These findings imply that, despite the more limited scope of SEC reviews under the JOBS Act, the effectiveness of SEC reviews in addressing poor earning quality is maintained in the post-JOBS-Act period. Following the enactment of the JOBS Act, the SEC appear to concentrate more on specific

issues within IPO disclosures (including earnings management) in particular. This may be because the SEC are circumspect to address potential informational problems created under the JOBS Act (Agarwal et al., 2017; Barth et al., 2017; Chaplinsky et al., 2017; Gupta & Israelsen, 2015).

On the contrary, the SEC are identified to provide more comment letters and address more themes in their letters for EGC IPOs having a lower degree of income-increasing earnings management through sales-based manipulations after the passing of the JOBS Act. The findings suggest that under the JOBS Act, the SEC are not likely to effectively detect sales-based REM conducted by EGC IPOs when preparing their registration statements. This may be due to the SEC's concerns that IPO firms are incentivised to opportunistically reduce their sales to satisfy the requirements of being an EGC IPO under the Act.

### **1.5. Contributions**

This thesis makes several contributions to the literature, in both empirical and methodological aspects. This thesis contributes specifically to the literature on SEC reviews, by identifying various determinants of the extensiveness and scope of SEC reviews of IPO registration statements. To date, previous studies on the IPO approval process focus on the effects of IPO firms' managerial expertise (Ertimur & Nondorf, 2006), the impact of the financial crisis, information uncertainty and industry characteristics (Colaco et al., 2018) on SEC reviews. Chapter three (the first empirical chapter) extends the extant literature by examining the impact of a wider range of IPO firms' characteristics including firm size, firm age, sales growth, the number of segments, engagement in restructuring and M&A activities, financial leverage, the level of financial distress and external financing, profitability, audit quality and separation of CEO and chairperson. Novel evidence is provided about the effects of these firm-specific factors on SEC reviews. The findings should be of interest to investors, auditors and other stakeholders, given the importance of IPO firms' reporting compliance and the informational quality of S-1 filings to investment and business decisions. In addition, this study, to some extent, provides IPO issuers with the knowledge of how to speed up SEC review processes. For example, regarding the choice of auditors, the findings suggest that IPO issuers should choose high-quality auditors (e.g. Big 4) to perform audit procedures could shorten IPO approval process. However, the issuer should bear in mind the audit fee premium associated with appointing a Big 4 auditor.

In addition, this is the first study to examine the sensitivities of SEC S-1 reviews to IPO firms' characteristics in the recent period, following major regulatory changes under the Dodd-Frank Act in 2010 and the JOBS Act in 2012, thus providing up-to-date insights about the ensuing evolution of the IPO approval process. Closely related to this study, Ertimur & Nondorf (2006) and Colaco et al. (2018) concentrate on the periods of 2005 – 2006 and 1986 – 2011, respectively. The findings that each type of issue mentioned in SEC comment letters is subject to the different levels of remediation cost should also be helpful to managers and other IPO participants who raise concerns about remediation cost in connection to SEC reviews. Moreover, by identifying an increase in SEC review extensiveness for firms potentially experiencing reporting and funding problems during the financial crisis, this study also contributes to understanding of the widespread impacts of the financial crisis.

Chapter four (the second empirical chapter) provides a deeper understanding of the quantitative impact of the JOBS Act on SEC S-1 reviews, which has not yet been explored in the accounting and finance literature. Specifically, addressing this void, this study is the first to quantify the reduction in SEC review extensiveness as indicated by the volume and scope of comments issued by the SEC under the “de-burdening” provisions of the JOBS Act. The findings imply that SEC reviews, to some extent, satisfy the JOBS Act's objectives in reducing the regulatory burden on EGC IPO firms, in order to revitalise the U.S. IPO market. In addition, the findings that reduction in SEC review extensiveness under the JOBS Act is less pronounced in more highly concentrated industries would be useful to investors and other stakeholders concerning about the effectiveness of SEC reviews in addressing potentially informational deficiencies in highly-concentrated markets. Specifically, the findings imply that, despite de-burdening provisions under the JOBS Act, the SEC maintain their proposed target of investor protection by increasing their scrutiny of IPOs in highly concentrated industries (Ali et al., 2014; Dambra et al., 2015; Robinson et al., 2011).

Chapter five (the third empirical chapter) contributes to the literature on the effectiveness of the SEC's oversight of the IPO registration statement, by examining the extent to which SEC reviews address the earnings quality of IPO firms. On the one hand, the chapter provides new evidence about the effectiveness of SEC reviews in uncovering potential deficiencies in the earnings quality of IPO registration statements due to IPO firms' engagement in income-increasing earning management. More extensive SEC reviews are experienced by IPO firms with higher accruals-based and discretionary-expenses-based manipulations. These findings

imply that greater SEC review extensiveness may be a reliable indicator of deficiencies in earnings quality within IPO registration statements, thereby addressing investors' and other stakeholders' concerns about the reliability of SEC reviews as a source of information about IPO firms' information quality.

On the other hand, the findings of chapter five also contribute to the literature by providing the evidence of pervasive manipulation through sales-based real earning management which remains broadly unaddressed by SEC reviews. These findings can assist the SEC in developing their review process, particularly in assessing the effectiveness of their detection of IPO's earnings management and designing a more adequate monitoring structure for earnings management. In addition, this chapter extends the literature on the impacts of the JOBS Act on IPO review processes by being the first to demonstrate that the effectiveness of SEC regulatory oversight has evolved under the JOBS Act. Specifically, the results reveal that SEC reviews are effective in uncovering the EGC IPO firms' earnings management through accruals-based and discretionary-expense-based manipulations under the JOBS Act, in spite of concerns that the JOBS Act constrains the scope of SEC reviews. These findings should be of interest to investors as they may ease concerns about the potential adverse effects of the JOBS Act in increasing information asymmetry. The findings imply that, after the JOBS Act, SEC comments are a good barometer of earnings quality in IPO registration statements, except for sales-based manipulations.

In addition to the empirical contributions as discussed above, the thesis makes some notable methodological contributions. Each of the empirical chapters employ SEC review measures based on hand-collected data from SEC comment letters filed on EDGAR, rather than following previous SEC review studies in using a third-party proprietary database, e.g. Audit Analytics (Bozanic et al., 2017; Cunningham et al., 2019; Duro et al., 2017; Li & Liu, 2017). The hand-collected dataset helps to overcome some data limitations from using proprietary databases. For example, when an SEC letter simultaneously refers to S-1 and other filings (such as S-1/A or 10K), Audit Analytics do not separate SEC comments by filing types, resulting in errors in the measurement of comment-related variables and the classification of comment topics (Cassell et al., 2013). Results based on this study's hand-collected dataset can therefore be considered as an external check of the validity of results based on a proprietary databases.

In addition, this thesis also develops a self-constructed coding scheme to purely reflect themes mentioned in SEC comment letters on S-1 filings rather than use taxonomy codes in Audit

Analytics which are developed from not only S-1 filings but also other filings (e.g. 10-K, 10-Q, 8-K). The self-constructed coding scheme is developed by adapting rather than directly employing the Ertimur and Nondorf (2006)'s coding scheme, as the authors focus on both S-1 and SB-2 filings whereas this thesis focuses on only S-1 filings. Furthermore, another methodological contribution of this thesis is the effective use of the Naïve Bayes algorithm to code S-1 filings' issues, demonstrating that the algorithm can be used successfully in the area of SEC comment letters on S-1 filings. As compared with manual coding widely used in previous relevant studies (Ertimur & Nondorf, 2006; Johnston & Petacchi, 2017), the Naïve Bayes algorithmic coding technique has advantages in lessening concerns about cost, time-consumption as well as subjectivity associated with coding as conducted by human coders (Core, 2001). The Naïve Bayes algorithm also has advantages over Latent Dirichlet Allocation (LDA) in terms of coding reliability, as LDA is based purely on computer-aided techniques to conduct the coding whereas the coding assisted by the Naïve Bayes algorithm is developed from the combination of human and computer-aided coding.<sup>8</sup>

**Table 1.1. A summary of contributions**

Type of contributions	Chapter	Contributions
Empirical contributions	Chapter three	Providing new evidence about the effects of a wider range of IPO firms' characteristics including; firm size, firm age, sales growth, the number of segments, engagement in restructuring and M&A activities, financial leverage, the level of financial distress and external financing, profitability, audit quality and separation of CEO and chairperson, on the extensiveness of SEC S-1 reviews. Only Ertimur & Nondorf (2006) have explicitly examined the impact of IPO firm characteristics on the IPO approval process to date, although their focus is mostly on the IPO firms' corporate governance.
		Providing up-to-date insights about IPO approval process over the recent period, following major regulatory changes under the Dodd-Frank Act in 2010 and the JOBS Act in 2012. Ertimur and Nondorf (2006) and Colaco et al. (2018), both similarly connected to this study, focus on the years 2005–2006 and 1986–2011, respectively.

<sup>8</sup> LDA is used in in Lowry et al. (2020)'s study to classify the issue types of IPO registration statements addressed in SEC comment letters.

		<p>Contributing novel evidence about remediation costs related to different issue types within S-1 filings. Thus far, no study has examined this area.</p> <p>Presenting broader evidence about the SEC's response to the global financial crisis, in terms of the extensiveness of the IPO approval process including; duration, the number of comment letters, the number of comments and the number of themes. Colaco et al. (2018) also identify the impact of the financial crisis on the SEC review, but they only focus on the duration of the SEC review.</p>
	Chapter four	<p>Providing novel evidence about the reduction in SEC review extensiveness under “de-burdening” provisions of the JOBS Act. There has been no research into this topic so far.</p> <p>Contributing new evidence showing the SEC’s compliance with the JOBS Act’s requirements reduces when reviewing IPOs in highly concentrated industries. Thus far, no study has examined this area.</p>
	Chapter five	<p>Providing new evidence about the effectiveness of SEC reviews in uncovering potential deficiencies in earnings quality within IPO registration statements, due to IPO firms’ engagement in income-increasing AEM and discretionary-expense-based REM. To date, no research has been conducted in this field.</p> <p>Contributing novel evidence on the ineffectiveness of SEC reviews in detecting sales-based earnings management. There has been no research into this topic up to this point.</p> <p>Extending the JOBS Act literature by presenting new evidence about the effectiveness of the SEC's detection of earnings management within IPO registration statements under the JOBS Act. Thus far, no study has examined this area.</p>
Methodological contributions		<p>Hand-collected dataset for the measurement of SEC review attributes. Prior SEC review studies mainly employ a third-party proprietary database, e.g., Audit Analytics (Bozanic et al., 2017; Cunningham et al., 2019; Duro et al., 2017; Li &amp; Liu, 2017).</p> <p>A self-constructed coding scheme is developed to purely reflect themes mentioned in SEC comment letters on S-1 filings. Ertimur and Nondorf (2006) also construct a coding scheme capturing the theme mentioned in SEC comment letters, however, the authors focus on both S-1 and SB-2 filings.</p> <p>Demonstrating the effective use of the Naïve Bayes algorithm in coding SEC comment letters on S-1 filings. Previous research usually use Naïve Bayes algorithm to conduct the textual analysis of 10-K and 10-Q filings (Li, 2010) or SEC comment letters on 10-K filings (Ryans, 2021) rather than SEC comment letters on S-1 filings.</p>

## **1.6.Thesis structure**

This thesis is structured as follows. Following this introduction, chapter two reviews the relevant literature in the area of SEC reviews of IPO registration statements. Institutional background is first discussed, which outlines: (1) the characteristics of the U.S. IPO market including the features of stock marketplaces, key parties engaging in an IPO, and the IPO process; (2) the structure of an IPO registration statement and regulations governing the registration filing; (3) the regulators and regulatory control of the U.S. IPO market and the IPO process; (4) the process and the characteristics of SEC reviews of IPO registration statements; and (5) the structure and content of SEC comment letters. The next section develops the theoretical framework. Specifically, public interest theory is applied to interpret how the SEC carry out their mission of investor protections. Iron triangles theory, the Chicago theory of regulation or capture theory and congressional dominance theory are used to discuss whether the JOBS Act can redirect SEC reviews. Agency theory, signalling theory, positive accounting theory, threshold management theory, and entrenchment theory are employed to explain why firms engage in earnings management. The last section critically analyses previous empirical findings relating to research questions.

Chapter three presents the first empirical study focusing on the first research question: How do the characteristics of IPO firms affect the extensiveness of SEC reviews?. Applying the Naïve Bayes algorithm to code SEC comments, the chapter first classifies the issue types that are commonly addressed in SEC comment letters responding to S-1 filings. The sensitivity of SEC reviews to IPO firm characteristics, including company size, company age, business complexity, financial health, auditor quality and corporate governance, are then examined. Variation in IPO's remediation costs related to different issue types in S-1 filings is also examined, in order to assist with IPO firms' decisions on resource allocation. The moderating effects of the global financial crisis of 2008-2009 on the sensitivity of SEC reviews to IPO firm characteristics are also examined in this chapter.

Chapter four presents the second empirical study investigating how the “de-burdening” provisions under the JOBS Act have affected SEC reviews of IPO registration statements. The impacts of the JOBS Act on the extensiveness of SEC reviews are first quantified. Additionally, this chapter then compares the changes in SEC review extensiveness between EGC IPOs and a control sample of non-EGC IPOs, so as to build a robust link to the JOBS Act. The chapter

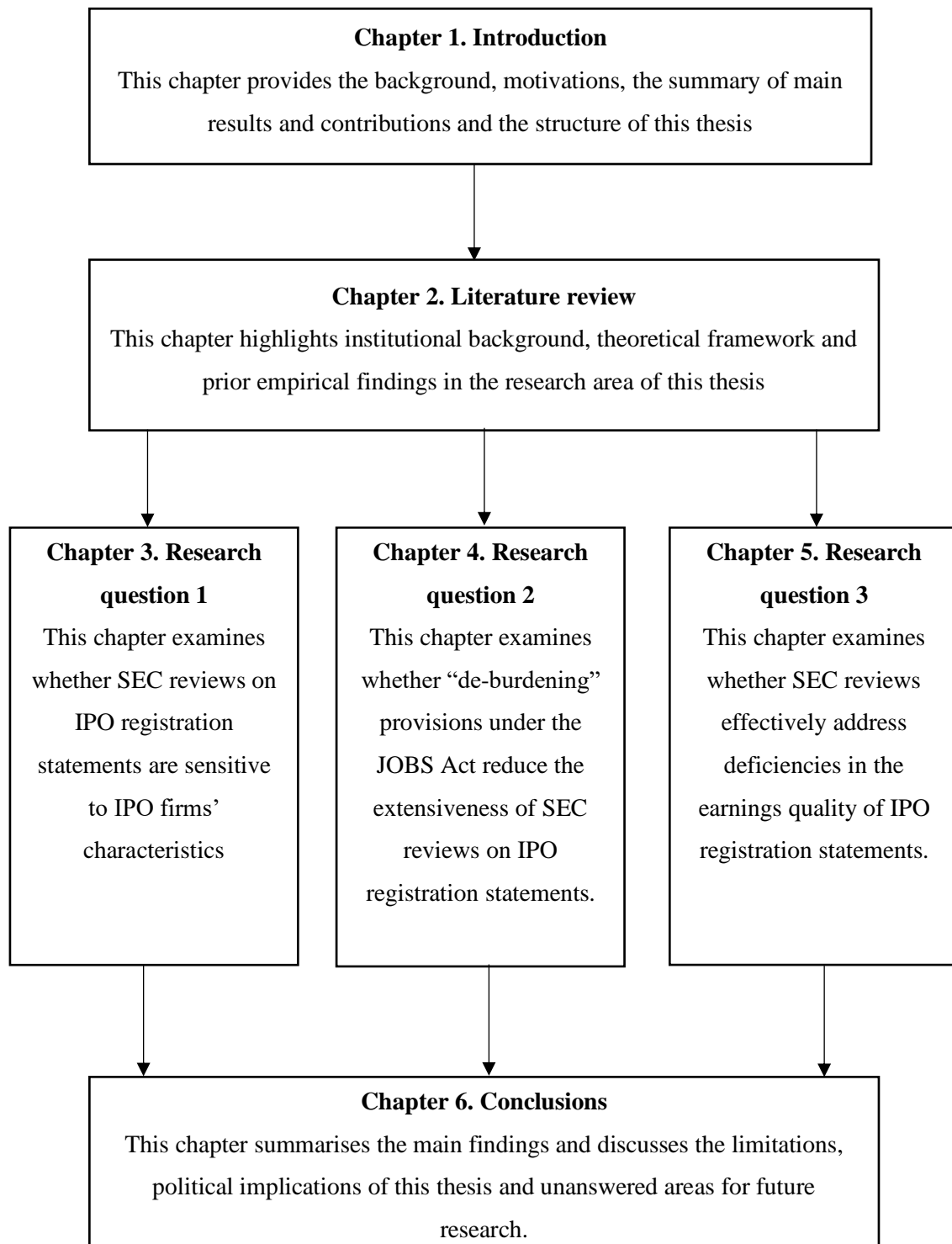


also discusses the moderating effects of industry concentration on reductions in SEC review extensiveness under the JOBS Act, in order to examine whether the SEC meet their stated objectives of protecting investors, given potentially high information uncertainty in high-concentrated industries. Finally, the effects of the JOBS Act on the proportion of comments relating to each theme are explored in order to provide further understanding of changes in the trends of SEC comments under the JOBS Act.

Chapter five examines the effectiveness of SEC reviews in addressing deficiencies in earnings quality within IPO registration statements. Using Kothari et al. (2005)'s procedure and the specifications of Dechow et al. (1998) as developed by Roychowdhury (2006), both AEM and REM are measured, respectively. The chapter first investigates the sensitivities of SEC S-1 reviews to IPO firms' earnings management, in order to evaluate the effectiveness of SEC reviews in addressing S-1 filings' earnings quality. Then, the relationships between SEC review extensiveness and earnings management in pre- and post-JOBS Act periods are compared, so as to examine the effects of the JOBS Act.

Overall conclusions are presented and discussed in chapter six. The main findings are first summarised and the policy implications are then discussed. The chapter also discusses limitations of the thesis and provides recommendations for future research. Figure 1.1 visualises the structure of the thesis.

**Figure 1.1. Structure of thesis**



## **2. Literature review**

### **2.1. Introduction**

This chapter outlines the institutional background, theoretical framework and literature related to research questions addressed in this thesis, which revolve around the determinants and the effectiveness of SEC reviews of IPO registration statements.

Regarding the institutional background, the characteristics of the U.S. IPO market are first discussed, highlighting the main stock markets in the U.S, the key parties assembling and supporting an IPO in the U.S. context, and an outline of the IPO process. Second, the chapter provides information about the IPO registration statement, including the typical structure, how to submit the statement and which regulations apply to the filing. Third, regulatory architecture, including the regulatory bodies and regulation of the U.S. IPO market are outlined. Fourth, the chapter describes SEC review process, also including information about the organization of the Division of Corporation Finance who are assigned by the SEC to conduct reviews of IPO registration statements. Lastly, the description of SEC comment letters is presented.

The chapter also explores a wide range of theories. Specifically, how the SEC carry out their mission of investor protections is discussed with the application of public interest theory. Whether the JOBS Act can redirect SEC reviews is argued basing on the assumptions of Iron triangles theory, the Chicago theory of regulation or capture theory and congressional dominance theory. Agency theory, signalling theory, positive accounting theory, threshold management theory, and entrenchment theory are also used to interpret why firms engage in earnings management.

A review of the relevant literature is then provided in this chapter. The literature on the determinants of SEC reviews is reviewed first, summarizing which proxies of SEC reviews, which filing types and which determinants of SEC reviews are typically employed in previous research. Second, two opposite strands of the JOB Act literature are outlined, including those debating about the benefits and costs of the Act. Finally, this chapter presents a review of the literature on incentives for firms to conduct earnings management in the IPO context.

## **2.2.Institutional background**

### **2.2.1. The U.S IPO market**

When conducting an IPO in the U.S., firms must decide on which stock market to place their securities. In the U.S., stock exchanges (e.g. New York Stock Exchange or NYSE, and NASDAQ) and self-regulating groups or over-the-counter (OTC) markets (e.g. Pink Sheets) are two main stock marketplaces on which IPOs are listed (Duff, 2017). The New York Stock Exchange (NYSE) was the first stock exchange to be established in the U.S., and it is also the world's largest stock exchange by market capitalization.<sup>9</sup> The exchange operates in an auction format, using both open outcry and electronic systems.<sup>10</sup> To be listed on the NYSE, IPO firms are required to have at least \$40 million in their market capitalization and a minimum offering price of \$4 (NYSE, 2020). The NYSE completed acquisitions of many stock exchanges such as the American Stock Exchange, the Pacific Stock Exchange and the Philadelphia Stock Exchange. Differently to the NYSE, trading communications on the NASDAQ are solely conducted through electronic systems such as computers and phones, where investors can collect automated information about stock prices. The NASDAQ's listing requirements are less stringent as going-public firms are required to only have a minimum market capitalization of \$15 million to trade their IPOs, resulting in more firms and more shares being traded on the exchange as compared with the NYSE (NASDAQ, 2020). Due to the technological advanced trading systems, the NASDAQ also attracts more technology firms than the NYSE. IPOs listing on the NASDAQ can alternatively trade on the Electronic Communications Network (ECN) where brokers do not engage in the trading activities and, therefore, the transaction costs are lower. Only non-bank institutional buyers trading a certain number of stocks can operate on ENC.

Stocks delisted from the NASDAQ or the NYSE can trade on OTC where trading fees and listing requirements are more accessible. For example, no listing requirements are imposed on firms trading on the Over Counter Bulletin Board (OTCBB). Small firms, who have no more than 300 investors, can participate in Pink Sheet groups where registration with the SEC is not required. In the U.S., there are also regional stock exchanges, which are smaller trading

---

<sup>9</sup> NYSE recorded \$22.92 trillion in their market capitalization as of June 30, 2019

<sup>10</sup> Open outcry is an auction communication using verbal and hand signal to communicate trading orders.

platforms for local firms, such as the Chicago Board Options Exchange (CBOE), Miami Stock Exchange (MS4X) and Chicago Mercantile Exchange (CME).

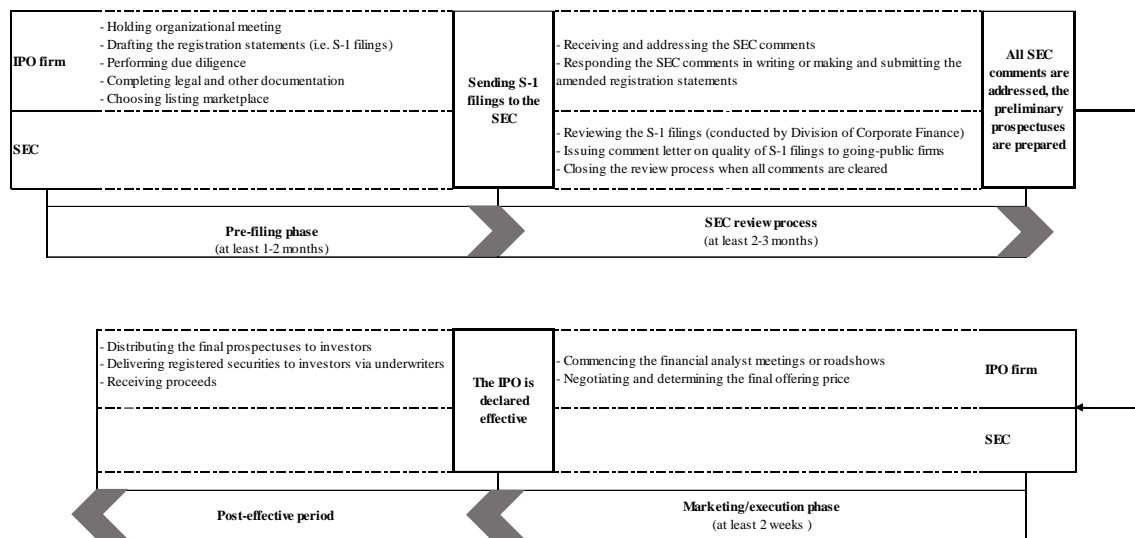
Key parties or working groups assembling and supporting a U.S. IPO usually include the internal staff of going-public firms, underwriters, counsels, external auditors, a transfer agent, a financial printer and external advisors (Mujalovic et al., 2020). Underwriters (or bookrunners), who are investment banks, are considered as bridges between IPO firms and investors since they buy offering securities from IPOs and then resell them to investors. The underwriters take a leading role in the IPO process as they engage in the preparation of registration statements and prospectuses, support IPO roadshow, conduct IPO marketing activities and also maintain their underwriting agreements with IPO firms even after the offering. Legal counsels also play a key role in the IPO process, carrying out their primary duties of producing drafts of the IPO registration statement. These attorneys are also responsible for maintaining, on behalf of IPO firms, contact with the SEC during their process of reviewing registration statements. External auditors also contribute by ensuring that the financial statements included in IPO registration statements satisfy the SEC's financial reporting requirements. The auditors also help identify any accounting issues that may attract the SEC's scrutiny and support IPO firms in responding to the SEC's accounting-related comments (Deloitte, 2020).

The U.S. IPO process consists of various stages of planning and preparation. Despite a variety of IPO timetables among going-public firms, the IPO process usually starts with an organizational meeting followed by a three-to-four month period to complete the IPO (NYSE, 2013) proceeds. According to Lowry et al. (2020), the percentage of withdrawn IPOs (unsuccessful ones) is approximately 11.11%. Specifically, examining the sample of IPO firms going public from 2005 to 2016, Lowry et al. (2020) identify 952 completed IPOs and 119 withdrawn IPOs.

**Figure 2.1** presents an overview of IPO process which a going-public firm is required to complete as well as IPO firms' activities in the post-effective period. Regarding the IPO process, firstly, in the pre-filing phase, an organizational meeting will be held, where IPO strategies including IPO schedule and key parties' main duties will be developed by IPO working groups. The draft of IPO registration statement is also prepared by IPO firms with the support of underwriters, counsels and external auditors. Legal and other documentation are also prepared by IPO firms and their working groups, including underwriting agreements, lock-up agreements, legal opinions, comfort letters and related press releases. In this phase, due diligence is also carried out by underwriters and their counsel in order to examine the going-public firm's business, financial health and corporate governance. IPO firms, in conjunction with their underwriters, also decide an appropriate stock exchange for their offering and then hold discussions with the exchange and register a ticker code.

The second stage of the IPO schedule is SEC review process in which the SEC review registration statements and issue comment letters to the IPO firm addressing any problematic aspects within the registration statement. Following that, the IPO firm responds to the SEC's comments and (if applicable) make amendments to their filings. SEC review process is closed when all SEC comments are satisfied. In marketing/execution phase – the final stage of IPO process, the IPO firm's underwriters arrange marketing meetings or a roadshow with potential stakeholders including financial analysts, brokers and potential institutional shareholders. The roadshow plays an important part in the success of the IPO, in being a sales pitch where the going-public firm and their underwriters promote the IPO to interested institutional shareholders. In this stage, the IPO firm and their underwriters determine the offering price based on firm performance, market conditions, and the level of institutional shareholder interest received during the roadshow. Finally, in the days following determination of the offering price, the IPO becomes effective and will start to trade on the selected stock exchange. Within two to three business days of IPO completion, registered securities are delivered to investors via underwriters, and the IPO firm receives offering proceeds. According to Lowry et al. (2020), the percentage of withdrawn IPOs (unsuccessful ones) is approximately 11.11%. Specifically, examining the sample of IPO firms going public from 2005 to 2016, Lowry et al. (2020) identify 952 completed IPOs and 119 withdrawn IPOs.

**Figure 2.1. An IPO process**



Source: NYSE (2013); PwC (2017)

### 2.2.2. IPO registration statement

The IPO registration statement (i.e. S-1 filing) is the very first document required by the SEC in the IPO process. It provides investors with information about the IPO firm in terms of their business, their offering (e.g. the price and the number of offered securities), their corporate governance arrangements, and a detailed account of their financial position for the first time. Jensen & Meckling (1976) claim that the prospectus could be considered as a social construct - an unofficial information contract between managers and investors. According to Lowry et al. (2020), as available information about going-public firms is very limited, the IPO registration statement is considered as a valuable informational sources about the IPO profile.

In general, the S-1 filing consists of two parts. Part I, which is the main content of the S-1 filing, is legally required to provide information about the going-public firm, including on their business, offering price, proceeds strategy, financial health, shareholders' ownership and relationship with key parties in the IPO. Part II is an optional section in the registration statement, which contains supplemental information about the offering such as the recent sales of unregistered securities, exhibits and financial statement schedules. The detailed structure of an S-1 filing is presented in Figure 2.2 as follows.



## **Figure 2.2. The structure of S-1 filing**

### **PART I—INFORMATION REQUIRED IN PROSPECTUS**

Item 1. Forepart of the Registration Statement and Outside Front Cover Page of Prospectus.

Item 2. Inside Front and Outside Back Cover Pages of Prospectus.

Item 3. Summary Information, Risk Factors and Ratio of Earnings to Fixed Charges.

Item 4. Use of Proceeds.

Item 5. Determination of Offering Price.

Item 6. Dilution.

Item 7. Selling Security Holders.

Item 8. Plan of Distribution.

Item 9. Description of Securities to be Registered.

Item 10. Interests of Named Experts and Counsel.

Item 11. Information with Respect to the Registrant.

Item 11A. Material Changes.

Item 12. Incorporation of Certain Information by Reference.

Item 12A. Disclosure of Commission Position on Indemnification for Securities Act Liabilities.

### **PART II—INFORMATION NOT REQUIRED IN PROSPECTUS**

Item 13. Other Expenses of Issuance and Distribution.

Item 14. Indemnification of Directors and Officers.

Item 15. Recent Sales of Unregistered Securities.

Item 16. Exhibits and Financial Statement Schedules.

Item 17. Undertakings.

S-1 filings are usually submitted on the Electronic Data Gathering, Analysis, and Retrieval (EDGAR) system developed and monitored by the SEC. Specifically, IPO firms first need to complete Form ID to apply for EDGAR access and then obtain a Central Index Key (CIK) which is a unique identifier for each IPO firm (SEC, 2020a). IPO firms can use their CIKs to login to the EDGAR to submit their SEC filings. IPO firms also needs to create EDGAR access codes including a password, password modification access code (PMAC) and CIK confirmation code (CCC). Secondly, the IPO firm is required to convert the S-1 filing from paper format to electronic format by following the EDGAR's guidance. Finally, after submitting the S-1, the IPO firm will be charged a filing fee by the Filing Fees Branch within the SEC. Occasionally, S-1 filings are also required to be amended in order to reflect changes in market condition or to correct potential deficiencies highlighted through the SEC's review. If this is the case, the IPO firm is required to prepare and file a Form S-1/A.

Form S-1 is filed pursuant to the Securities Exchange Act of 1933 (often referred to as the Truth in Securities law) enacted to enhance the transparency of the IPO information environment and constrain potential fraud in securities offering and trading activities. The filing of Form S-1 complies with four primary regulations as follows.

- Regulation C, which provides specific rules for the preparation of Form S-1, consisting of Regulation Care regulations and procedures about (a) actions towards confidential information; (b) amendments to S-1 filings before the IPO effective date; (c) the process to amend the S-1 after the IPO; and (d) "Plain English" principles;
- Regulation S-K, which provides detailed reporting requirements and guidance for all sections of the S-1 filing;
- Regulation S-T, which specifies that an electronic filing format is obligated for all submissions of S-1 filings and related documents on the EDGAR system; and
- Regulation S-X, which governs the form and content of financial reports registered with the SEC. Regulation S-X consists of specific requirements for preparing and disclosing financial reports and other requirements related to IPO firms' specific industries and businesses.

### **2.2.3. The regulatory architecture of the U.S. IPO market**

The most important regulatory body monitoring the U.S. IPO market is the Securities and Exchange Commission (SEC), which is mandated by the United States federal government. The SEC's key responsibilities are ensuring market integrity, shareholder protection and revitalising capital accumulation. According to the trading requirements of The Securities Act, before an IPO is declared effective to trade on stock markets, the going-public firm must file their registration statement with the SEC and satisfy all comments issued by the SEC about the statement's informational quality.

In the U.S., going-public firms' underwriters are governed by the Financial Industry Regulatory Authority (FINRA) which is a not-for-profit self-regulatory organization (SRO) composing of brokerage firms and exchange markets. The FINRA can only apply its rules to members, while the SEC is more focused on investors. According to the FINRA's Corporate Financing Rules, their members (i.e. underwriters) engaging in IPO activities must file underwriting and other agreements with the FINRA for review. The objective of the FINRA's review is to safeguard that underwriters' documents are credible and that the fees charged by underwriters for selling the IPOs' shares are fair and appropriate. A FINRA "no objections" letter must be issued to underwriters prior to the effective date of the IPO.

Going-public firms are also required to satisfy a range of listing requirements if they decide to trade their offerings on a specific stock exchange. The NYSE and NASDAQ, which are the two main U.S. stock exchanges, impose distinct listings requirements on IPO firms trading securities on the exchanges. In general, when listing an IPO on a stock exchange, going-public firms are required to meet listing criteria, such as (1) the offering price must be at or above a required minimum threshold, (2) they must have at least a certain number of shareholders, (3) they must have at least a certain volume and amount of shareholder's equity, and (4) they must complete the process of registration with the SEC by providing credible financial and operational reports.

The U.S. IPO process and stock market are governed by a considerable number of regulations. The Securities Act of 1933 is the key regulation of the U.S IPO market, which monitor offering activities including the filing of IPO registration statements with the SEC as mentioned in Section 2.2.2. The going-public firm is also subject to the Dodd-Frank Wall Street Reform and Consumer Protection Act, which was enacted on 21st July, 2010, with the goal of strengthening

the oversight of particular organizations, offering severe criteria and management following the financial crisis of 2007 in order to provide protection for the economy and American consumers, investors and businesses. Specifically, the Dodd-Frank Act was enacted to help eliminate any future government bailouts granted to big, complicated, interconnected firms under the “Too-Big-Too-Fail” policy by reforming the market disciplines (e.g. accountability and transparency) to ensure the financial stability of key financial companies (Balasubramnian & Cyree, 2014).

The Dodd–Frank consists of 16 titles obliging regulatory bodies to establish, in sum, 243 rules, undertake 67 researches, and produce 22 periodic reports (Finkle, 2017). The passing of the Dodd-Frank Act causes a number of changes in the authorities of the SEC and other existing regulatory agencies such as Federal Deposit Insurance Corporation (FDIC), Office of the Comptroller of the Currency (OCC), Federal Reserve (Fed), the Securities Investor Protection Corporation (SIPC), as well as the closing of the Office of Thrift Supervision. Specifically, responding to the Dodd-Frank Act, the SEC adopted 67 mandatory rulemaking provisions of the Act (e.g. Section 952(b)-Additional executive compensation disclosure, Section 972-Chairperson/CEO structure disclosure in annual proxy) and established five new offices including Office of the Whistleblower, Office of the Credit Rating, Office of the Investor Advocate, Office of Minority and Women Inclusion and Office of Municipal Securities (SEC, 2019).

In addition, following the requirements of the Dodd-Frank Act, the SEC is also obligated to annually provide Congress with a report on the effectiveness of control activities in each SEC divisions (Bozanic et al., 2017). Furthermore, the Dodd-Frank Act transforms the regulatory architecture as a variety of new agencies are formulated such as the Financial Stability Oversight Council, the Office of Financial Research, and the Bureau of Consumer Financial Protection. Direct authority or authority shifted from an existing agency over a specific strand of financial regulation are conferred on the new agencies. Congress also obligate these new agencies to provide them with annual or semi-annual reports displaying the outcomes of existing strategies and proposing future plans.

On April 5, 2012, President Barrack Obama signed the Jumpstart Our Business Startups (JOBS) Act which appeals to the SEC to establish rules and conduct research on capital formation, disclosure, and registration requirements. After the dot-come bubble collapse in

2000, Sarbanes-Oxley Act and other regulations were introduced which led to prohibitive compliance costs on emerging growth companies (EGCs) going public, in terms of wasted money and time (Keating, 2012). This resulted in a decrease in the volume of IPOs below historical levels. Title I of the JOBS Act, also known as the “IPO on-ramp”, aims to reverse the decade-long decrease in the volume of IPOs, especially EGC IPOs, in the United States. IPO firms are eligible for EGC status if they have total gross revenues of less than \$1 billion during its most recently completed fiscal year, did not offer more than \$1 billion in nonconvertible debt over the past three years, and is a non-accelerated filer under SEC reporting requirements. Provided that going-public firms keep satisfying these criteria, its EGC status can be preserved for five years following their IPOs. An IPO firm cannot claw back the EGC status after it is lost.

Title I of the JOBS Act consists of two key groups of provisions for “de-risking” and “de-burdening” the IPO process. Specifically, the “de-risking” provisions permit EGC IPOs to have confidential SEC reviews on their draft registration statements before their filings are published. Appendix 2.1 compares the difference between the public filings process and the confidential review process. In addition, EGC IPOs are permitted to conduct written and oral communications, under the testing-the-waters process, with institutional and individual accredited shareholders even before publicly filing in order to obtain more information about the attractiveness of their offerings to investors. The advantage of this process is that EGC IPOs are permitted to share their business- and offering-related information with only shareholders, rather than competitors, which therefore lowers proprietary costs and also the costs of IPO withdrawal (Dambra et al., 2015). Otherwise, the “de-burdening” provisions under the JOBS Act was enacted to lessen EGC IPOs’ mandatory reports and relax certain accounting, disclosure requirements and compliance duties applied on EGC IPOs when they are going public (Gao et al., 2013). It is also worth noting the adoption of disclosure exemptions under the Act is voluntary, not mandatory, that is, IPO firms with emerging growth status have rights to decide which disclosure exemptions under the Act they would adopt. Table 2.1 below compares reporting requirements applicable to EGC IPOs before and after the enactment of the JOBS Act.

**Table 2.1. Jumpstart Our Business Startups Act (JOBS Act) provisions under the “IPO on-ramp” for emerging growth companies (EGCs)**

<b>Provision</b>	<b>Pre-JOBS Act</b>	<b>Post-JOBS Act available to EGCs</b>
<b>De-risking provisions (affecting pre-IPO communications)</b>		
Confidential filing	No confidential filing for US issuers.	Emerging growth companies can submit draft IPO registration statements to the SEC for confidential review (to go public, registration statements and any amendments must be publicly filed with SEC no later than 21 days before road show).
Testing-the-waters	Written and oral communications regarding the offering prior to filing registration statement generally prohibited. During offering, written communications other than prospectus generally prohibited.	EGCS, either before or after filing a registration statement, could test-the-waters by engaging in oral or written communications with qualified institutional buyers and individual accredited investors to determine interest in an offering.
<b>De-burdening provisions (providing scaled disclosure and opt-outs of previous or future regulations)</b>		
Reduced financial statement disclosure	Three years of audited financial statements in IPO registration statement.  Five years of selected financial data in IPO registration statement, subsequent registration statements and periodic reports.	Two years of audited financial statements in IPO registration statement.  Two years of selected financial data in IPO registration. Selected financial data in subsequent registration statements limited to earlier audited period presented in IPO registration statement.

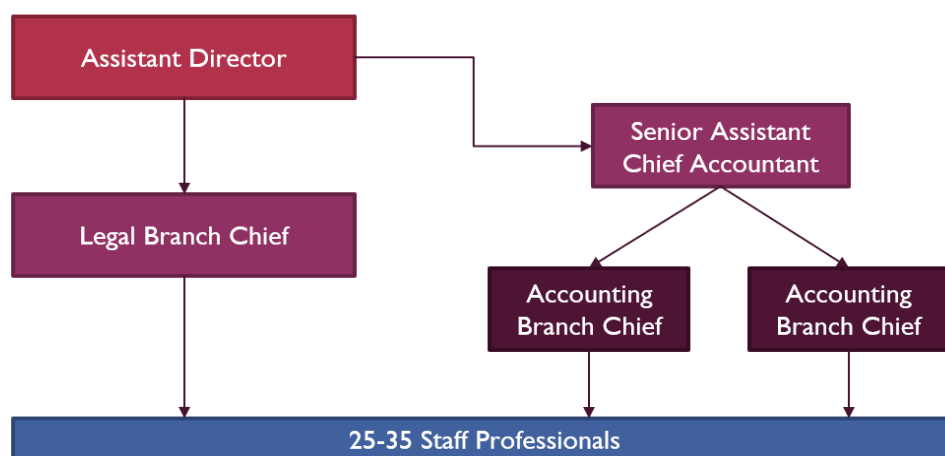
Reduced compensation disclosure	Compensation, discussion, and analysis section and compensation disclosure for five named executive officers in IPO registration statement and subsequent annual reports.	No compensation, discussion, and analysis section. Compensation disclosure for three named executive officers in IPO registration statement and subsequent annual reports.
Auditor attestation opt-out	Management assessment and auditor attestation of internal control over financial reporting beginning with second 10-K following IPO.	Only management assessment of internal control over financial reporting beginning with second 10-K following IPO.
Future accounting standards opt-out	Must comply with applicable new or revised financial accounting standards.	Not required to comply with any new or revised financial accounting standards (cannot selectively comply).
Public Company Accounting Oversight Board (PCAOB) rulings opt-out	PCAOB considering requiring mandatory audit firm rotation and auditor discussion and analysis.	Exempt from mandatory audit firm rotation and auditor discussion and analysis. Future PCAOB rules apply only if specifically determined by SEC.
Executive compensation vote opt-outs	Must hold nonbinding advisory shareholder votes on executive compensation (Say-on-Pay, Say-on-Frequency, or Say-on-Golden Parachute vote required by the Dodd-Frank Wall Street Reform and Consumer Protection Act and SEC rules).	Exempt from holding nonbinding advisory shareholder votes on executive compensation (specifically, Say-on-Pay, Say-on-Frequency, or Say-on-Golden Parachute vote).

Source: Dambra et al. (2015)

#### 2.2.4. SEC review process

In the U.S. market, going-public firms are governed by disclosure guidelines enforced by the SEC as mentioned in Section 2.3.3. A key responsibility of the SEC is conducting a careful review of all IPO firms' prospectuses in order to secure that going-public firms are reporting "meaningful financial and other information to the public" (SEC, 2013). The SEC review and approval process is an important step that all firms going public in the U.S. must complete. In fact, when going public for the first time, U.S. firms are required by the SEC to file registration statements (i.e.S-1 filings) in order to provide the SEC as well as investors with detailed information about the firms' business model, financial conditions and future growth prospects. The Division of Corporation Finance, one of five divisions run by the SEC, is designated to conduct the review of S-1 filings. The division is organised into 11 industry-focused offices including Healthcare and Insurance; Consumer Products; Information Technologies and Services; Natural Resources; Transportation and Leisure; Manufacturing and Construction; Financial Services; Real Estate and Commodities; Beverages, Apparel, and Mining; Electronics and Machinery; and Telecommunications (Baugh et al., 2017). The assignment of S-1 reviews to the offices is based on the IPO firm's industry as classified by the 4-digit SIC Code. Each office has one assistant director, one senior assistant chief accountant, one legal branch chief and two accounting branch chiefs and 25 to 35 professionals, primarily accountants and lawyers. Figure 2.3 shows the hierarchy in the organizational structure of each office in the Division of Corporation Finance.

**Figure 2.3. Organizational hierarchy of an office in Division of Corporation Finance**

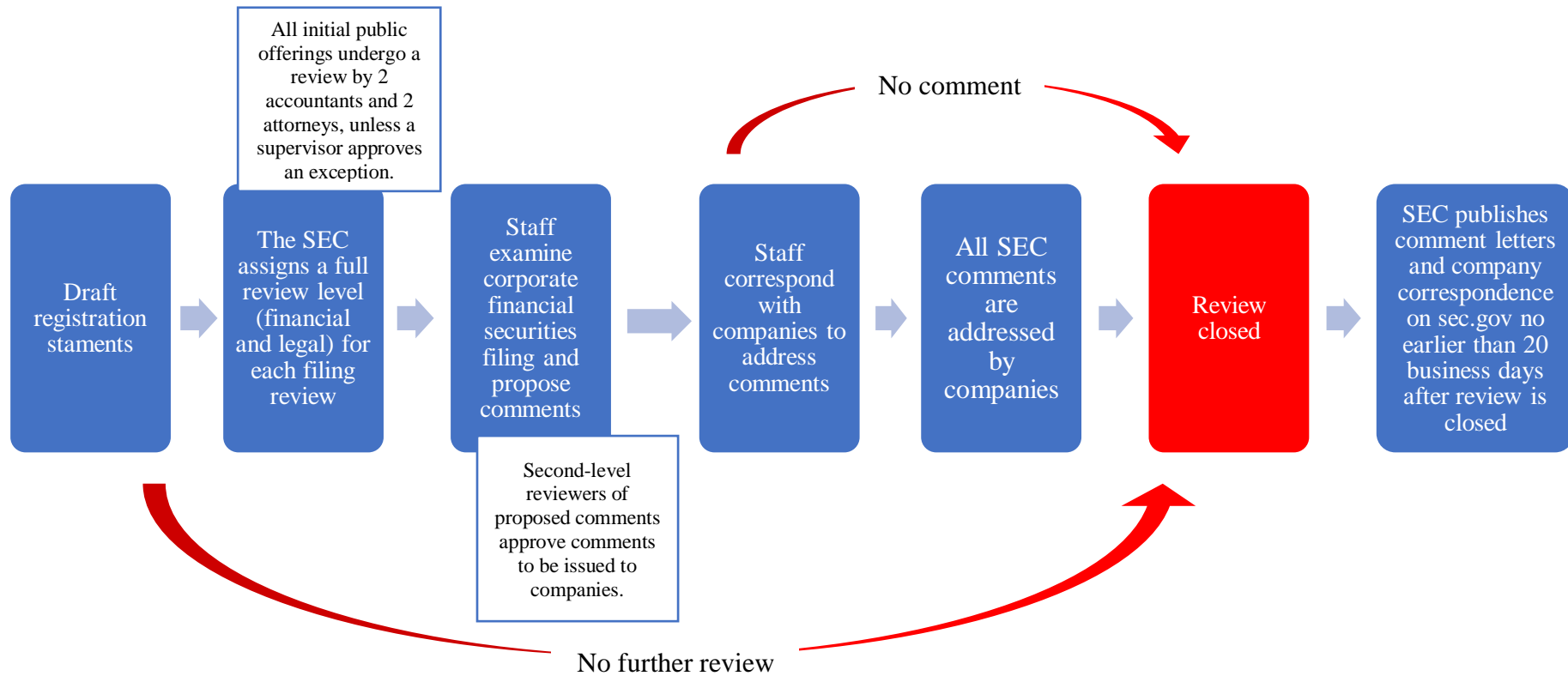


Source: adapted Baugh et al. (2017)



The SEC reviews IPO registration statements to ensure that the statements satisfy the SEC's reporting regulations regarding format, tone and content, and then issue comment letters requesting clarification, justification, or amendments on certain matters where deemed necessary. All IPO registration statements sent to the SEC by going-public firms will usually be reviewed by 4 SEC staff members including two accountants and two attorneys. Full reviews, including reviews on both accounting and legal information, will be conducted for all IPO registration statements. Each legal and accounting information will be examined under two-tier reviews. The first reviewers undertake the initial review of the IPO registration statement and might issue comments to filing firms if they identify any deficiency in the information quality of IPO registration statement. The second reviewers will then evaluate the first reviewers' reviewing reports and might approve, adjust, waive or/and provide further comments to the reports. When coming to complete agreement, the reviewers will prepare and send a comment letter to filing firms addressing the issues they found. Following the receipt of an SEC comment letter, filing firms issue responses or look to amend their registration statements accordingly. Only when all of the SEC's concerns are addressed will they be willing to close their review and declare the registration statement as 'effective', allowing the issuer to complete the IPO. As of May 2005, all formal correspondence between the SEC and the filing firm (i.e. comment and response letters) are made publicly available. Figure 2.4 describes the SEC review process in more details.

Figure 2.4. The process of SEC review on IPO registration statements

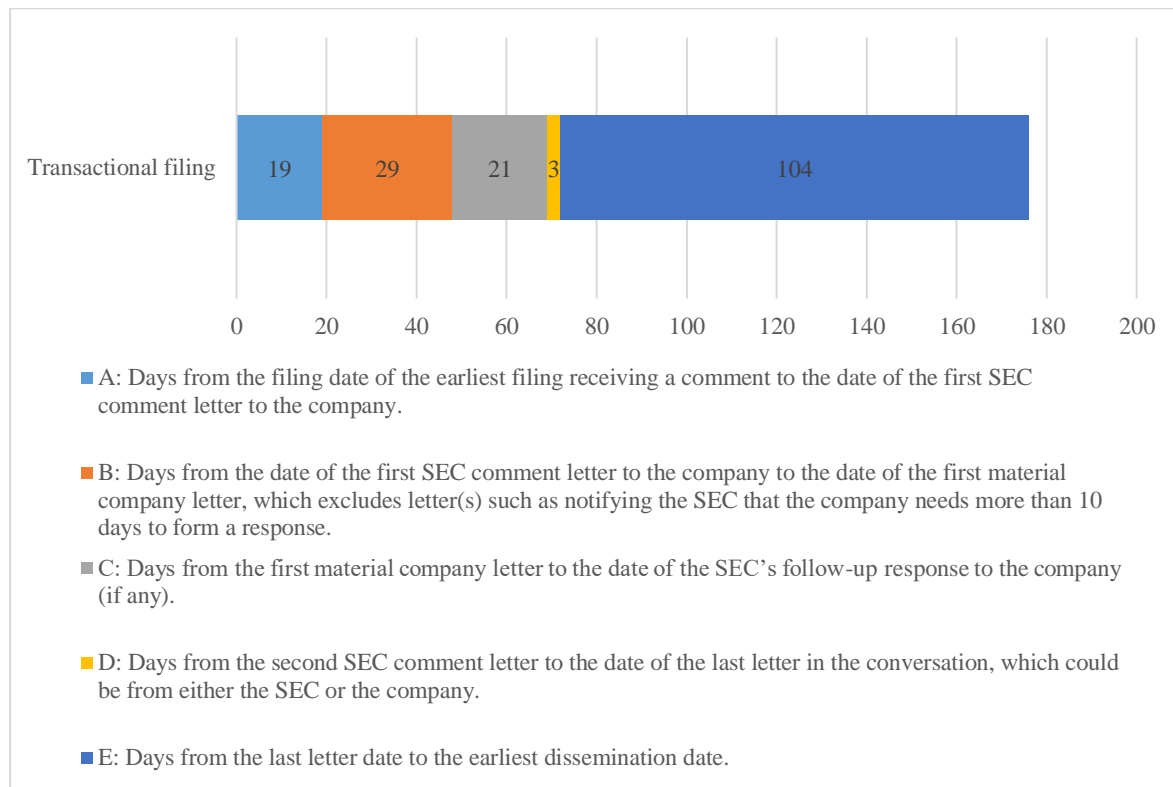


Source: adapted GAO (2016)

The SEC usually proposes that they will provide the first comment letters on the initial S-1 within four weeks. However, in fact, the duration of SEC reviews on initial S-1 filings are varied and affected by various determinants including the complexity of S-1 filings and the conditions of the market at the filing date (Hamilton, 2018). WilmerHale (2015) state that in a slow market, the SEC issue the first comment letters in less than 30 days. Contrarily, when the volume of IPOs suddenly increases, the duration of the initial SEC review could sometimes exceed the 30-day threshold by many days. WilmerHale (2015) also state that the review duration of the firms' initial responding letters and S-1 amendments are difficult to predict, because of not only differences in comment types and filing quality, but also the workload and the availability of SEC staffs. Baugh et al. (2017) also suggest that SEC scrutiny is determined by various elements, consisting of the criteria required in Section 408 of Sarbanes-Oxley Act (SOX) and other elements recognised through the SEC's review criteria which is not revealed to maintain the integrity of SEC reviews.

Figure 2.5 below describes the average timeline of SEC reviews of IPO registration statements as of October 2019. The figure shows that, on average, the SEC meet their proposed target of reviewing the initial IPO registration statement submission within 30 days, spending on average about 19 days, as indicated by the length of "A" area. Generally, a conversation between the SEC and IPO firms regarding the review of IPO registration statements will last approximately 72 days from the initial filings date to the final comment letter date (area "A", "B", "C" and "D"), and then it will take approximately 104 days for the publishing of the SEC review conversation (area "E"), which exceeds the SEC's minimum threshold of 20-day publishing process as visualised in Figure 2.4 above.

**Figure 2.5. The average timeline of SEC reviews on IPO registration statements**



Source: adapted Cunningham & Leidner (2019)

One of the key factors attracting the SEC’s scrutiny and impacting SEC review duration is earnings management activities engaged by IPO firms. The SEC have long expressed their concerns about the low quality of financial reporting due to firms’ aggressive earnings management activities which have negative effects on investors’ investing decisions, since such activities obfuscate “the true consequences of management’s decisions” (Levitt, 1998). The proclaimed goals of SEC reviews of corporate disclosures (e.g. S-1 filings) are to monitor the firm’s compliance with regulatory disclosures and accounting policies as well as enhance the quality of corporate disclosure by constraining firms from distorting firm-specific information to bias their offering prices.

A speech by Bayless (2000), SEC Chief Accountant - Division of Corporation Finance, highlights the achievements of SEC reviews in discovering “a surprising number of accounting errors, disclosure deficiencies, and tortured interpretations of Generally Accepted Accounting Principles (GAAP) in filings with the Commission” which leads to “frequent changes to financial statements and related disclosure before the registration statement is declared effective”. This suggests that frequent amendments to IPO registration statements in response

to SEC comment letters somewhat imply that the SEC effectively identify deficiencies in IPO disclosures. In addition, Bayless (2000) highlights positive results from the Earnings Management Task Force in 2000, including amendments to financial statements or earnings releases conducted by more than 50 IPO firms to lower an aggregate R&D expense by \$5 billion as well as by more than 40 other IPO firms to adjust the timing of revenues or restructuring cost recognition.

Despite the pronounced goals of SEC reviews and in contrast to Bayless (2000)'s reports, there are a considerable number of concerns and criticism about the effectiveness of SEC reviews in identifying deficiencies in IPO firms' financial reporting. For example, in July 2014, Robert P. Casey, United States Senator, wrote to SEC Chair Mary Jo White asking the Commission to put in a greater deal of effort to review and improve disclosures in Chinese IPOs such as e-commerce giant Alibaba. Burton (2019), Senior Fellow in Economic Policy at The Heritage Foundation, censure that despite the increase in the SEC's budgets by 82 percent over 10 years, the SEC seem to spend their budgets on "unnecessary management, support, and ancillary functions" rather than key activities (e.g. monitoring corporate disclosures), and therefore, the reforms of the SEC are needed to improve the performance of its key activities.

In addition, according to Johnston & Petacchi (2017), SEC reviews maybe not objective due to the political connections with reporting firms constraining the SEC from addressing critical issues and as a result, SEC reviews may produce no positive effects to the economy. Similarly, Bozanic et al. (2017) also argue that despite receiving SEC comment letters addressing issues in the disclosures, managers may abuse their higher authority over the SEC to defend their disclosures against SEC comments. Moreover, Johnston & Petacchi (2017) suggest that the SEC may request for additional information which has low incremental value, which may lead to an oversupply of IPO firms' disclosures and hence may not yield considerable improvement in information environment.

Regarding the passing of the JOBS Act in 2012, a New York Times article criticised the way that the Act constrains "adequate oversight by the Securities and Exchange Commission" and hence "undo essential investor protections, reduce market transparency and distort the efficient allocation of capital" (New York Times, 2012, para. 1 and 7). Mary L. Schapiro, SEC Chairperson, also expressed disapproval of the revenue threshold for EGC IPOs under the JOBS Act as the threshold of \$1 billion in annual revenue "is so broad which would eliminate important protections for investors in even very large companies." Chaplinsky et al. (2017)

also argue that the reduction in information transparency and increase in indirect costs maybe derived from the reduction in regulators' ability to constrain the deficiency in EGC IPO firms' disclosures under the Act.

### **2.2.5. SEC comment letter**

Reviewers from the Divisions of Corporation Finance issue comment letters in relation to their review of IPO registration statements. Comment letters are released publicly on the SEC's EDGAR system. Conversations between the SEC and IPO firms, which comprise of one or more rounds of letters issued by reviewers and associated responses from the firms, can be viewed and downloaded freely from the EDGAR database. On average, each IPO firm received four SEC comment letters (Ryans, 2015). Each SEC comment letter, according to Lowry et al. (2020), usually contains between 1,200 and 2,500 words, although the number of words can vary from no more than 100 words to above 15,000 words. On EDGAR, SEC comment letters are arranged in chronological order based on filing date, the date when the letters are uploaded on EDGAR or the date when the letters are received by the IPO firms. The standard structure of an SEC comment letter usually comprises six separate parts, as follows (Lowry et al., 2020):

1. Part 1: Heading - the date that SEC comment letters are issued and IPO firm's details including name, address and leader.
2. Part 2: Subject line – detailing IPO firm's name, the registration form (e.g. S-1, S-1/A), filing date and filing number.
3. Part 3: Beginning - a statement confirming that the registration statement has been reviewed, briefly describing comments, instructing how the firm can respond to the comments and proposing further comments. The following statement is usually included at the beginning of each comment letter:

“I have reviewed your registration statement and have the following comments. In some of my comments, I may ask you to provide us with information so I may better understand your disclosure.

Please respond to this letter by amending your registration statement and providing the requested information. If you do not believe my comments apply to your facts and

circumstances or do not believe an amendment is appropriate, please tell us why in your response.

After reviewing any amendment to your registration statement and the information you provide in response to these comments, I may have additional comments.”

4. Part 4: Itemised comments - the most important part of SEC comment letter, describing the informational issues that the SEC have identified in the IPO registration statement. Each comment also mentions the actions required of the IPO firm in order to satisfy the SEC comment.
5. Part 5: Ending – this part mentions the SEC’s authority over IPO firms’ application for the acceleration of their IPO’s effective date as well as provide the contact details of reviewers.
6. Part 6: Signature – the name or signature of the head or the delegates of industry-specific office within the Division of Corporate Finance.

For illustrative purposes, this thesis presents the initial SEC comment letter to Netlist, Inc.’s IPO registration statement in Appendix 2.2.

The SEC’s comments correspond to IPO registration statements and are commonly subject to the reporting regulation and the reviewers’ perception of IPO firms’ facts and circumstances (Deloitte, 2017). Each SEC comment consists of 2 parts including an explanation of the nature of the issue (theme) and the action required, as illustrated in the example below.

**Example of an SEC comment**

*“The first sentence of this risk factor and your disclosure under “Customers” on page 74 suggest that you have only one customer that is a consumer electronics manufacturer, but disclosure in the rest of this risk factor and elsewhere in the filing suggest that you have more than one customer in this industry. Please advise and/or revise to clarify this matter.”*

(Comment 8 - SEC comment letter to Synacor Inc. - SEC Accession No. 0000000000-11-072296 – date: 16/12/2011)

➔ **Themes:** *“The first sentence of this risk factor and your disclosure under “Customers” on page 74 suggest that you have only one customer that is a consumer electronics manufacturer, but disclosure in the rest of this risk factor and elsewhere in the filing suggest that you have more than one customer in this industry.”*

The scope of SEC comments is broad and they typically focus on addressing reporting, accounting and legal problems, for example complicated equity-based financial instruments, share-based compensation and revenue recognition. Regarding accounting-themed comments, McKeon (2016) provides a summary of the top 10 accounting issues that are commonly addressed in the SEC comments, as detailed in Table 2.2 below.<sup>11</sup>

**Table 2.2. Most common first letter IPO issues between 2013 and 2015**

<b>Issues</b>	<b>No. letters</b>	<b>% of all letters</b>
Deferred, stock-based and/or executive compensation issues	288	48.20%
Debt, quasi-debt, warrants & equity (BCF) security issues	231	38.70%
Revenue recognition (include deferred revenue) issues	205	34.30%
Tax expense/benefit/deferral/other (FAS 109) issues	103	17.30%
Earnings per share (EPS), ratio and classification of income statement issues	102	17.10%
Acquisitions, mergers, and business combinations	95	15.90%
PPE issues - Intangible assets and goodwill	87	14.60%
Financial statement segment reporting ((FAS 131) subcategory) issues	75	12.60%
Research and development issues	74	12.40%
Liabilities, payables and accrual estimate issues	70	11.70%

Source: McKeon (2016)

<sup>11</sup> McKeon (2016) obtain the data from Audit Analytics for the period of 2013-2015.



SEC reviewers also commonly focus on registration-specific issues, as follows (Deloitte, 2017).

1. Issues on financial reports including:

a. The updates of financial reports.

**Example of an SEC comment**

*“The financial statements should be updated, as necessary, to comply with Rule 3-12 of Regulation S-X at the effective date of the registration statement.”*

(Comment 56 - SEC comment letter to Greenway Medical Technologies Inc. - SEC Accession No. 0000000000-11-048928 – date: 11/08/2011)

b. The adequacy of reporting periods required

**Example of an SEC comment**

*“Please revise to present average net revenues per gross square foot for each interim period presented here and throughout your registration statement.”*

(Comment 8 - SEC comment letter to Vera Bradley Inc. - SEC Accession No. 0000000000-10-042474 – date: 27/07/2010)

c. The additional financial reports required for some specific IPO firms (e.g. newly formed firms, firms conducting acquisitions, firms having more than one subsidiaries or business lines).<sup>12</sup>

**Example of an SEC comment**

*“I note that you do not present quarterly information for the predecessor periods as they are not comparable or meaningful. Please tell us whether the presentation of net sales and cost of sales for the predecessor periods would be comparable and meaningful, and if so, please present those items to promote an investor's understanding of the impact seasonality has on your business.”*

(Comment 27 - SEC comment letter to Gordmans Stores Inc. - SEC Accession No. 0000000000-10-029771 – date: 27/10/2010)

---

<sup>12</sup> Newly formed firms are defined as entities will succeed to an operating business before the their IPOs become effective (Deloitte, 2017). The firms are probably required to provide the balance sheet of their recent operations (if applicable) besides the financial reports of the operating business. Firms conducting acquisition are required to include the financial reports of their predecessors who are acquired by the IPO firms. Firms having more than one subsidiaries or business lines are required to include the “carve-out” financial reports which are distinct financial report that originated from the parent or bigger firms’ financial reports.

2. Disclosures and financial reports required for public entities under U.S GAAP and Regulation S-X, as well as transition provisions from non-public to public entities.

**Example of an SEC comment**

*“I note your discussion of your pro forma adjusted EBITDA and pro forma adjusted free cash flow for 2013 on page 105. In order to provide a more balanced presentation, please revise your discussion of each these measures on page 105 to also include a discussion of the most comparable GAAP measures on both an actual and pro forma basis. Refer to the guidance outlined in Item 10(e) of Regulation S-K.”*  
(Comment 35 - SEC comment letter to Metaldyne Performance Group Inc. - SEC Accession No. 0000000000-14-047132 – date: 27/10/2010)

3. Pro forma information about the planned distributions (e.g. proceeds) to shareholders as of, or promptly prior to the IPO closing.

**Example of an SEC comment**

*“Please revise your pro forma balance sheet presentation to reflect the distribution accrual without giving effect to the offering proceeds alongside the most recently presented historical balance sheet in the filing. Please remove all other adjustments in the pro forma presentation alongside the historical balance sheet. Please refer to SAB Topic 1:B.3 for guidance”*  
(Comment 48 - SEC comment letter to Boise Cascade Co. - SEC Accession No. 0000000000-12-067030 – date: 12/12/2012)

4. Pro forma information related to alterations in capitalization (e.g. stock split, stock redemption, stock conversion)

**Example of an SEC comment**

*“I note that all share and per share information for all periods presented has been adjusted to reflect the effect of the reverse stock split effective June 12, 2013. In this regard, please revise the description of your presentation of pro forma results, in the second bullet point in this section, to exclude the reference to the stock split.”*  
(Comment 1 - SEC comment letter to RetailMeNot Inc. - SEC Accession No. 0000000000-13-035023 – date: 26/06/2013)

5. Required information about net tangible book value per share prior to or following a distribution when a dilution occurs.<sup>13</sup>

**Example of an SEC comment**

*“Please revise the table to show dilution in net tangible book value (deficit) per share as of December 31, 2012 as opposed to pro forma net tangible book value (deficit). Also, in the second paragraph on page 39 tell us your basis for using weighted average shares outstanding versus number of shares outstanding as of the end of the period.”*

(Comment 9 - SEC comment letter to CDW Corp. - SEC Accession No. 0000000000-13-021304 – date: 26/06/2013)

In summary, the IPO market in the US is very dynamic and diverse, which includes many stock exchanges (e.g. NYSE, NASDAQ) and a wide range of market participants (e.g. issuers, underwriters, regulators). The market is regulated by the Securities and Exchange Commission (SEC) whose main tasks are to maintain the integrity and transparency of the IPO informational environment. The Securities Act of 1933, the Dodd-Frank Act and the JOBS Act are important regulations that are enforced by the SEC in the U.S. IPO market. Regarding the IPO approval process, an issuer is required to complete three main phases including the pre-filing phase, SEC review process and marketing/execution phase. To register their first offerings, IPO firms are mandated by the SEC to submit their registration statements (i.e., S-1). Submitting an S-1 statement to the SEC also means IPO issuers disclose, for the first time, information on their businesses, offerings, corporate governance structures, and financial statements. All IPO registration statements are examined by the SEC who will issue comment letters asking for an explanation, justification, or changes on specific issues as needed. SEC comment letters typically have six sections: heading, subject line, beginning, itemised comments, ending and signature. Eventually, the SEC will publish their comment letters and issuers’ correspondence via the SEC’s EDGAR system.

The SEC review system as well as their effectiveness have been topics of interest to IPO market participants and researchers. Although Bayless (2020), the SEC’s Chief Accountant in the Division of Corporation Finance, and several academic studies (e.g., Li & Liu, 2017; Lowry, 2020) suggest that SEC reviews are effective in monitoring and improving the quality of corporate disclosures, Casey (2014), United States Senator, and several other academic

---

<sup>13</sup> According to Regulation S-K, Item 506, dilution occurs when “common equity securities are being registered and there is substantial disparity between the public offering price and the effective cash cost to officers, directors, promoters and affiliated persons of common equity acquired by them.”

studies (e.g., Chaplinsky et al., 2017; Johnston & Petacchi, 2017) disagree, concluding that SEC reviews are not entirely effective in this respect. To address the research question regarding the effectiveness of SEC reviews, this study starts by reviewing theories relevant to regulatory mechanisms in order to provide a basis for the research hypotheses and methodological design. These theories are discussed in the next section.

## **2.3.Theoretical framework**

### **2.3.1. How the SEC carry out their mission of investor protections?**

#### **2.3.1.1.Public interest theory**

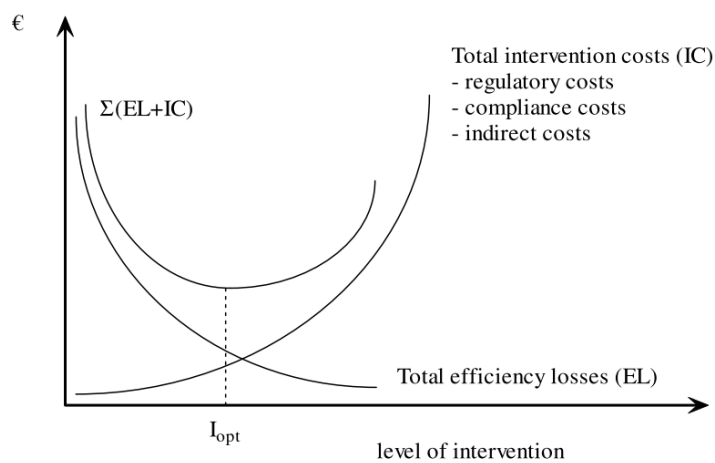
Pigou (1932) establishes the theory of public interest which claims that regulations are designed in the interest of the public when they are requested by the public to remedy ineffective operations. Regulations are assumed to benefit society as a whole, rather than serving the interests of any particular individual. Regulatory agency is therefore believed to fulfill the needs of society as a whole rather than merely being of benefit to regulators. The objectives of the SEC, as a regulatory agency, should therefore be to serve the interests of the whole society. The SEC do report that “For more than 85 years since our founding at the height of the Great Depression, we have stayed true to our mission of protecting investors, maintaining fair, orderly, and efficient markets, and facilitating capital formation” (SEC, 2020b). The SEC also express their goal of “continually [directing] its resources towards the most productive uses for investors and the public” (SEC, 2012). Examining the SEC’s effort in maintaining the public interest, Philips & Zecher (1981) also conclude that the SEC is a broker who equalises highly opposing parties in the securities market. Heese et al. (2017) identify that the SEC do not perfunctorily undertake reviews of firms with political connections, suggesting that the SEC are not ‘captured’ by these firms. Gunny & Hermis (2020) identify no evidence indicating the SEC deliberately overlook informational deficiencies during busy times.

The traditional public interest theory is centered on two assumptions. Firstly, unfettered economies commonly collapse due to the prevalence of market failures. Secondly, regulators are benevolent and likely to efficiently remedy these business deficiencies by legislation. Consequently, regulation promotes public interest and social welfare. This regulatory theory has been applied both as a prescription of what policymakers would do and as a review of what they are currently doing (Shleifer, 2005). As assumed in this theory, policymakers monitor prices in such a way that natural monopolies do not charge extra, enforce safety requirements

to avoid incidents such as explosions or mass poisoning, monitor jobs to defeat employer's monopsony influence over workers, govern security problems so that shareholders are not deceived. Public interest theory is considered as the foundation of mainstream public economics, as well as the ideology of communist and other left-wing legislators.

Public interest theory can be also defined as the best available utilization of scarce resources for individual and social products and services in society. Market failure is a condition where scarce resources are not brought into their most profitable use. According to Bator (1958), the distribution of resources is not ideal from a theoretical standpoint and there is a requirement for approaches to improve the distribution. Government intervention is one of the means of improving efficiency in the distribution of resources where a market failure is detected (Arrow, 1970, 1985; Shubik, 1970). It could be believed that government intervention is a comparatively more effective institution for coping with a variety of market failures (Whynes & Bowles, 1981). Similarly, it could be suggested that, in some situations, regulatory oversight would be a more efficient instrument to deal with market failures than private agreements between market participants. Regulators would not be troubled by failures in the information environment and could more effectively obtain information to evaluate where marginal intervention costs equilibrate marginal social gains (Asch, 1988; Leland, 1979). Public interest theory also suggests that lawmakers work for the public interest, the legislative mechanism is effective and knowledge on the costs and advantages of legislation is generally circulated and accessible (Noll, 1989). This fundamental principle is demonstrated in Figure 2.6 below.

**Figure 2.6. Optimal level of welfare of control**



Source: Hertog (2012)

Economic theory assumes that, without regulation, resources would be distributed inefficiently. Without regulatory control, these risks are at their maximum point where the EL-curve intersects with the vertical axis (intersection not identifiable). Regulatory intervention leads to a reduction in these welfare-related risks. The higher the level of regulatory oversight, the less the depletion of welfare in the private sector. For example, the naive theory of public interest in regulation would justify “fair rate of return” regulation through the existence of a natural monopoly company. Prices might decrease and production might increase until the distribution of social resources is effective.

A more complicated version of public interest theory is one which also considers the costs of regulatory oversight. The more the regulator gets involved in the private activity of the company, the greater the intervention costs (curve IC) would be. Regulatory costs are borne in 2 stages: the preparatory stage and the implementation stage. Preparatory costs are incurred by required actions and practices, such as collecting appropriate and reliable information about social concerns to be resolved and designing the legislation. In the next step, the government faces implementation-related costs, including administrative costs, monitoring costs and enforcement costs. Compliance costs will be borne by the company in terms of time, commitment, and resources. It is anticipated that the company will operate strategically and will hide all sensitive information from the regulator. Once put into effect, the cost of controlling company actions and implementation of the legislation increases.

In addition, indirect costs are also to be predicted. The less profit the company achieves, the less effort it makes to reduce the cost of manufacturing or to produce new products and innovative technology. Regulatory oversight makes private investment less resilient: risk premia increase, investment decreases and economic growth declines, etc. Public interest theory assumes that the regulator understands that increasing degrees of intervention or regulation setting can raise costs and have a range of regulatory plans to select from. No matter what it chooses, all types of intervention have varying intervention and compliance costs and different impacts on stagnant and dynamic effectiveness or other policy objectives. The optimal norm or degree of intervention shown in Figure 2.6 is  $I_{opt}$ . The optimal point of intervention ( $I_{opt}$ ) entails trading off resources allocated to greater degrees of regulatory intervention and lower degrees of ineffective company conduct. Thus, regulatory theories of public interest generally conclude that a comparative study of regulatory plans required to accurately distribute scarce resources to the market has taken place.

### **2.3.1.2.Criticism of public interest theory**

The arguments justifying legislation as an important solution to industry problems have been debated from various perspectives. First, the assumption of market failure in the absence of regulation under public interest theory has been subject to critique. The conclusion that monopoly control, externalities or any other types of market failures result in an ineffective distribution of resources can only be explained by assuming a paradigm under which any of the associated transaction costs are not present. The distribution of resources tends to be effective if transaction costs are included in the research design (Dahlman, 1979; Tomanoff, 1984). Monopoly control, for example, seems to have inefficient effects (Demsetz, 1969). Once transaction costs, such as the failure of the monopoly to discriminate against prices or to avoid arbitrage or the failure of customers to mobilise and bargain efficiently, are taken into consideration, market outcomes would be efficient. Furthermore, in fact, the market system itself is also capable of creating institutions to correct for any failures. In addition, a more common critique of the assumption of market failure is its minimal explanatory capacity. In general, economists need just 10 minutes to rationalise government oversight by structuring some type of market failure (Peltzman et al., 1989). Taken together, it is argued that the market failure assumption is a contradictory and needless component of the public interest regulatory theory.

Second, the assumption that government intervention is always efficient or effective has been disproven. The primary assumption suggests that government oversight is efficient and can be enforced at no significant cost (Posner, 1974). Thus, in the case of government intervention, the transaction costs and information costs, which influence market failure, are believed to be missing. This assertion has been questioned in theoretical studies. Theoretical research has shown that the partial goal of effective distribution of resources does not in general render the market society more effective if inevitable inefficiencies exist elsewhere in the market (Ng, 1990). The inevitable inefficiencies could be, for example, the product of external effects, taxes, imperfect competitiveness, and inaccurate information. Other theoretical research focuses on inherent weaknesses in policy making. Precise predictions of how the regulations will fit cannot be achieved if the regulations alter the behaviour of the legislation and the systems under which they exist. Theoretical research into the efficacy and effectiveness of political policy has increasingly evolved into non-market failure theories similar to market

failure theories (Tullock et al., 2002; Wolf, 1978, 1993). These theories refer to non-market failures, for example:

- The scarcity of information on the marginal benefits of government entity operation and the corresponding scarcity of motives to balance marginal costs with marginal benefits;
- The scarcity of output measures or metrics and the corresponding scarcity of motives to lower costs or to prevent unnecessary regulatory action;
- The scarcity of a marketplace for regulatory oversight analogous to the marketplace for corporate oversight, with its corresponding inability to regulate managers;
- Injustice in the allocation of rewards to the agencies as a consequence of capture or compromise;
- The inevitability of unforeseen effects, undesirable side-effects and even detrimental regulatory effects.

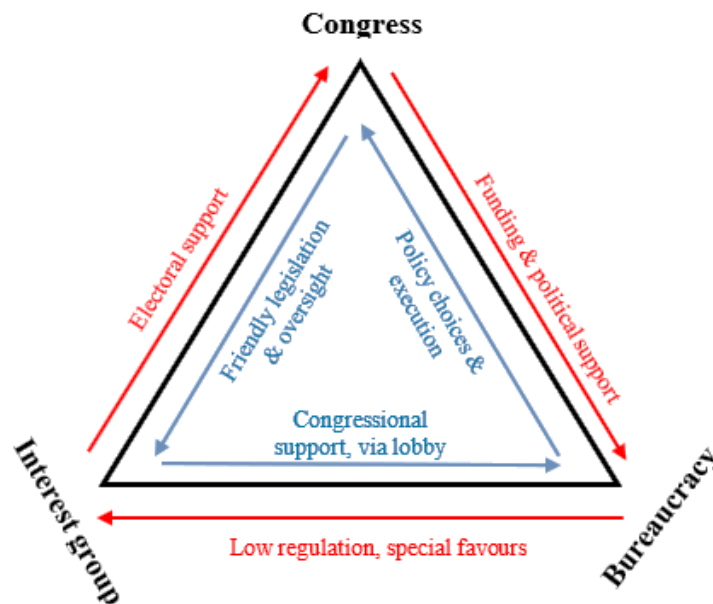
### **2.3.2. “De-burdening” the IPO process: Can the JOBS Act redirect the SEC review?**

#### **2.3.2.1. Iron Triangles theory**

Since the SEC is a U.S. federal government regulatory agency, it is important to also consider how political influence may affect their behaviour. The Iron Triangles of United States political theory, developed by Adams (1981), can help to shed light on this dimension by focusing on the sharing of support between congressional committees, bureaucracy and special interest groups with authority over a particular range of contexts as visualised in Figure 2.7 below.



**Figure 2.7. Iron Triangle of United States politics**



Source: David (2020)

Interest groups are situated at one corner of the triangle. Interest groups are an important factor in the iron triangle, because they can construct a political situation in which their lobbyists have excessive control over the governments (i.e. Congress and bureaucracy) through their electoral and congressional supports.

Members of Congress who tend to affiliate themselves with a constituency for political and electoral benefits are positioned in another corner of the triangle. Congress swaps "friendly legislation" with interest groups and political support with bureaucrats in order to secure their electoral supports. Consequently, bureaucrats receive the benefits of less supervision and the freedom to more openly the implement policies. The interest groups also enjoy special privileges and diminished oversight. In addition, making budgetary allocations that significantly influence the bureaucrats' funding received on an annual basis, the members of Congress are likely to make use of this "power of the purse" to change the way the bureaucrats execute their legislations. They will also, by their supervisory authority, prosecute and call in bureaucrats who do not comply with Congress's regulation.

Bureaucracy (e.g. the SEC) constitutes the third corner of the triangle. The bureaucracies serve as the implementation mechanism of regulations approved by the Congress. Congress is a major source of the bureaucracies' financial support. This synergistic influence can lead the

bureaucracies to execute regulation in a way that is in line with the interests of Congress, but against other parties' interests. Otherwise, recognizing that Congress tends to align itself with interest groups for their electoral support, bureaucrats are likely to enact legislation in ways that benefit the interest groups so that they can also be favourable to Congress, who allocates their budgets.

Interconnections between these three parties can result in self-sufficient (and often corrupt) sub-government circumstance in which the best interests of other American market participants (e.g. investors) are neglected in favor of adapting to regulatory changes under some specific new legislation.

### **2.3.2.2. The Chicago theory of regulation – Capture theory**

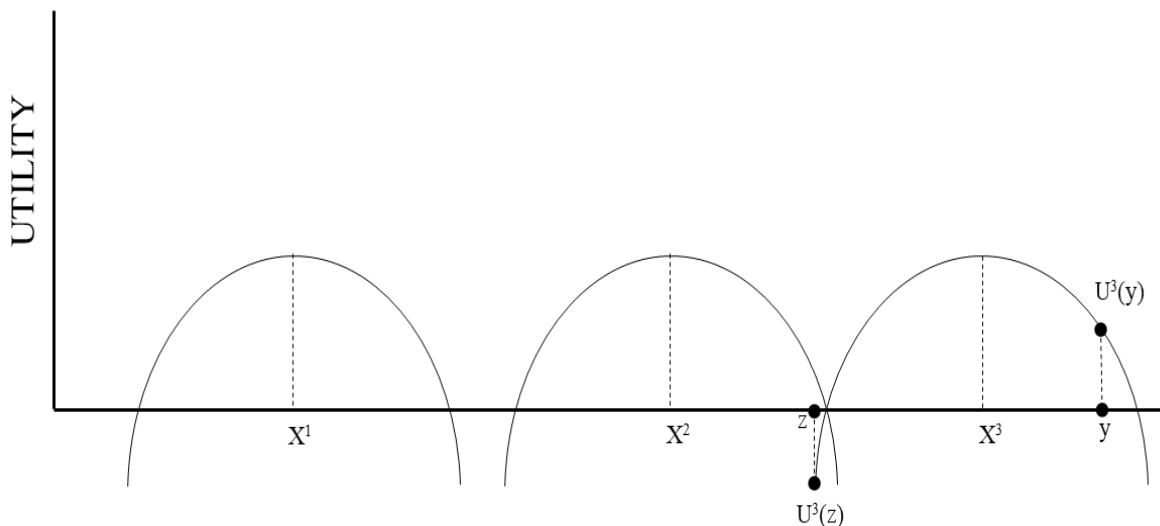
On March 27<sup>th</sup>, 2012, the JOBS Act was passed by the U.S. House of Representatives, the lower house of the U.S. Congress, and then signed into law by Barack Obama on April 5<sup>th</sup>, 2012 (Morphy, 2012). With the key target of revitalizing the U.S. IPO market, Title I of the JOBS Act, entitled “Reopening American capital markets to emerging growth companies”, reduces regulatory reporting burden on EGC IPOs by allowing firms to submit two, instead of three, years of audited financial statements; lessen the number of designated officers reported in the executive compensation disclosure from five to three; and also eliminate the section of discussion and analysis of compensation. The literature provides evidence that such relaxation of reporting requirements might spoil the investor protection as the degree of information uncertainty increases under the Act (Barth et al., 2017; Chaplinsky et al., 2017).

Modern theories of political allocation assume that political decisions take the place of market decisions. For instance, modelling the connection between two policy sectors of the iron triangle, who are Congress and interest groups, the Chicago theory of regulation or ‘capture theory’ developed by Stigler (1971) and then extended by Peltzman (1976) centres around the proposition of support-maximizing politicians and supposes that policy allocation conducted by legislatures usually demonstrates a fundamental bias in favour of interest groups’ policy demands. As interest groups might exercise their political pressures and have a considerable role in deciding the results of legislators’ election, a major political benefit is often received by these groups at the expense of others (Olson, 1965).

Corresponding to the significant reduction in the volume of the U.S. IPOs during the period of 2011-2012, in March 2011, the U.S. Treasury Department held the Access to Capital

Conference to discuss strategies to rejuvenate U.S. IPO markets, especially in the case of EGC IPOs.<sup>14</sup> The conference resulted in the creation of the IPO Task Force which has the mandate, as stated by Chair Kate Mitchell, of “quickly develop[ing] reasonable and actionable steps that can restore access for emerging growth companies to the capital they need to create jobs and expand their businesses globally”, specifically, alleviating the reporting burden for EGC IPOs (Jensen et al., 2015). The IPO Task Force also suggest that these recommendations can be implemented without compromising investor protection. The JOBS Act was accordingly enacted to carry out the IPO Task Force’s mandate. The passage of the JOBS Act can be viewed as the Congress’s response to the interest of reopening the American capital markets to EGC IPOs among market participants (e.g. private firms, stock exchange officials and regulators) so as to enhance Congress’s political support. Weingast & Moran (1983) design a model of legislative choices regarding political support functions, as shown in Figure 2.8.

**Figure 2.8. Legislator preferences**



Source: Weingast & Moran (1983)

The legislature is supposed to issue regulation over a single-dimensional subject space,  $X$ . The regulation resulting in maximum political support for legislators 1, 2 and 3 are indicated by  $X^1$ ,  $X^2$  and  $X^3$ , respectively. The policies’ degree of political support decrease by the distance between the specific points to the maximum points  $X^1$ ,  $X^2$  and  $X^3$ . It should be noted that the

<sup>14</sup> On average, the volume of U.S IPOs decrease from 310 IPOs on the annual basis during the period of 1980-2000 to 99 IPOs during the period of 2011 – 2012, leading to a growing concern among the market participants such as the private firms’ managers, stock exchange officials and regulators about the consequent reduction in the gross domestic product (GDP) and employment growth.

legislator preferences is derived from the degree of political supports. For instance, legislator 3 favours regulation y over regulation z as y can produce greater support. Needless to say, regulation X<sup>3</sup> is favoured by legislator 3 most. In sum, when making a choice between any two comparable regulations, legislator preference is given to regulations producing greater support. The regulations, which produce the greatest political support (an equilibrium X), receive a majority of preferences by the legislators' committee board.

In this vein, the JOBS Act was passed by Congress perhaps because, compared with other alternative initiatives, the Act directly carries out the recommendations of the IPO Force Task and to some extent relaxes market participants' concern about a decade-long decline in the number of U.S. IPOs, which therefore potentially yields greater political support for Congress.

### **2.3.2.3. Congressional dominance theory**

Under the Title I of the JOBS Act, the SEC is required by Congress to relax some reporting obligations (e.g., the number of audited financial statements, disclosures of compensation) applicable to EGCs going public so that Congress's target of revitalizing the U.S. IPO markets can be achieved. Furthermore, in the early stages of the JOBS Act enactment, Congress also required the SEC to undertake a review of Regulation S-K to "determine how such requirements can be updated to modernise and simplify the registration process and reduce the costs and other burdens associated with these requirements for issuers who are emerging growth companies" and then submit a report of this review to Congress not later than 180 after the passing of the JOBS Act.

Established by Congress and considered as a regulatory agency of the U.S. federal government, the SEC operates in alliance with the Congress, characterizing a legislature-agency relationship. The existing literature retains two distinct assumptions about the legislature-agency relationship including the bureaucratic (or traditional) approach and congressional dominance approach (Weingast & Moran, 1983).

On the one hand, supporting the assumption of bureaucratic behaviours, the independence of regulatory agencies from Congress is hypothesised, which is believed to result in Congress's failure in controlling the bureaucratic discretion in regulatory agencies' operation. Weingast & Moran (1983) suggest that various determinants constrain Congress's control on regulatory agencies. Firstly, regulatory agencies take control of political information in their operating fields. Secondly, connections between regulatory agencies and their clientele hinder

Congress's oversight on the agencies. Finally, the costs associated with the passage of some new regulation to alter agency policy might reduce congressional power.

Dodd & Schott (1979, p.2) argue that the federal bureaucracy is "a prodigal child. Although born of congressional intent, it has taken on a life of its own and has matured to a point where its muscle and brawn can be turned against its creator". Likewise, Wilson (1980, p.388,391) also expresses that "by and large, the policies of regulatory commissions are not under close scrutiny or careful control of either the White House or of Congress.[...]. [Moreover,] whoever first wished to see regulation carried on by quasi-independent agencies and commissions has had his boldest dreams come true. The organizations studied for this book operate with substantial autonomy, at least with respect to congressional or executive direction".

On the other hand, the congressional dominance approach assumes that regulatory agencies are under Congress's control and are likely to be directed by legislations issued by the legislature. The congressional dominance view centres on the relationship between the two other corner points of the triangle, Congress and bureaucracy. Congress is assumed to govern regulatory agencies' decisions in a way that increases the probability of their re-election. The legislature might have an influence on agency policy as they allocate the agencies' budgetary resources, offer and raise the agencies' job positions as well as establish the agencies' missions and structure. In addition, Congress's control over the regulatory agencies can be successfully gained if an incentive system with appropriate rewards and sanctions is developed (Weingast & Moran, 1983). The rewards will be paid to agencies who fulfil the requirements under some regulation of the legislature. On the contrary, the sanctions will be imposed on the agencies who fall short of Congress' legislative requirements.

Weingast & Moran (1983) believe that an effective incentive system enhances the regulatory agencies' compliance with the congressional goals and targets. There are many aspects that form the congressional incentive system. The first aspect is the competition among the regulatory agencies for budgetary favours. Running for re-election, Congress usually gives priority to regulatory agencies who outperform the clientele service when allocating budgetary resources. Second, supervision keeps a key function in prosecuting the offending agency. This involves new regulations, certain restrictions on operations, and other ways to distress agency leaders, damage potential job prospects, and hamper pet projects. Finally, and possibly the strongest form of power, Congress determines who is appointed and re-appointed.

Supporting congressional dominance theory, Butler (1995), Hansen (1990), Hansen & Prusa (1996, 1997), Rowley & Thorbecke (1995) identify that decisions made by International Trade Commission (ITC) are affected by the interests of congressional committees. The authors also identify that ITC decisions involving members of congressional supervisory committees are more likely to have defence. Similarly, De Vault (2002) provides evidence in favour of congressional dominance theory indicating that the congressional supervisory committee controls the conduct of the ITC through regulations and the appointment of ITC officials. The authors also identify that the interests of specific congressional supervisory committees affect the judgments of the ITC. Weingast (1984) uses the congressional dominance theory to analyse the SEC's empirical conduct and identify that the SEC's effectiveness in enforcing policy reforms relies on their conformity with congressional interests. The author also observes that Congress provides the SEC with higher budget allocations because it is more politically worthy.

### **2.3.3. Why does earnings management occur?**

Influencing the wealth of managers and other market players, earnings management is not viewed as a straightforward accounting mechanism, but is rather a strategic function that affects investment decisions and the distribution of resources by various stakeholders. There are five theoretical approaches explaining the motives of firms generally, and IPO firms, specifically, to engage in earnings management, including agency theory, signalling theory, positive accounting theory, threshold management theory, and entrenchment theory.

#### **2.3.3.1. Agency theory**

A key theoretical approach to understand the reasons why earnings management occurs is agency theory. An important principle of this theory is that it considers the company as a nexus of contractual relationships including those between stakeholders and management members. It is primarily related to conflicts of interest between the principal (e.g. shareholders) and the agent (e.g. corporate managers) occurring in the existence of information asymmetry between the entities (Jensen & Meckling, 1976). Information asymmetry is primarily concerned with the problems of adverse selection and moral hazard. Adverse selection occurs when executives have access to confidential materials which are important to decision-making. A moral hazard issue occurs when executives make decisions that are not compatible with the demands of investors who are unable to recognise such behaviour.

Managers' engagement in earnings management can be motivated by information asymmetry (Dye, 1988; Trueman & Titman, 1988). When information asymmetries exist, accounting choices can be used as a mechanism by which insiders might easily transmit details on the extent, timing and risk of future cash flows to poorly-informed outsiders. Nevertheless, compensation, prestige or other self-interested motivations might also cause executives to take benefit of the information discrepancy to manipulate earnings in order to increase stock prices (Fields et al., 2001).

High information asymmetries are present in the IPO context. When conducting an IPO, a going-public firm reveals its financial reports for the first time on the registration statement, which contains financial statements for the past three years. Public informational sources on private companies are minimal. Consequently, a great deal of confidential and useful information about a new issuer prior to the IPO is in the hands of its executives, prohibiting external shareholders from truly understanding the company (Cheung and Krinsky, 1994; Barzel et al., 2006; Balatbat, 2006). This divergence in information between investors and issuers and the scarcity in credible, unbiased information sources make it difficult for investors to analyse the appropriateness of the published accounting information representing the potential growth of the organisation. As a result, self-interested executives have strong motives to opportunistically distort published earnings around the IPO to boost share prices. Furthermore, in the immediate post-IPO phase, lock-up constraints on managers' selling of shares are claimed to encourage managers to attempt to control profits upwards in order to retain high share prices until after the lock-up period (Teoh et al., 1998a).

### **2.3.3.2. Signalling theory**

Signalling theory argues that the same information is not transmitted by all market participants. Evidently, in the context of business environment, there is often insufficient information exchange between different parties within the organization (Myers & Majluf, 1984). Managers are also perceived to be the most knowledgeable group on the potential prospects of the organization, and they typically have proprietary information that enables them to send out messages to various customers and market participants. Initially developed by Spence (1973), signalling theory was then popularised by Ross (1977), who investigated the association between managers and shareholders in the presence of information asymmetry.

Providing details about the company's goals and future opportunities, managers may manage earnings to disclose the company's performance. Deprived of this information, the market infers information from both the behaviour of managers and the reported results in order to form their own conclusions (Aerts et al., 2013). As a result, managers will disclose and exchange proprietary information about the potential growth of the firm through particular accounting activities. This corresponds to the convergence of business perceptions with those of management members (Sun et al., 2013). According to Xue (2004), only businesses with good potential prospects can manage their performance to transmit messages to shareholders and other stakeholders. Similarly, Altamuro et al. (2005) state that engagement in earnings management activities is justified by the assumption that managers seek to disclose important information on the potential growth of the firm.

Research on signalling theory identifies two kinds of signal: informational and opportunistic signals. The first category establishes the notion that managers with proprietary information want to disclose this information in order to ensure that share prices more accurately reflect their firm's intrinsic value, thereby reducing information asymmetry between various market participants. Ahmed et al. (1999) identify that firms with a high expected growth utilise earnings management to communicate these investment opportunities. The second form of signal, opportunistic signals, occurs when managers attempt to disguise non-profitable projects and deceive shareholders in order to obtain personal benefits such as job security or to increase their wealth in terms of outcome-related compensation. This approach also applies to the theory of management thresholds, which predicts that managers will disseminate misleading signals to reach particular outcome thresholds.

### **2.3.3.3. Positive accounting theory**

Positive accounting theory, also referred to legislative-contractual theory or political-contractual theory, is one of the most widely-used theories in the literature.<sup>15</sup> Positive accounting theory, introduced by Watts & Zimmerman (1978 and 1986), suggests multiple accounting methods employed to manipulate the company's reported results. According to the theory, managers might exhibit two behaviour patterns: opportunistic behaviour, prioritizing

---

<sup>15</sup> Some previous research refers to Positive accounting theory as legislative (political)-contractual theory or politico-contractual theory (Mironiuc et al., 2015, Nezha, 2019, Charfeddine et al., 2013, Lakhali et al., 2014). Nezha (2019) states that Positive accounting theory is built on a firm's political and contractual vision. Particularly, the firm's political and contractual responsibilities, such as debt contracts, employee remuneration, and future negative costs, might force executives to mislead the outcomes.



their benefit at the detriment of other shareholders, and behaviour aimed at maintaining accounting principles effectively to increase the firms' performances.

Watts & Zimmerman (1986) proposed three potential causal causes motivating the need for earnings management: compensation, debt and size. According to the compensation requirements, managers tend to accelerate and boost profits in order to optimise their benefits, particularly if there is a significant association between the compensation ratio and the firms' performance. In terms of debt-related motivation of earnings management, Duke et al. (1995) suggest three terms of debt contracts employed in the United States including: (1) demanding a minimum amount of non-distributable earnings; (2) enforcing a minimum amount of working capital; and (3) enforcing a maximum amount of debt. Below the thresholds of minimum earnings and minimum working capital, no additional debt will be accumulated. Exceeding the threshold of maximum debt will result in a requirement to renegotiate debt contract which can increase costs or allow creditors to gain ownership of the company. Therefore, managers may manage earnings to satisfy these thresholds. The third earnings-management incentive refers to firms' size. Watts & Zimmerman (1978 and 1986) and Healy & Wahlen (1999) observe that, as corporations become more influential and visible, they are more likely to be regulated and will be more inclined to avoid breaching antitrust law and prevent state penalties. Consequently, large companies are likely to manipulate or even decrease their net profit through the use of earnings management in order to reduce such political costs.

#### **2.3.3.4.Threshold management theory**

Management threshold theory, developed by Burgstahler & Dichev (1997), suggests that firms' managers are likely to employ earnings management to meet market expectations, that is, earnings threshold. Burgstahler & Dichev (1997) were the first scholars to investigate such anomalies in the reporting of accounting data. They mention the presence of two kinds of thresholds: the zero-result threshold (to prevent losses) and the threshold of nil variation (to prevent a reduction in income). In addition, Degeorge et al. (1999) suggest that there are significant incentive for firms to meet the threshold set by analysts' expectations.

Market participants often employ these thresholds as metrics to measure firms' performance. Therefore, the existence of anomalies around the threshold was viewed as a distortion of the accounting outcome. Vidal (2010) argues that managers are likely to conduct earnings management to meet or even surpass these thresholds. In practice, executives resist disclosing

losses and favour a null outcome or even a poor positive outcome. Other than optimizing their compensation, managers have incentive to present positive performances since it demonstrates their ability to meet or surpass their goals (Aerts et al., 2013) and thereby preserve their prestige and improve their demand on the job market.

Degeorge et al. (1999) tried to rank the three thresholds employed in previous research by addressing the psychological impact of negative outcomes on investors. The authors regard a first preference for a minimally positive outcome, a second preference for growth in outcome and, eventually, preference for meeting predictions. Considering the psychological theory that human minds undergo an inherent aversion to negative figures, it is more encouraging for managers to disclose good outcomes than negative, null or decreasing outcomes. This conduct is also explained by the cognitive theory developed by Schelling (1960) who assumed that the human psyche makes a significant distinction between positive and negative values. This prohibits executives from disclosing unfavourable outcomes and motivates them to use accounting techniques to avoid presenting such an outcome.

#### **2.3.3.5. Entrenchment theory**

Entrenchment is defined as the strengthening of managers' positions within the organization by making their replacement costly and challenging. Managers would attempt, through their administration, to improve their discretionary role in order to increase their wellbeing and receive substantial rewards. Therefore, the role of executives is irreplaceable under entrenchment strategies. Earnings management is developed from the entrenchment principle. Evidently, by owning certain amounts of shares, the interest of the executives aligns with that of the stockholders, consequently the management is expected to be properly handled. However, as assumed in entrenchment theory, the manager may behave in their own interests by attempting to increase their shareholdings by managing the earnings numbers.

Klein (2002) identifies a positive association between earnings management and managerial shareholdings, indicating that managers conduct earnings management to maximise their shares of capital. This form of conduct has been observed, in fact, prior to financing activities such as the issuance of new shares, the acquisition of shares or the distribution of stock options (Aboody & Kaznik, 2000). As a result, executives opt for a drop in profits before capital purchases in order to cut share prices on a temporary basis and take advantage of the lower-cost process. Therefore, the engagement in earnings management could be explained by

managers' objectives to decrease the cost of financing, enabling executives to promote themselves and become major owners in a company with minimum cost.

### **2.3.3.6.Revelation theory**

In several strands of economic theory, it is often useful to be capable of characterising the conditions under which the economic decision-making variable of interest is irrelevant. Prominent instances of this are the Modigliani and Miller (M&M) theorems, in corporate finance, and the Coase theorem, in welfare economics. Modigliani and Miller (1958) point out the circumstances under which a company's financial structure is unrelated to its value. The irrelevance theorems are helpful, not because the hypotheses on which they are centred are somewhat representative of the real environment, but since they allow us to concentrate on how the economic choice of interest would be influenced if one or more of the impractical hypotheses are eased.

In the context of earnings management, the revelation principle specifies that managers would not be able to reap the benefits from managing earnings provided that the following optimal requirements are met:

- Ideal and cost-free contracting and contract implementation, which include a binding pre-commitment;
- Ideal Bayesian logic on behalf of corporate shareholders and managers;
- Common knowledge: everybody acknowledges the dynamics of the game and the reliability of the system of revealing managers' inside information is acknowledged by market participants.
- Cost-free management information exchange: executives can disclose whatever they wish to shareholders at zero cost.

Accounting researchers identify that earnings management persists as the aforementioned ideal conditions are relaxed and/or violated. According to Walker (2013), the most important systemic infringements of the ideal circumstances that exist in the real world, which can lead to the occurrence of earnings management, include:

- High contracting costs resulting in the need for simpler general terms, such as financial contracts relying on rolling GAAP, allowing managers to misuse the discretion afforded within the GAAP.

- Coordination and commitment between a wide range of investors is challenging to attain; thus, contracts are likely to be frequently renegotiated;
- Many shareholders tend not to be completely rational: stock prices are influenced by bubbles and panics, so executives may question shareholders' rationality;
- The existence of third parties (e.g. competitors, trade unions, tax officials, regulators) can render communication with shareholders costly.

This thesis first examines, in chapter 3, the impact of IPO firm characteristics on the extensiveness of the SEC review. From the perspective of public interest theory, the SEC, as a regulatory agency, may tend to protect the benefits of the whole society, maintain the efficiency of the capital market, and avoid capture by any party (e.g. IPO issuers). Therefore, if any potential deficiency in the informational quality of their IPO registration statements as indicated by IPO firm's characteristics is identified, the SEC review, in line with the assumption of public interest theory, may become more intense.

Secondly, the impact of the JOBS Act on the extensiveness of the SEC review is then investigated in chapter 4. Under the assumptions of iron triangles theory, capture theory and congressional dominance theory, the SEC, a bureaucracy of the Congress, is expected to satisfy the reporting exemptions required by the JOBS Act, which was passed by the U.S Congress, in order to alleviate the reporting burden for EGC IPOs, which is considered as an interest group. Specifically, capture theory assumes the Congress tends to align itself with interest groups for their electoral support. Recognising that, the bureaucracy will execute regulations approved by the Congress in ways that benefit the interest groups, in order to secure their financial support from the Congress, as assumed in iron triangles theory and congressional dominance theory.

Agency theory, signalling theory, positive accounting theory, threshold management theory, and entrenchment theory all assume that firms generally, and IPO firms, specifically, tend to engage in earnings management as motivated by information asymmetry, managers' own benefits (e.g., shareholdings), political costs, threshold, challenging commitment to investors. These motivations always are particularly pronounced in the IPO context. The study presented in Chapter 5 examines whether the SEC review effectively address earnings management in IPO registration statement. In line with the assumption of public interest theory that by enacting

regulations, the regulator can effectively address the business flaws, the SEC is expected to perform their proposed duties successfully.

## **2.4.Prior empirical findings**

### **2.4.1. Determinants of SEC review**

Previous research has mainly focussed on SEC reviews of periodic filings (e.g. 10-K; 10-Q), rather than reviews of IPO disclosures, specifically. In this broader context, studies have investigated the likelihood of firms receiving a comment letter, the extensiveness of SEC reviews, and the typical content of SEC comment letters. Studies in this area usually employ proxies reflecting elements cited in SOX Section 408 paragraph (b), which includes the criteria used by the SEC to select periodic filers for review. Cassell et al. (2013) observe that the likelihood of receiving a comment letter conforms well to the SOX section 408 criteria as well as other determinants reflecting possible informational issues. Specifically, firms restating previously issued financial statements, having more volatile stock returns, older firms, firms having more fragile financial health, more complicated operations, no separation of CEO and chair positions, less external funding, or firms not engaging high-quality auditors are identified to be more likely to receive the SEC comment letters. Cassell et al. (2013) also observe that the likelihood of receiving the SEC comment letters is greater for bigger firms when not controlling for corporate governance differences. Cunningham et al. (2019) and Gunny & Denver (2020) also identify that bigger firms, and firms with weaker internal controls and more volatile stock returns are more likely to receive an SEC comment letter.

Research investigating the likelihood of receiving SEC comment letters also focus other types of filings required by the SEC or certain financial reporting standards, for example, 8-K filings reporting a change in auditor (Ettredge et al., 2011), reports of executive compensation in proxy statements (Robinson et al., 2011), registration statements (Agarwal et al., 2017; Johnson et al., 2020; Schuldt & Vega, 2018), non-GAAP reporting (Donelson et al., 2020), IFRS (Gietzmann & Isidro, 2013; Linthicum et al., 2017) as well as other accounting choices or filings (Bens et al., 2015; Boone et al., 2013; Hennes & Schenck, 2014; Kubick et al., 2016; Pettinicchio, 2020; Rosati et al., 2017).

The literature also investigates how external factors affect the likelihood of receiving a comment letter, for instance, foreign monitoring mechanisms (Naughton et al., 2018), political connections (Heese et al., 2017), and the SEC's own budget constraints (Ege et al., 2020; Gunny

& Hermis, 2020). By investigating the likelihood of receiving a comment letter, scholars have also verified the qualitative metrics of document similarity (Brown et al., 2018) and have discovered avenues for spillover effects and information transfer between market participants, for example, from industry peers (Brown et al., 2018; Hennes & Schenck, 2014) or auditors (Baugh & Schmardebeck, 2020; Bills et al., 2020). Furthermore, higher information uncertainty is identified as another factor that increases the likelihood of receiving a comment letter (Chen & Johnston, 2010).

In addition, the literature commonly focuses on the duration of SEC reviews, the number of comment letters or the number of comments in the initial SEC comment letter as the proxies of the extensiveness of SEC reviews (Cassell et al., 2013; Duro et al., 2017; Ertimur & Nondorf, 2006; Heese et al., 2017). The determinants of SEC review extensiveness examined in these studies, on the whole, have similar impacts in terms of predicting the likelihood of receiving a comment letter. Other factors that have been observed to affect the extensiveness of SEC review include information uncertainty (Ertimur & Nondorf, 2006), industry characteristics (Colaco et al., 2018), the expertise and position of SEC staff conducting the review (Baugh et al., 2017) and earnings quality (Schuldt & Vega, 2018).

Ertimur & Nondorf (2006) find that when reviewing registration statements prepared by IPO firms, the SEC issue fewer comments when reviewing firms with more experienced Chief Financial Officers, which implies higher reporting quality. They also observe that the SEC issues more comment letters and comments for IPO firms having outside, independent blockholders and with a higher percentage of shares held by the CEO, perhaps since these firms face stronger incentives to engage in earnings management (Dechow et al., 1996). Colaco et al. (2018) provide evidence that higher levels of ex-ante information uncertainty are associated with longer IPO durations, implying a greater level of scrutiny exercised. Baugh et al. (2017) demonstrate that individual SEC reviewers with a more senior job position tend to spend less time reviewing disclosures and address more issues in their comment letters. They also find that reviewers who are accountants comment on more issues than non-accountants (e.g. general attorney reviewers). Examining SEC oversight of earnings management through revenue manipulation, Schuldt & Vega (2018) observe that the SEC is likely to provide more comments on revenue recognition issues on IPO prospectuses exhibiting greater earnings management and hence, lower earnings quality.

Analysing the content of SEC comment letters, previous studies have focused on the range of specific issue types categorised by Audit Analytics (Cassell et al., 2013; Gunny & Hermis, 2020; Ryans, 2015). The number of words in the first SEC comment letter is also used as a measure of review extensiveness (Johnson et al., 2020). Studies employing these measures, in general, identify that the factors affecting them are comparable to those affecting the likelihood of receiving a comment letter. Furthermore, these facets of SEC comment letters are also identified to be determined by SEC reviewers' characteristics ( Baugh et al. , 2017; Do & Zhang, 2018; Kubic, 2020; Robinson et al., 2011), the SEC's budget constraints (Ege et al., 2020; Gunny & Hermis, 2020), and the enactment of the JOBS Act (Agarwal et al., 2017).

Scholars have also investigated remediation costs in relation to addressing SEC reviewers' comments, as measured by the number of the SEC comment letters or 'rounds' during the issuers' correspondence with the SEC, and the duration between the date of the initial SEC comment letter and the effective or completion date of the IPO (Cassell et al., 2013; Cassell et al., 2019; Do & Zhang, 2018). Similar determinants of the likelihood of receiving a comment letter are also identified to affect the cost of remediation. Furthermore, previous research also identifies that remediation costs are reduced for firms that copy-in the external auditor within their initial response to the SEC (Ballesterro & Schmidt, 2019), and those benefitting from the involvement of external securities lawyers (Bozanic et al., 2018). However, remediation costs are increased for firms making excessive use of complicated words in their communications with the SEC (Cassell et al., 2019).

#### **2.4.2. Benefits and costs of the JOBS Act**

There are distinct strands to the literature on the impact of the JOBS Act on IPOs. On the one hand, previous research documents the advantages of the Act to going-public firms (e.g., Dambra et al., 2015 and Dambra & Gustafson 2018). Especially, Dambra et al. (2015) identify a considerable growth in U.S. IPO markets, specially EGC IPOs, following the enactment of the JOBS Act. The authors observe that during the period April 2013 to March 2014, the number of IPOs and the percentage of EGCs were at their highest levels since 2000. This increase was partly due to high valuation within the biotechnology and pharmaceutical industries. The authors also document an increase of 21 IPOs per year, on average, following the passage of the JOBS Act – a 25% rise in the total number of IPOs over the 2001–2011 period.

Dambra et al. (2015) suggest that the increase in IPO volume under the JOBS Act may also be partly driven by market conditions, as bull markets dominated in the period following the JOBS Act's enactment. Participation by analysts in the securities issuance process increased under the JOBS Act, and analysts became more optimistic following the JOBS Act. Investors, going-public firms, analysts and underwriters evidently benefit from this post-JOBS increase in the analyst' optimism. Specifically, investors selling their stocks following the disclosure of excessively optimistic analyst research, usually institutional investors, take advantage of the analysts' optimism in order to trade on more favourable terms.

Greater analyst involvement in the IPO process also increased the positive association between optimistic research and post-IPO purchasing quantity, which may be advantageous to analysts and underwriters as greater post-IPO purchasing quantity can increase analysts' compensation and underwriters' revenues (Dambra et al., 2015). Greater underpricing resulting from optimistic analyst reports can possibly enhance underwriters' reputation amongst their favoured issuers (Betty and Ritter, 1986, Reuters, 2006). Dambra et al. (2015) additionally provide evidence that optimistic opinions are more likely to result in increased offering prices following the JOBS Act, implying that excessive optimism may reduce going-public firms' cost of capital.

On the other hand, prior research identifies the direct and indirect costs of the Act as a result of increased information asymmetry (e.g., Chaplinsky et al. 2017 and Barth et al., 2017). Chaplinsky et al. (2017) identify that the direct costs of issuance might not be lowered following the JOBS Act. However, supporting the argument that fewer mandated disclosures under the JOBS Act might reduce information transparency, the authors provide evidence that underpricing, an indirect cost of issuance, is on average 11 percentage points higher for firms that are newly qualified as EGCs. This additional cost results in a 3% loss of post-IPO market value for newly-eligible EGCs. Interrogating possible benefits of the JOBS Act, the authors draw a conclusion that it is unlikely that any examined benefits are significant enough to counterbalance the increased costs through underpricing.

Providing additional evidence about the costs of the JOBS Act, Barth et al. (2017) identify that underpricing and post-IPO volatility, two proxies of information uncertainty, vary according to the range of provisions adopted by EGC IPOs. The authors observe that the provision for confidential reviews and the de-burdening provisions of the JOBS Act result in increased information uncertainty around IPOs. Furthermore, the authors identify that the number of JOBS Act provisions adopted by EGC IPOs is positively associated with the degree of



information uncertainty, as indicated by bid-ask spreads, suggesting an overall increase in information uncertainty under the JOBS Act. The decrease in mandatory disclosure is also found to be positively related with the number of dedicated institutional investors who prefer using private information. The increase in information uncertainty is also identified to be experienced to greater extent by EGC IPOs having higher proprietary costs of disclosure.

### **2.4.3. Earnings management incentives in the IPO context**

Teoh et al. (1998b) suggest two plausible reasons why IPO firms are likely to manage earnings when going public. First, the IPO market is one where market participants (e.g. investors, regulators, auditors, analysts) carry out evaluations of IPO issuers with limited information about prior firm performance. High information asymmetry is a typical characteristic of the IPO market (Leland & Pyle, 1977). Rao (1993) shows that media coverage of IPOs is sparsely available in the pre-IPO period. IPO prospectuses, which are drawn up by the issuer and their underwriter, form a substantial part of the available information about the issuer (e.g. their business, financial statements and future prospects). Therefore, when evaluating the issuer's performance and prospects, investors and other market participants must rely heavily on the prospectus.

Aharon et al. (1993) state that if information about a specific firm is scarce in the market, there would be external requirements for and dependence upon the firm's IPO disclosures, which typically contain only one to three years of annual and quarterly financial statements. Due to the scarcity of other publicly available information to corroborate the accounting information in prospectuses, investors have difficulties in appraising whether the accounting information precisely reflects the issuers' actual performance. If investors are not able to comprehend the quality of accounting information provided in the prospectus, issuers may be incentivised to window dress their performance by distorting the reported earning in order to attract investors. According to Gibbins et al. (1990), if there is little public information about a specific firm, the firm will have greater incentives to engage in opportunistic reporting activities by exercising their discretion in reporting financial information.

Second, a successful IPO would generate valuable capital resources to fund issuers' business expansion as well as to potentially pay off current debts. Therefore, IPO issuers may have considerable incentives to exploit discretion available in reporting and price formation to ensure full subscription of their offerings. In the process of setting the offering price,

underwriters often base the price on going-public firms' earnings numbers and the price-earnings ratio of peer public firms in the same industry as the going-public firms to recommend the offering price in prospectuses. Consequently, the going-public firms may be incentivised to report favourable earnings numbers in the prospectus (i.e. engage in income-increasing earnings management), in order to maximise their offering value. Specifically, reporting favourable earnings numbers may increase the offering value through not only achieving a higher offering price but also increasing the probability of receiving full subscription and completing the offering successfully.

Overall, when going public, IPO issuers have strong incentives to manage their earnings to mislead potential investors due to the information asymmetry between the issuer and their investors in the IPO market, as well as the issuer's opportunistic motivations of building and growing a successful offering. There are two strands of recent research providing evidence about the IPO firms' engagement in the earnings management activity. One documents more conservative reporting of earnings around IPOs (e.g. Fields et al., 2001; Herbohn et al., 2010; Kallunki & Martikainen, 2003; Louis & Robinson, 2005). The other documents the existence of aggressive or opportunistic income-increasing earnings management in the IPO context (e.g. Alhadab & Clacher, 2018; Alhadab et al., 2015, 2016; Gao et al., 2017; Gounopoulos & Pham, 2017, 2018; Kouwenberg & Thontirawong, 2016). International evidence about increased earnings management activity by IPO firms has been observed in many jurisdictions, such as the United States (e.g. Chahine et al., 2012; Gounopoulos & Pham, 2017, 2018; Louis & Robinson, 2005), the United Kingdom (e.g. Alhadab et al., 2015, 2016), Netherlands (e.g. Roosenboom et al., 2003) and Asian countries (e.g. Ahmad-Zaluki et al., 2011; Kouwenberg & Thontirawong, 2016).

## **2.5. Conclusion**

SEC reviews perform a crucial role in the U.S. capital market as they serve a purpose of protecting investors by monitoring IPO approval processes, as well as enhancing the informational quality of the IPO environment. However, it is possible that SEC reviews fall short of this ideal as there exists a wide range of internal and external factors potentially affecting the effectiveness of SEC reviews. This literature review chapter elaborates the institutional background, theoretical framework and prior empirical findings in regard to the determinants and effectiveness of SEC reviews. Specifically, the chapter summarises and critically analyses backgrounds, theories and literature relating to the determinants of SEC

review extensiveness. The benefits and costs of the JOBS Act are then reviewed in terms of potential impacts on SEC reviews. Finally, earnings management incentives in the IPO context are discussed.

The chapter starts by discussing the institutional background of the U.S IPO market. There are two major types of IPO marketplaces in the U.S. including stock exchanges (e.g. New York Stock Exchange or NYSE, and NASDAQ) and OTC markets (e.g. Pink Sheets). In a U.S. IPO, key parties usually consist of internal staffs of going-public firms, underwriters, counsels, external auditors, a transfer agent, a financial printer and external advisors. Key regulator overseeing the U.S. IPO market is the SEC. Another regulatory body in the U.S IPO market is the FINRA who govern IPO firms' underwriters. The U.S. IPO process and stock markets are governed by a considerable number of regulations including the Securities Act of 1933, the Dodd Frank Act, the JOBS Act and a range of listing requirements of stock exchanges (e.g., NYSE, NASDAQ). An IPO process normally comprises three main phases including pre-filing phase, SEC review process and marketing/execution phase.

Regarding the review process, the SEC require all going-public firms to file registration statements (i.e., S-1 filings) in order to register their initial offerings. The S-1 filing is the very first disclosure required and reviewed by the SEC. The registration statement contains information related to IPO firms' business, their offering, their corporate governance arrangements and financial statements for the first time. The SEC, specifically the Division of Corporation Finance, then review all IPO registration statements and issue comment letters requesting clarification, justification, or amendments on certain matters where deemed necessary. SEC comment letters, which are released publicly on the SEC's EDGAR system, usually consists of six sections including heading, subject line, beginning, itemised comments, ending and signature.

According to public interest theory, the regulatory agency (e.g., the SEC) is believed to satisfy the needs of society as a whole rather than merely serving private interests. According to this perspective, the SEC retains neutrality when conducting their reviews (Gunny & Hermis, 2020; Heese et al., 2017; Philips & Zecher, 1981). However, there have been several extensive debates on public interest theory. The assumption of market failure within public interest theory is not practical as the market system itself is also capable of creating institutions to correct for any failures. In addition, the assumption that government intervention is always efficient or effective is questionable as there might be other inevitable inefficiencies (e.g., imperfect

competitiveness, inaccurate information) existing elsewhere in the market. Therefore, regulatory agency might not be neutral in some cases, especially when the assumptions of market failures and effective government intervention are violated.<sup>16</sup>

Distinct strands of the literature discuss a potential determinant of SEC reviews, namely the JOBS Act (Agarwal et al., 2017; Lowry et al., 2020). The Chicago theory of regulation or ‘capture theory’ states that interest groups exercise political pressure and as a result, they may receive political benefits at the expense of others. The enactment of the JOBS Act can be considered as the response of Congress to pressures from market participants to revitalise the American capital markets. On the one hand, the SEC is believed to satisfy the “de-burdening” provisions under the JOBS Act since these provisions offer several advantages to ECG IPOs, as documented by Dambra et al. (2015) and Dambra & Gustafson (2018). In this vein, according to Iron Triangle theory, bureaucracies (e.g. the SEC) serve as the implementation mechanism of regulations approved by Congress (e.g. the JOBS Act) as Congress is a major source of the bureaucracies' budgets. Similarly, the congressional dominance theory supposes that regulatory agencies are under Congressional control and are likely to be directed by legislations issued by the legislature. On the other hand, the SEC is argued to be more extensive under the JOBS Act as there are a number of direct and indirect costs of the Act as a result of increased information asymmetry (e.g., Chaplinsky et al. 2017 and Barth et al., 2017).

When conducting an IPO, an issuer has strong incentives to engage in earnings management in order to deceive potential investors about their true financial performance. This is because information asymmetry between the issuer and their investors in the IPO market is high. In addition, the issuer also has opportunistic motivations of building and growing a successful offering. Many theories support the existence of earnings managements in the IPO context. Agency theory state that the existence of information asymmetry between the principal (e.g. shareholders) and the agent (e.g. corporate managers) may lead to the conflicts of interest between these entities, resulting in moral hazard issues. Signalling theory argues that there are two types of signal, including informational signals, which aim to reduce information

---

<sup>16</sup> The literature identifies SEC reviews to be impacted by a broad range of factors, including those cited in SOX Section 408 paragraph (b), for example firm age, firm size, business complexity, corporate governance, financial health and auditor quality (Cassell et al, 2013; Cunningham et al., 2019, Duro et al., 2017; Ertimur & Nondorf, 2006; Gunny & Denver, 2020), information uncertainty (Chen & Johnston, 2010; Ertimur & Nondorf, 2006), foreign monitoring mechanisms (Naughton et al., 2018), political connections (Heese et al., 2017), the SEC's own budget constraints (Ege et al., 2020; Gunny & Hermis, 2020), the expertise and position of SEC staff conducting the review (Baugh et al., 2017), and earnings quality (Schuldt & Vega, 2018).

asymmetry and more accurately reflect the firm's intrinsic value, and opportunistic signals, which aim to mislead shareholders about the firm's poor performance.

In this vein, Positive accounting theory predicts two types of behaviour, including opportunistic behaviour, prioritizing the managers' interests at the expense of investors, and behaviour of adhering to accounting principles in order to enhance firm performance. Management threshold theory argues that corporate managers have incentives to conduct earnings management in order to meet earnings thresholds. Entrenchment theory assumes that managers act in opportunistic ways to increase their shareholdings by managing the earnings numbers. Revelation theory specifies that earnings management might occur if the assumptions of ideal conditions are relaxed (e.g. incomplete rationality of shareholders).

Literature about IPO firms' engagement in the earnings management activity has developed along two opposite strands. One supports conservative earnings management (e.g. Fields et al., 2001; Herbohn et al., 2010; Kallunki & Martikainen, 2003; Louis & Robinson, 2005). The other provides evidence on aggressive or opportunistic income-increasing earnings management around IPOs (e.g. Alhadab & Clacher, 2018; Alhadab et al., 2015, 2016; Gao et al., 2017; Gounopoulos & Pham, 2017, 2018; Kouwenberg & Thontirawong, 2016).

Overall, this chapter develops institutional settings by discussing the characteristics of the U.S IPO market, the features of the IPO registration statement, the U.S IPO regulatory architecture, SEC review process and the content of SEC comment letters, which all provide a comprehensive understanding of the research topic and scope. In addition, many theories including; public interest theory, iron triangles theory, capture theory, congressional dominance theory, agency theory, signalling theory, positive accounting theory, threshold management theory, and entrenchment theory, are covered in this chapter, which lays foundations for hypotheses developed in this thesis. Finally, literature on the determinants of SEC review, the benefits and costs of the JOBS Act and earnings management incentives in the IPO contest are critically analysed in this chapter, which provides an overview of current knowledge and gaps in the existing research. The next three chapters present three distinct studies that are linked to three research questions developed in this thesis. Specifically, chapter 3 examines how the characteristics of IPO firms affect the extensiveness of SEC reviews? The impact of the JOBS Act on the SEC review extensiveness is investigated in chapter 4. Chapter 4 aims to provide evidence about the effectiveness of the SEC review in addressing earnings management within the IPO registration statement.

### **3. The effects of IPO firms' characteristics on SEC reviews of IPO registration statements**

#### **3.1. Introduction**

This study aims to examine how the extensiveness of SEC reviews of S-1 filings, as indicated by the duration of the SEC, the number of SEC comment letters, the number of comments and the range of themes mentioned in the letters, relates to IPO firms' characteristics. S-1 filings are registration statements prepared by firms going public in the U.S., which provide information about the initial-public-offering (IPO) firm's financial health, business strategy, competitive advantage in their industry and financial prospects. The U.S. Securities and Exchange Commission (SEC) is an independent agency of the United States federal government, whose key responsibility is conducting a careful review of IPO firms' prospectuses in order to ensure that IPO firms are reporting "meaningful financial and other information to the public" (SEC, 2013). In almost every comment letter, SEC reviewers express that "...the purpose of our review process is to assist you in your compliance with the applicable disclosure requirements and to enhance the overall disclosure in your filing".

Generally speaking, SEC reviews of IPO registration statement play an important role since they aim to improve disclosure quality within U.S. IPO markets. The IPO environment is characterised by high levels of information asymmetry which may induce IPO firms to make insufficient or misleading disclosures to maximise the proceeds of the offering (Li & Liu, 2017). Therefore, understanding SEC review process for S-1 filings, especially the determinants of the review (e.g. IPO firms' characteristics), is important since investors rely on the information discloses through S-1 filings when making investment decisions. S-1 filings typically contain an extensive amount of intangible information about the IPO firm's future strategy and possible problems which will likely affect investors' evaluations (Loughran & McDonald, 2013).

Public interest theory, developed by Pigou (1932), suggests that regulatory bodies are neutral and aim to protect the interests of society as a whole, rather than those of individuals in weak and inefficient markets. There are a growing number of studies providing evidence that SEC reviews are sensitive to firms' characteristics as indicators of potential informational deficiencies. For example, prior research identify that SEC reviews of corporate disclosure are likely to more extensive for bigger firms (Cassell et al., 2013; Cassell et al., 2019; Cunningham & Leidner, 2019; Eiler & Kutcher, 2016; Ertimur & Nondorf, 2006; Heese et al., 2017; Johnston

& Petacchi, 2017; Li & Liu, 2017; Wang, 2016), perhaps because bigger firms are likely to be more complicated (Boone et al., 2013; Chaplinsky et al., 2017) and more likely to display reporting violations (Correia, 2014).

In terms of firm age, older firms, who might have greater weaknesses derived from their diversified and complicated operations (Chaplinsky et al., 2017; Doyle et al., 2007), are identified to experience more extensive SEC reviews (Baugh et al., 2017; Cassell et al., 2013; Chen & Johnston, 2010; Colaco et al., 2018; Heese et al., 2017; Johnston & Petacchi, 2017). Concerning business complexity, empirical findings demonstrate that firms with greater complexity in their businesses, who have greater sales growth, more business segments, and who conduct restructuring and M&A activities, attract greater SEC scrutiny (Baugh et al., 2017; Cassell et al., 2013; Duro et al., 2017; Heese et al., 2017; Wang, 2016), perhaps because these firms have a weaker informational environment and low reporting quality (Cassell et al., 2013; Jiang et al., 2005).

With regard to financial health, prior research provides evidence that SEC reviews of corporate disclosures are more extensive for firms with complex financial issues or potential issues related to financial health as indicated by higher leverage (Duro et al., 2017; Ryans, 2015), greater probability of bankruptcy (Cassell et al., 2013), firms with positive earnings (Baugh et al., 2017; Wang, 2016) as they are more likely to be disclosing misleading earnings numbers in order to attract investors (Teoh et al., 1998a), and firms with lower external financing (Baugh et al., 2017; Cassel et al., 2013; Heese et al., 2013; Wang, 2016) who might have lower disclosure quality and reporting compliance (Ettredge et al., 2011; Lang & Lundholm, 1993; Wang, 2016).

Regarding auditor quality, SEC reviews are observed to be less extensive for firms audited by high-reputable auditors (Cassell et al., 2013; Cassell et al., 2019; Colaco et al., 2018) suggesting they mitigate reporting problems (Ball & Shivakumar, 2008; Chang et al., 2008; Johnston & Petacchi, 2017; Li & Liu, 2017 and Venkataraman et al., 2005). Finally, the strength of corporate governance arrangements has also been found to play an important role. Prior empirical findings suggest that firms with weak corporate governance, e.g. exhibiting CEO-chairperson duality, tend to experience more extensive SEC reviews (Cassell et al., 2013; Ettredge et al., 2011; Heese et al., 2017; Robinson et al., 2011) since they are likely to have more potential reporting deficiencies (Dechow et al., 1996; Ettredge et al., 2011; Ertimur and Nondorf, 2006; Robinson et al., 2011).

While a number of existing studies explore how firm characteristics affect the extensiveness of SEC reviews, as mentioned above, these research mostly examine SEC reviews of annual filings (e.g. 10-K, 20-F, 40-F), 8-K filings, proxy statement filings and filings other than IPO registration statements (i.e. S-1 filings). Findings from the above studies might not generalise to SEC reviews of S-1 filings since S-1 filings contain the information that is more specific to the securities offering. More closely related to this study, Ertimur & Nondorf (2006) examine effects of IPO firms' managerial expertise and their corporate governance on SEC reviews on S-1 and SB-2 filings and identify that higher managerial expertise is likely to reduce the number of themes mentioned in SEC comment letters. Another related study is that of Colaco et al. (2018), who examine the determinants of IPO waiting periods, including the impact of information uncertainty and industry or market characteristics. They identify that firms with greater ex-ante information uncertainty, higher underpricing, and poorer post-IPO performance are likely to have experienced longer waiting periods, which include the period of their SEC review.

This study differs from Ertimur & Nondorf (2006) and Colaco et al. (2018) in three aspects. First, this study examines a broader range of IPO firm characteristics potentially impacting SEC reviews of S-1 filings than merely IPO firms' managerial expertise, corporate governance (Ertimur & Nondorf, 2006) and industry or market characteristics (Colaco et al., 2018). Second, this study employs a more recent sample period, which covers recent and important regulatory changes which are likely to have substantially affected SEC reviews, e.g. the Dodd Frank Act in 2010 and the JOBS Act in 2012. Third, while Ertimur & Nondorf (2006) examine SEC reviews of S-1 and SB-2 filings, this study focuses only on S-1 filings in order to maintain consistency within the sample and the content analysis. SB-2 is a simplified version of S-1 filings which provides less detailed information about the IPO firm.

A further related study is Agarwal et al. (2017), who examine SEC comment letters during a more recent period 2010 to mid-2014. However, their study focuses on the style of SEC comment letters (e.g. tone, percentage of quantitative items), but not the intensity of SEC reviews. Differently to Agarwal et al. (2017), this study examines differences in the intensity of SEC reviews, which more closely relates to the effectiveness of their review activities, rather than merely the style of their reviews.

Motivated by (1) the importance of understanding SEC reviews of S-1 filings, (2) the paucity of research on how the broad range of IPO firm characteristics affect the intensity of SEC S-1 reviews, specifically, (3) the lack of research on S-1 filings in general, and (4) the lack of research



on the impact of recent regulatory changes on S-1 reviews, e.g. the Dodd Frank Act, this study examines the key research question: ‘How do IPO firm characteristics affect SEC reviews of IPO registration statements?’. To answer the key research question, six broad categories of IPO firm characteristics are considered in this study, namely company size, company age, business complexity, financial health, auditor quality and corporate governance.

A sample of 909 U.S. IPO firms filing S-1 registration statements during the period 12<sup>th</sup> May 2005 to 31<sup>st</sup> December 2017 is employed. Four proxies are employed to measure the intensity of SEC reviews, namely: the duration of the IPO process; the number of SEC comment letters; the number of comments; and the range of themes covered within comment letters. Multivariate tests with negative binomial regressions are used to examine relationship between SEC S-1 reviews and IPO firm characteristics. In addition, this study also investigates how issue types mentioned in SEC comment letters affect remediation costs faced by the IPO firm, and whether the global financial crisis of 2008-2009 has any moderating effect on the sensitivity of SEC reviews to IPO firm characteristics.

The results show that bigger IPO firms are likely to: experience longer SEC reviews; receive more comment letters; more comments; and comments on a wider range of themes. Older IPO firms are also identified to experience a longer SEC review duration and receive more comment letters. This study also observes that SEC reviews are likely to be more extensive for firms having greater business complexity. Specifically, a wider range of themes in SEC comment letters is observed for IPO firms having more business segments. Firms conducting M&As are also likely to receive more comments and comments on a wider range of themes. However, the duration of SEC reviews is identified to be longer for IPO firms having lower sales growth who might have less business complexity, perhaps expressing the SEC’s concern that these firms are incentivised to manipulate downward their sales in order to qualify for EGC status under the JOBS Act.

The results also show that the extensiveness of SEC reviews is greater for firms with poor financial health or with potential issues related to the reporting of financial health, as SEC reviews appear to be shorter for IPO firms using more external financing and having positive reported earnings. IPO firms with higher bankruptcy risk are also identified to experience longer SEC review duration, receive more comment letters, more comments and more themes covered in the SEC letters. IPO firms not audited by Big4 auditors are also observed to experience longer SEC reviews and receive comments on a wider range of themes. Overall, the results highlight that SEC reviews of S-1 filings are more extensive for bigger and older firms, firms having more

business segments, lower sales growth, firms conducting M&A activity, with less external financing, positive earnings, greater financial distress and are not audited by high-quality auditors.

Moreover, as compared with other possible issues highlighted in SEC comment letters, comments on core accounting issues, non-core accounting issues, business issues and disclosure issues are observed to result in higher remediation costs, and the costs are highest for comments on core accounting issues. Furthermore, this study identifies that, during the period of the global financial crisis, bigger IPO firms, IPO firms having higher external financing, and IPO firms having higher a probability of bankruptcy are more likely to experience greater SEC review extensiveness.

This study contributes to the extant literature by providing new and broad evidence about how IPO firms' characteristics affect SEC reviews of S-1 filings. Prior research on the determinants of SEC reviews of IPO registration statements only identify impacts from a narrow range of firm characteristics. e.g. IPO firms' managerial expertise (Ertimur & Nondorf, 2006), the financial crisis (Colaco et al., 2018), and the impact of technology industries and hot markets on the duration of the IPO process (Colaco et al., 2018). Therefore, findings in this study extend the literature by providing evidence on a much broader range of factors. In particular, it is the first to shed light on the impact of company size, firm age, sales growth, the number of segments, financial distress, external financing activities, M&A activities, profits and dual CEO and chair on the extensiveness of SEC S-1 reviews, specifically. These findings are important since they provide a better understanding of SEC reviews of S-1 filings, which is useful to investors, auditors and other stakeholders who rely on SEC reviews to ensure the high quality of S-1 filings, to facilitate their decision-making. In addition, this study, to some extent, provides IPO issuers with the knowledge of how to speed up SEC review processes. For example, regarding the choice of auditors, the findings suggest that IPO issuers should choose high-quality auditors (e.g. Big 4) to perform audit procedures could shorten IPO approval process. However, the issuer should bear in mind the audit fee premium associated with appointing a Big 4 auditor.

This study also contributes by providing evidence on the sensitivities of SEC S-1 reviews to IPO firms' characteristics during a more recent period. This is important given important regulatory changes, e.g. the 2010 Dodd Frank Act and the 2012 JOBS Act. In addition, this study also deepens the understanding of the widespread effects of the global financial crisis 2008 – 2009 by providing evidence that SEC reviews are more likely to be more extensive for firms having

potential issues in their reporting and funding activities during the financial crisis. Furthermore, this study provides managers and other IPO participants with more information about remediation costs in connection to SEC reviews by identifying that each type of issue mentioned in SEC comment letters is subject to the different levels of remediation cost. Finally, this study also contributes by providing a new coding scheme, which is a useful tool for future research on issues relating to SEC reviews of S-1 filings.

The remainder of this chapter is organised as follows. Section 3.2 reviews the relevant empirical literature. Section 3.3 discusses the data collection and methodology. The empirical results are presented and discussed in Section 3.4, while Section 3.5 concludes the chapter.

### **3.2.Literature review**

Public interest theory, developed by Pigou (1932), suggests that regulatory bodies aim to protect the interests of the public as a whole rather than those of any individuals. He argues that the regulatory bodies aim to serve the public interest when they are required by the public to intervene, monitor and reform inefficient practices. Two main assumptions of public interest theory are that (1) markets are very weak and inefficient, and (2) regulatory bodies are neutral arbiters. Applying public interest theory, Godfrey et al. (2010) express that regulatory bodies will intervene in firms' disclosure processes in order to correct wrongdoings in information reporting, to protect investors, and to gain the confidence of all market participants. Nevertheless, public interest theory might not hold in the real world, as regulatory bodies could be captured by big firms (Stigler, 1971) or lobbied by interest groups (Watts & Zimmerman, 1978).

In support of public interest theory, the prior literature provide evidence that SEC reviews can uncover existing or potential informational deficiencies, such as information uncertainty (Colaco et al., 2018; Chen & Johnston, 2010), low disclosure quality (Lowry, 2020; Schuldt & Vega, 2018), weak corporate governance (Cassell et al., 2013; Ertimur and Nondorf., 2006; Ettredge et al., 2011), and can improve the quality of the information environment (Li & Liu, 2017; Lowry, 2020; Schuldt & Vega, 2018).

The literature investigating the determinants of SEC reviews of firm disclosure is diverse. For the sake of brevity, this study outlines empirical findings in relation to the research questions: How do the IPO firm's characteristics affect SEC reviews of IPO registration statements? Specifically, this section addresses how SEC reviews are influenced by company size, age, business complexity, financial health, auditor quality and corporate governance quality.

## Company size

Company size has long been argued to influence regulatory oversight, as Skinner (1994) suggests that bigger firms might attract greater regulatory scrutiny. Ettredge et al. (2011) suggest that corporate compliance with accounting and disclosure regulation is associated with company size. Boone et al. (2013) identify that bigger firms have greater complexity and diversity. Chaplinsky et al. (2017) also find that bigger firms tend to disclose more information. The SEC (2006) state that, in accordance with SOX Section 408 paragraph (b), the Division of Corporation Finance shall take company size, based either on market capitalization (SOX section 408 criterion 3) or the level of impact on a sector of the economy (SOX section 408 criterion 5), as a key criterion for selecting companies for periodic review. Correia (2014) suggests that bigger firms are more likely to violate federal securities laws, and consequently are identified to have greater probability of SEC enforcements.

Regarding the impact of company size on the extensiveness of SEC reviews, Cassell et al. (2013) identify that bigger firms are more likely to receive SEC comment letters on 10-K filings, experience longer SEC reviews (duration from the first comment letter to the “no further comment” letter) and receive more comment letters from the SEC. Similarly, Cassell et al. (2019) find a positive relationship between company size and the number of days in SEC review duration and the number of SEC letters on 10-K filings. Wang (2016) identify that the probability of receiving an SEC comment letter on segment disclosures and amending current reports is higher for bigger firms. Likewise, Eiler & Kutcher (2016) also find that bigger firms are more likely to receive PRE-related comment letters.<sup>17</sup> Johnston & Petacchi (2017), Duro et al. (2017), Heese et al. (2017) and Cunningham & Leidner (2019) also identify that bigger firms have a higher probability of receiving comment letters on 10-K filings.<sup>18</sup>

Li & Liu (2017) provide evidence that IPOs receiving comment letters on S-1 and SB-2 filings are bigger than those not receiving comment letters. Lowry et al. (2020) show that bigger firms are likely to receive longer comments about revenue recognition, capitalization, liquidity and risk factor issues (in terms of the number of words). Examining IPO registration statements,

---

<sup>17</sup> PRE stands for permanently reinvested earnings. The SEC oversight has concentrated on filers with PRE as PRE-related reports are one of the limited sources containing information about foreign businesses. Because PRE-related reports provide limited information, the SEC can make use of their review, particularly the PRE-related SEC letters, to inquire more details about foreign businesses.

<sup>18</sup> The finding of Duro et al. (2017) is demonstrated in the period after May 12th, 2005 when SEC began publishing their comment letters.

Ertimur & Nondorf (2006), find a positive relationship between company size and the range of themes in comment letters on S-1 and SB-2 filings. Overall, prior research supports the view that SEC reviews of corporate disclosures are likely to be more extensive for bigger firms.

The first hypothesis, therefore, is stated in an alternative form, as follows.

***H1<sub>alternative</sub>**: SEC reviews of IPO registration statements are likely to be more extensive for bigger issuers.*

### **Company age**

Chaplinsky et al. (2017) identify that older IPO firms are likely to disclose more information. Doyle et al. (2007) observe that the older firm tends to have weaknesses as they are more likely to have weaknesses in their accounting transactions. In line with the expectation that greater scrutiny in the review process might be experienced by older firms, Cassell et al. (2013) find that older firms are more likely to receive comment letters on 10-K filings and also experience higher cost of remediation as indicated by the number of comment letters received during the review process. Similarly, Chen & Johnston (2010) and Johnston & Petacchi (2017) provide evidence that the probability of receiving comment letters on 10-K filings is higher for older firms.

IPO firms receiving comment letters on 10-K filings are observed to be older than those not receiving any comment letter (Cassell et al., 2013; Heese et al., 2017). Likewise, Baugh et al. (2017) identify that the sample of firms receiving comment letters on their annual filings are more mature than the sample of all firms on the Compustat database. Focusing on the IPO process, Colaco et al. (2018) observe that longer IPO waiting periods, which includes SEC review process, are likely to be experienced by older firms. Taken together, these findings indicate that older firms are likely to receive more extensive SEC reviews.

Therefore, the second hypothesis, stated in an alternative form, is as follows.

***H2<sub>alternative</sub>**: SEC reviews of IPO registration statements are likely to be more extensive for older issuers.*

### **Company complexity**

According to Baugh et al. (2017), Cassell et al. (2013) and Duro et al. (2017), company complexity is greater for firms with higher sales growth, more reporting segments, and for firms

conducting restructuring and M&A activities. Cassell et al. (2013) also suggest that company complexity may decrease the quality of financial disclosures. Jiang et al. (2005) identify that firms with greater expected growth are likely to be operating under conditions of higher information uncertainty, which might attract more SEC scrutiny (Chen & Johnston, 2010; Colaco et al., 2018; Ertimur & Nondorf, 2006). Heese et al. (2017) also state that firms with high sales growth rates, indicating high growth expectation (Jiang et al., 2005), are often targeted by the SEC for review.

Cassell et al. (2013) find evidence that high complexity increases the extensiveness of SEC reviews of 10-K filings. Specifically, the authors identify that, compared with firms not receiving any comment letters, firms receiving letters have greater business complexity as they have more business segments, and are more likely to conduct restructuring and M&A activities. They also observe that the SEC provide more comment letters for firms conducting M&A activities and wider ranges of themes in the comment letters for firms having more business segments. Likewise, Baugh et al. (2017) also observe that the sample of firms receiving comment letters on their annual filings more frequently restructure their operations and conduct M&A than the sample of all firms on the Compustat database.

Heese et al. (2017) identify that the probability of receiving an SEC comment letter on 10-K filings is higher for firms conducting restructuring or M&A, who may have more complexity in their business. Similarly, Duro et al. (2017) find evidence that after May 12th, 2005 when SEC began publishing their comment letters and firms' correspondence, the probability of receiving an SEC comment letter on 10-K filings is higher for firms conducting M&A. Wang (2016) observes that firms engaging in restructuring activities are more likely to have deficient disclosures as they receive comment letters addressing deficiencies in segmental reports, and are more likely to amend (or commit to amending) the reports. The authors also identify that firms with deficiencies in segmental disclosures are more likely to conduct M&A activities. In general, the empirical findings reveal that the SEC increase the extensiveness of their review for firms with greater complexity in their businesses.

The third hypothesis, therefore, is stated in an alternative form, as follows.

***H3<sub>alternative</sub>: SEC reviews of IPO registration statements are likely to be more extensive for issuers with greater complexity in their business.***

## **Financial health**

Building on prior work, this study focuses on firm leverage, financial distress, profitability and needs for external financing as indicators of firms' financial health. Regarding firm leverage, Healy & Palepu (2001) argue that firms with high leverage ratios are likely to employ accounting methods to boost their profits. Filatotchev (2019) also suggest that leverage ratios are positively associated with the degree of earnings management. In line with arguments about the negative effects of firm leverage on disclosure quality, Ryans (2015) identify that the probability of receiving comment letters on 10-K filings is greater for firm with higher leverage. Likewise, Duro et al. (2017) present evidence that after the SEC began publishing their review correspondences in 2005, firms with higher leverage (i.e. have higher debt levels) are more likely to receive SEC comment letters on 10-K filings.

Concerning financial distress, Schwartz & Soo (1995) observe that more reporting deficiencies are conducted by firms that are close to bankruptcy. The authors also identify that firms in financial distress are less likely to ensure reporting compliance. Begley et al. (1996) also find that as compared with firms who do not have financial distress, distressed firms are more likely to commit fraud. Brazel et al. (2009) and Dechow et al. (1996) find that firms in financial distress are more likely to be noncompliant with GAAP. Similarly, Ettredge et al. (2011) suggest that firms in financial distress are less able to comply with reporting requirements as revitalizing profitability catches their managerial attention and is also their priority when investing their meagre financial resources. Supporting potential reporting problems driven by corporate financial distress, Cassell et al. (2013) identify that firms with a higher probability of bankruptcy have a higher probability of receiving SEC letters and also receive more comment letters on 10-K filings perhaps because they use their financial resources more sparingly when responding to comment letters (Ettredge et al., 2011).

With regard to profitability or the value of earnings, Teoh et al. (1998a) suggest that IPO firms often manipulate accounting information to report more positive earnings, in order to attract investors, during the IPO year. Burgstahler & Dichev (1997) and Degeorge et al. (1999) also argue that exceeding positive earnings thresholds incentivises firms to manage their earnings numbers. Bushman & Piotroski (2006) posit that the SEC is more susceptible to political issues derived from financial reporting scandals associated with overstatement rather than understatement of earnings numbers. Supporting the potential negative consequences of incentives to report positive earnings, Wang (2016) identifies that firms receiving SEC comment

letters addressing deficient segment reports have higher abnormal profit than those not having the reporting deficiencies. Baugh et al. (2017) observe that the sample of firms receiving comment letters on their annual filings typically report higher profits than the full sample of firms on the Compustat database.

In terms of external financing needs, Ettredge et al. (2011) and Lang & Lundholm (1993) identify that disclosure quality and reporting compliance are higher when firms have previously issued debt or equity securities. Wang (2016) suggests that firms with funding from external resources (e.g. equity or bond offerings) are likely to develop a more transparent information environment in order to reduce the cost of capital. In agreement with arguments about the positive information effects of external financing, Cassel et al. (2013) find that, as compared with firms not receiving comment letters, firms receiving letters on 10-K filings are less likely to require funding from outside the firms by issuing debt or equity securities. Cassel et al. (2013) and Heese et al. (2013) also identify that firms who have obtained external financing have lower probabilities of receiving comment letters on 10-K filings. Similarly, Wang (2016) find that firms receiving comment letters about segmental disclosure deficiencies are less likely to require external financing than those not receiving comment letters. Baugh et al. (2017) also identify that firms receiving comment letters on their annual filings rely less on external financing than a sample of all firms on the Compustat database.

Overall, prior research provides evidence that SEC reviews of IPO registration statements are more extensive for firms with financial problems or deficiencies, as indicated by higher leverage, greater probability of bankruptcy, positive earnings, and lower external financing.

This thesis therefore states the fourth hypothesis in an alternative form, as follows.

***H4<sub>alternative</sub>**: SEC reviews of IPO registration statements are likely to be more extensive for issuers having more fragile financial health.*

### **Auditor quality**

According to Healy & Palepu (2001), in the U.S., one of the key targets of auditing services is ensuring firms' compliance with accounting regulations when preparing financial reports. Johnston & Petacchi (2017) and Li & Liu (2017) suggest that firms that are audited by Big 4 auditors tend to be of lower risk and have more standard reports. Ball & Shivakumar (2008) suggest that earnings numbers reported prior to IPOs are likely to be more conservative,



explaining that it is likely due to increased auditor monitoring. Similarly, Venkataraman et al. (2005) suggest that aggressive income-increasing earnings management may be constrained by high quality auditors. Filatotchev et al. (2019) provide evidence that firms tend to have lower abnormal accruals when they are audited by high-quality auditors (i.e. Big 6, Big 5 or Big 4 auditors). Chang et al. (2008) also observe that higher quality auditors (i.e. Big 4 auditors) are more likely to mitigate accounting problems.

Consistent with the argument that Big 4 auditors constrain informational deficiencies, Cassell et al. (2013) find evidence that being audited by a Big 4 auditor reduces: the probability of receiving an SEC comment letter; review durations; the number of comment letters; and the range of themes mentioned in comment letters on 10-K filings. Cassell et al. (2019) also observe that firms audited by Big 4 auditors experience lower remediating costs as indicated by the duration of review process and the number of comment letters on 10-K filings. Johnston and Petacchi (2017) report that firms audited by Big 4 auditors are less likely to receive comment letters on 10-K filings. Focusing on IPO firms, Colaco et al. (2018) provide evidence that high-quality auditors decrease the duration of the IPO process. Taken together, these findings suggest that SEC reviews are less extensive for firms audited by high quality auditors.

The fifth hypothesis, therefore, stated in an alternative form, is as follows.

*H5<sup>alternative</sup>: SEC reviews of IPO registration statements are likely to be less extensive for issuers that are audited by a Big 4 auditor.*

### **Corporate governance<sup>19</sup>**

Brazel et al. (2009) suggest that poor quality corporate governance is likely to result in impaired monitoring of corporate disclosure quality and hence increases the chance of fraud. Desai et al. (2006) identify that firms having a CEO who is simultaneously the chair are likely to have low quality of corporate governance. According to Dechow et al. (1996), firms conducting earnings management are more likely to have CEO-chair duality. Ettredge et al. (2011) also identify that

---

<sup>19</sup> Following previous studies (Cassell et al., 2013; Ertimur and Nondorf, 2006; Robinson et al., 2011), in a preliminary test, besides the duality of CEO and chairman, this study also includes other indicators of corporate governance such as the number of directors on the boards, the proportion of board seats held by managers, the proportion of shares held by CEO. However, these indicators did not appear to have a significant impact on SEC reviews. Moreover, the inclusion of these additional indicators of corporate governance reduces the test power due to the problems of data availability in the IPO context, hence this study decides to omit them from the main analyses. Therefore, it should be noted that the findings in this study are limited to one aspect of corporate governance, which is CEO duality.

low quality corporate governance, due to CEO-chair duality, is likely to decrease disclosure compliance. Robinson et al. (2011) identify that firms having a CEO who simultaneously serves as the chair have greater disclosure deficiencies. Examining IPO firms' corporate governance, Ertimur and Nondorf (2006) suggest that the board's ability to monitor is likely to be impaired if a member of management serves as the chair.

Robinson et al. (2011) identify that firms with weak corporate governance, as indicated by CEO-chair duality, receive more comments in the SEC letters. Ettredge et al. (2011) consistently observe that the probability of receiving a comment letter is lower when firms have separation between the CEO and chair position. Cassell et al. (2013) provide evidence that lower quality corporate governance, proxied by CEO-chair duality increases: the probability of receiving an SEC letter; the range of themes addressed in SEC letters; the review duration; and the number of comment letters issued to firms on their 10-K filings. Heese et al. (2017) identify that firms receiving SEC letters on 10-K filings are more likely to have CEO-chair duality. Taken together, these findings indicate that firms with weak corporate governance, as indicated by CEO-chair duality, are likely to experience a more extensive SEC review.

The sixth hypothesis is therefore specified, in an alternative form, as follows.

***H6<sub>alternative</sub>**: SEC reviews of IPO registration statements are likely to be more extensive for issuers with duality between the CEO and Chair positions.*

### **3.3. Research design**

#### **3.3.1. Sample selection**

Employing the Thomson Reuters Eikon database, the initial sample is formed from the population of IPOs who filed their registration statements during the period 12<sup>th</sup> May 2005 to 31<sup>st</sup> December 2017 on NASDAQ, NYSE and American Stock Exchange (AMEX).<sup>20</sup> Following previous studies in the IPO context, this study includes only IPO firms offering common shares, and eliminates IPOs with offering price less than \$5 per share, American Depositary Receipts (ADRs) and financial firms, unit issues and simultaneous offerings (Gounopoulos and Pham, 2017, 2018; Lee, 2011; Li and Liu, 2017; Sletten et al., 2018). Since the focus is on the S-1

---

<sup>20</sup> The SEC started publishing the IPO firms' filings and the SEC comment letters from 12<sup>th</sup> May, 2005.

review process, IPO firms filing registration statements on forms other than S-1 are excluded to ensure the consistency within the sample.

The final sample contains 909 IPO firms. Of these, 784 IPO firms receive SEC comment letters, and 710 IPO firms receive SEC comment letters on their initial S-1 filings. Table 3.1 presents the sample selection procedures in more detail. SEC comment letters are manually collected from the EDGAR database.<sup>21</sup> The date of initial S-1 filings and IPO effective dates are collected from Thomson Reuters Eikon.<sup>22</sup> Accounting data are obtained from the Compustat North America while corporate governance data are collected from Thomson Reuters Eikon.

**Table 3.1. Sample selection**

	<b>Number of IPOs</b>
<b>U.S. IPOs (on NASDAQ, NYSE, AMEX) filing registration statements from 12/05/2005 to 31/12/2017 collected from Thomson Eikon</b>	<b>3525</b>
<i>Less: IPOs with offering price less than 5\$ per share (data from Thomson Eikon)</i>	(1,202)
<i>Less: Simultaneous and unit offerings (data from Thomson Eikon)</i>	(56)
<i>Less: American Depository Receipts and other financial firms (data from Thomson Eikon)</i>	(733)
<i>Less: IPOs do not offer common shares (data from Thomson Eikon)</i>	(532)
<i>Less: IPOs do not file S-1 (data manually collected from EDGAR)</i>	(93)
<b>Final sample</b>	<b>909</b>

### 3.3.2. Coding of SEC comment letters

To examine the types of issues mentioned in the initial SEC comment letters, manual content analysis of themes is performed on a training sample of comments from initial comment letters, then Naïve Bayes machine learning is employed to code the full sample of 710 SEC comment

<sup>21</sup> Electronic Data Gathering, Analysis, and Retrieval (EDGAR) database is developed by the U.S SEC which contains public firms' filings required by the SEC, the SEC comment letters and the firms' correspondence.

<sup>22</sup> This study examines the integrity of the filing date of S-1 and the effective date of IPOs by also manually collecting the data from EDGAR database for a sample of 300 IPO firms. This study identifies a similarity rate of 99.2% with the data collected from Thomson Reuters Eikon.

letters.<sup>23</sup> Most research examining themes in SEC comment letters conduct manual coding and therefore examine only a small sample. For instance, Ertimur & Nondorf (2006) carry out manual coding on 95 SEC comment letters addressing issues in S-1 and SB-2 filings, and Johnston & Petacchi (2017) manually code 157 SEC comment letters addressing issues in 10-K and 10-Q filings. While coding conducted by human coders may have higher level of accuracy, it has two main limitations including; small sample size due to concern about cost and time-consumption, and problems with reliability due to the subjective nature of the coding (Core, 2001). Especially, limited sample size may lessen the power of empirical tests as well as the possibility to generalise the findings.

An alternative technique, which may transcend the limitations of human coders, is computer-aided content analysis (Li, 2010). According to Li (2010), two standard techniques are widely used in the literature to perform computer-aided content analysis, namely rule-based techniques and statistical techniques. In the first technique, a text is read by a computer program and then the coding units (e.g. words or phrases) in the text are categorised into pre-supposed classifications developed in a specific dictionary (e.g. Harvard Psychosociological Dictionary), without the need of manual coding.

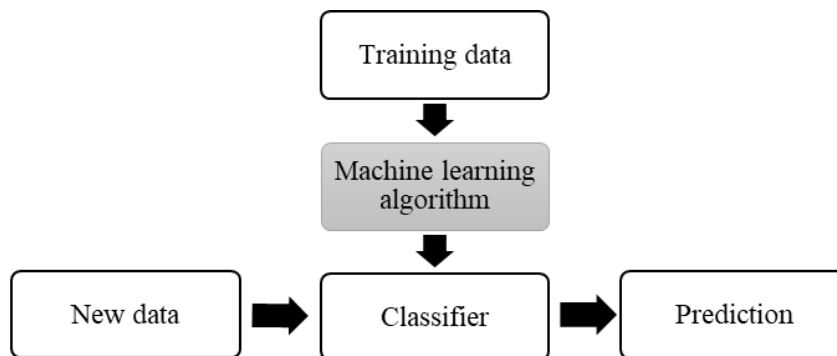
In the statistical technique, statistical inference based on some specific machine learning algorithm, which is developed from the labelled training data, is used to infer and categorise coding units in a text (Manning & Schütze, 1999; Mitchell, 2006). The statistical technique is used, for example, to estimate the correlation between the frequency of a keyword in a text and a set of categories, in order to deduce which category the text most likely relates to.

Figure 3.1 visualises how the statistical technique applies machine learning algorithms to perform statistical inference, or a supervised classifier, which is then used to predict or assign the supervised classification to new objects.

---

<sup>23</sup> This study restricts the focus to initial comment letters, i.e. the first comment letter issued by the SEC for each IPO. This study does so to avoid duplication, as subsequent comment letters tend to involve ongoing discussion of issues identified in the initial letter and/or merely acknowledge the company's response.

**Figure 3.1. Statistical coding technique with the application of machine learning algorithm**



In order to increase the power of empirical tests and obtain generalisable results from a large sample of SEC comment letters, computer-aided content analysis is employed in this study to code issue types mentioned in the initial SEC comment letters. This approach is less costly and less subjective than manual coding. Unfortunately, there is no available dictionary for coding the thematic contents of corporate disclosures (e.g. issues in S-1 filings). To date, predefined dictionaries are mainly developed to capture tone of a text (e.g. Harvard Psychosociological Dictionary, Linguistic Inquiry and Word Count) (Li, 2010). Therefore, this study employs the statistical form of computer aided content analysis, i.e. applying machine learning algorithms instead of using predefined dictionaries, to classify issue types of S-1 filings mentioned in SEC comment letters. The detailed coding process is presented as follows.

### **Design of coding scheme**

A self-constructed coding scheme for initial SEC comment letters is designed in order to capture issues mentioned in SEC comment letters. This process begins by following the standard coding procedure with 5 main stages as developed by Weber (1985) as well as adapting the coding scheme developed by Ertimur & Nondorf (2006) to identify main themes cited in SEC comments on S-1 filings. In the first stage, recoding units are defined as themes in each specific comment in the initial SEC comment letters. In each comment, the theme provides information about a certain issue relating to the information quality of initial S-1 filings, as evaluated by the SEC. The comments are extracted from each initial SEC comment letter by following the procedure presented in Appendix 3.2.

In the second stage, a random sample of 20 comment letters are chosen and themes are defined for each specific comment in the 20 comment letters. The themes are determined by identifying keywords in each paragraph of the comment. Keywords in each comment in the initial SEC

comment letters are identified and subsequently, these keywords are sorted into groups which represent distinct themes. A name is then given to each key-word group to define the theme. These themes are then summarised to provide a mutually exclusive definition and code for each. In total, 45 distinct thematic codes are developed.

The thematic codes representing issue types are then grouped into seven general categories including; Core-accounting issues, Non-core-accounting issues, Offering Issues, Business Issues, Corporate Governance Issues, Disclosure Issues and No issues, based on the general context in which the thematic codes are used as well as the list of main chapters and sections within S-1 filings, as required by the SEC. The coding scheme is then tested on another random sample of 20 initial SEC comment letters in order to identify whether further refinement is required (e.g. if there are themes which have been overlooked). The coding scheme developed for SEC comment letters is presented in Table 3.2. Detailed definitions of the categories are provided in Appendix 3.1. Based on the self-constructed coding scheme, a sub-sample of 4,807 comments from a random sample of 261 comment letters are manually coded to provide a training dataset for the development of the Naïve Bayes machine learning algorithm.

Manual coding is challenging due to ambiguities in the meanings of keywords. Some keywords may have multiple meanings. For example, on the one hand, “compensation” could indicate the money paid as awards to the board of directors and consequently, a comment containing the keyword “compensation” could be classified as an issue relating to corporate governance. On the other hand, “compensation” could relate to money paid as awards to underwriters, suggesting a comment containing “compensation” could alternatively be classified as an issue relating to the offering. Some comments mentioning the issues relating to ‘compensation’ do not clearly identify to whom the compensation in question is paid. Therefore, without more specific context, classifications of some comments are unavoidably subjective. The coding of a particular comment could also be made difficult due to ambiguities in the main focus of the comment. Some comments mention more than one issue and all of these issues are presented at the same level of prominence. In such cases, the comments are classified into more than one category of issues, and as a result the total percentage of comments across 45 thematic codes exceeds 100%.

**Table 3.2. Coding scheme of the SEC comment letters**

Code	Issue types	Percentage of issue types
<b>I. CORE-ACCOUNTING ISSUES</b>		<b>17.74%</b>
A1	Assets	2.08%
A2	Liabilities	0.67%
A3	Equity	1.79%
A4	Income	2.31%
A5	Expense	4.62%
A6	Earnings	0.69%
A7	Other financial items	1.19%
A8	Accounting-related transactions/events	4.41%
<b>II. NON-CORE-ACCOUNTING ISSUES</b>		<b>4.26%</b>
B1	Pro forma financial information	2.48%
B2	Non-GAAP measure	1.00%
B3	Internal controls	0.31%
B4	Claims, Commitments and Contingencies	0.48%
<b>III. OFFERING ISSUES</b>		<b>10.69%</b>
C1	Characteristics of offering	2.02%
C2	Proceed	1.52%
C3	Parties of offering	2.77%
C4	Effect of offering	0.37%
C5	Risk factors (offering)	0.50%
C6	Offering-related document	3.52%
<b>IV. BUSINESS ISSUES</b>		<b>31.87%</b>
D1	Products/Services	2.27%
D2	External stakeholders	3.95%
D3	Business activities	6.34%
D4	Competition	1.37%
D5	Material Agreements	3.25%
D6	Properties and Facilities	2.25%
D7	Risk factors (business)	5.08%
D8	Results of operation	5.70%
D9	External reports	1.27%
D10	Status	0.40%
<b>V. CORPORATE GOVERNANCE ISSUES</b>		<b>6.89%</b>
E1	Managers	1.31%
E2	Related parties' transactions	1.25%
E3	Organizational structure	0.89%
E4	Compensation	3.14%
E5	Employee	0.29%
<b>VI. DISCLOSURE ISSUES</b>		<b>29.77%</b>
F1	Technical information	1.06%
F2	Abstract word	1.35%
F3	Tone	0.56%
F4	Selective disclosure	1.08%
F5	Completeness	10.01%
F6	General information	6.84%
F7	Inaccurate/inappropriate disclosure	3.35%
F8	Disclosure too outdated, generic, or too detailed	2.29%
F9	Relevance	1.41%
F10	References	0.29%
F11	Format	1.52%
G1	<b>VII. OTHER ISSUES</b>	<b>2.39%</b>
<b>TOTAL</b>		<b>103.62%</b>

This table reports the coding scheme and percentage distributions of 4807 comments in training data set which are manually coded into 7 groups of issue types containing 45 issue types of S-1 filings. The 4807 comments are extracted from random sample of 261 initial SEC comment letters. Total percentage across 45 issue types exceed 100% since some comments are classified into more than one types of issue.

## Application of Naïve Bayes Algorithm

The specific type of machine learning algorithm employed in this study is the Naïve Bayesian machine learning algorithm. The Naïve Bayesian algorithm, which is a probabilistic machine learning model based on Bayes theorem, is commonly used in area of text classification (Ryans, 2014). Employing the Naïve Bayesian algorithm, this study categorises each comment in SEC comment letters into a particular type of issue or thematic code as developed in the self-constructed coding scheme. The Naïve Bayes algorithm classifies the issue type of a comment in an SEC comment letter based on the frequencies of single words or phrases in the comment.

Using the aforementioned training dataset, the remaining 16,440 comments are coded using the Naïve Bayes algorithm, with the support of the WEKA machine learning software. The text of each comments in the training dataset and remaining dataset are first cleaned following the cleaning process outlined in Appendix 3.2. Each comment is then categorised as relating to one of the 45 individual codes in the coding scheme. Specifically, under the Naïve Bayes algorithm, each comment is first converted into a set of words or word phrases (*vector of words or phrases*). Following that, a model is trained by measuring, in each issue type as classified in training dataset, the relative frequency of each single word or phrase. Bayes' theorem is then applied to determine the type of each comment as that with the highest conditional probability given the words and/or phrases contained in the comment, as follows.

$$\begin{aligned} \text{issue type}_j &= \underset{\text{issue type}_i \in 45 \text{ issue types}}{\operatorname{argmax}} P(\text{issue type}_i | \text{vector of words or phrases}_j) \\ &= \underset{\text{issue type}_i \in 45 \text{ issue types}}{\operatorname{argmax}} \frac{P(\text{vector of words or phrases}_j | \text{issue type}_i) * P(\text{issue type}_i)}{P(\text{vector of words or phrases}_j)} \end{aligned} \quad (3.1)$$

where  $\text{issue type}_i$  denoted issue type  $i$  developed from the training dataset ( $i \in \{A1, A2, \dots, B1, B2, \dots, G1\}$ ),  $\text{vector of words or phrases}_j$  is a vector of words or phrase in “unknown” comment  $j$  in the remaining dataset ( $j \in \{1, 2, 3, \dots, 16440\}$ ),  $\text{issue type}_j$  denotes the issue type categorised for comment  $j$  in the remaining dataset.

An important assumption in the Naïve Bayes algorithm, where the adjective “Naïve” comes from, is that the probability of a feature does not affect the probability of other features in the dataset. This assumption makes the calculation of the algorithm simpler and mitigates the issue of the “curse of dimensionality” (Bellman, 1961). Therefore, this study assumes that



the probability of the occurrence of each word or phrase is mutually independent.<sup>24</sup> The computation of the Naïve Bayes algorithm with support of WEKA machine learning software is presented in more detail in Appendix 3.3.

### **Validation of the Naïve Bayes algorithm**

To validate the effectiveness of the Naïve Bayesian algorithm, N-fold cross-validation tests are conducted, with  $N = 10$ . According to Li (2010), the N-fold cross-validation test is unbiased toward the training data and can discover both underfitting and overfitting.

To evaluate the effectiveness of the Naïve Bayesian learning algorithm applied to the training dataset, the N-fold cross-validation method with  $N = 10$  is applied to 4,807 comments within the training dataset, by dividing the dataset into ten equal parts with approximately 481 comments in each part. 10 experiments are implemented and in each experiment, a part is employed as test data and 9 remaining parts are used as training data. Finally, average results of success rate over 10 experiments are calculated, indicating the accuracy level of the Naïve Bayesian learning model that is applied to predict the classification of comments in the training dataset.<sup>25</sup>

Adjustments to the original manual coding of the training dataset are also implemented until the acceptable values of the training classifier's accuracy are achieved. Specifically, to conduct the adjustment, this study firstly adjusts self-constructed coding scheme by narrowing the number of issue types as previously developed in the scheme, particularly, grouping issue types, which have precision value equal to 0, with the most relevant issues types, which have precision value greater than 0, to create new and more general types of issue.<sup>26</sup> Secondly, this study replaces the old codes for issue types in the training dataset with the equivalent codes for issue types according to the new coding scheme.

---

<sup>24</sup> Even if it is not realistic, independence is assumed. In the context of a SEC comment letter, for instance, the term "accounting policies" is more likely to be seen in combination with the term "critical". Nevertheless, empirical evidence from other disciplines suggests that although this assumption is unrealistic, it may have minimal influence on the outcomes (Domingos & Pazzani, 1997; Li, 2010). Domingos & Pazzani (1997) identify that attribute independence does not always affect the Bayesian classifier's performance. The mutual independence of word/phrase is an important assumption of all computer-aid textual analysis techniques (e.g., Naïve Bayes algorithm) that most studies using this technique in the field of Accounting and Finance follow (Li, 2010). The reason is that it is exceedingly difficult to create an algorithm that properly incorporates the context in which a word/phrase is used (i.e., natural language).

<sup>25</sup> The evaluation is conducted by using the "Cross-validation" test option in Weka which provides summary about the training classifier's accuracy using Naïve Bayesian algorithm.

<sup>26</sup> Precision value is the percentage of instances (i.e. SEC comments) that are accurately classified into a class divided by the total instances classified as that class.

Since the coding scheme includes a wide range of themes (45 individual codes), there is a risk of low coding accuracy (Eskin & Bogosian, 1998; Long et al., 2009). For instance, Long et al. (2009) achieve error rates of 12.4%, 32.9% and 52.3% when employing their Naïve Bayes algorithm with 2, 5 and 10 categories, respectively. Similarly, Li (2010) reports that increasing from 3 to 12 categories reduces the accuracy of his Naïve Bayes algorithm from 82% to 63%. The results, presented in Table 3.3, reveal accuracy higher than 52% for each of the 7 broad themes, specifically: 53.9% for core accounting comments; 82.4% for non-core accounting; 73.0% for offering-related; 54.9% for business-related; 75.2% for corporate governance-related; 52.2% for disclosure-related; and 97.4% for other. The overall accuracy rate is approximately 65.2%, which is high given the number of categories in the coding scheme. The result indicates that if the Naïve Bayesian algorithm is applied to predict SEC comments in the training dataset, it will accurately classify the comments 65.2% of the time.

In terms of the number of coded comments, the results also suggest that SEC comment mostly relate to “Business issues”, which is primarily related to the IPO firms’ products or services, external stakeholders (e.g. customers, partners, vendors and regulators), business activities (e.g. operating, financing and investment activities), tangible and intangible properties and facilities, competitive strengths, terms and conditions of material contracts/agreements, business-related risk factors (changes in export/import policies), results of operations (e.g. liquidity, key business metrics) as well as the firms’ status (e.g. limited liability company, Delaware corporation, emerging growth company). “Disclosure issues” and “Core-accounting issues” and “offering issues” also attract a high level of attention within SEC reviews.

**Table 3.3. N-fold Cross-Validation Test (N=10)**

<b>Group of issue types</b>	<b>Number of issue types</b>	<b>Number of coded comments</b>	<b>Accuracy of classifiers</b>
1. Core accounting issues	8	853	53.93%
2. Non-core accounting issues	4	205	82.44%
3. Offering issues	6	514	72.96%
4. Business issues	10	1532	54.90%
5. Corporate governance issues	5	331	75.23%
6. Disclosure issues	11	1431	52.20%
7. Other issues	1	115	97.39%
Totals	45	4087	65.15%

This table reports N-fold cross-validation test results (N=10) for Naïve Bayesian machine learning algorithm applied on training dataset. In the training data set, comments are manually classified into 45 issues types belonging to one of the seven themes shown in the table.

### 3.3.3. Key variables

#### 3.3.3.1. SEC review process

As stated by Li & Liu (2017), SEC review process is usually composed of numerous comment letters issued by the SEC and amendments provided by IPO firms. Only when all of the issues highlighted in the SEC comment letters are addressed will the review process be complete and the SEC be willing to declare registration statement as ‘effective’. Based on this institutional background, four attributes of SEC review process are considered in this study including; duration of IPO process (*Duration*), the number of SEC comment letters (*#Letters*), the number of comments (*#Comments*) and the range of themes (*#Themes*) in the initial SEC letters.

Particularly, this thesis measures *Duration* by calculating the number of days from the filing date of the initial S-1 form to date when the IPO becomes effective. This measure represents the length of SEC review process for each IPO firm. According to Ertimur & Nondorf (2006), although this period covers not only SEC review period but also other periods (e.g. road shows, execution of underwriting agreement) in the IPO process, it mainly relates to the extensiveness of the SEC’s review. Colaco et al. (2018) also suggest that IPO duration indicates the multiple layers of oversight from regulators.

Regarding *#Letters*, the thesis measures this variable by counting the number of comment letters that the SEC issues on each S-1 filing (including initial S-1 and amended S-1 filing) as listed on the EDGAR database for each IPO firms. This thesis considers an SEC filing as an SEC comment letter when this filing meets all three criteria including, (1) having filing type as “UPLOAD”, (2) being published during period from the filing date of the initial S-1 to the IPO’s effective date and (3) having a subject line such as “Re: [...] Registration Statement on Form S-1[.]” for an initial SEC comment letter or “Amendment No.[...] to Registration Statement on Form S-1” for comment letters relating to amended S-1 filings.<sup>27</sup>

This study measures *#Comments* by counting the number of comments in the initial comment letters that the SEC issues to each IPO firm. If the SEC do not issue comment letters for initial S-1 filings, or they do not issue any comment letters during their review process, or they do not

---

<sup>27</sup> The SEC designates form type as “UPLOAD” for SEC-originated letters (See <https://www.sec.gov/answers/edgarletters.htm> )

provide detailed comments in their letters due to matters relating to compliance with the SEC regulations, *#Comments* is set equal zero.<sup>28</sup>

*#Themes* is calculated by counting the number of issues types mentioned in the initial SEC comments letters. If the SEC do not issue comment letters for the initial S-1 filings, or they do not issue any comment letters during their review process, or they do not provide detailed comments in their letters due to matters relating to compliance with the SEC regulations, *#Themes* is set equal zero. The data of *#Themes* is obtained from the coding of the SEC's comment letters by applying the Naïve Bayes algorithm as mentioned in Section 3.3.2.

### 3.3.3.2. IPO firms' characteristics

Following Cassell et al. (2013), Duro et al. (2017), Heese et al. (2017) and Johnston & Petacchi (2017), a number of proxies for IPO firm characteristics are employed, including; company size (*Size*), company age (*Age*), business complexity (*Sales growth*, *Segments*, *Restructuring*, *M&A*), financial health (*Leverage*, *Zscore*, *External financing*, *Positive earnings*), auditor quality (*Big 4*), CEO-chairperson duality (*CEOchairperson*),

Specifically, regarding company size, this study measures *Size* as total assets reported in the fiscal year immediately prior to the filing year of the initial S-1 filing (year t-1) (Duro et al., 2017). A positive relationship is expected between *Size* and each SEC review attribute.

As for *Age*, this study follows Heese et al. (2017) in calculating this proxy as the period between year t-1 and the year when data for the IPO firm first appeared on the Compustat database. This thesis also expects a positive relationship between *Age* and SEC review attributes.

In terms of company complexity, this study measures *Sales growth* as the percentage change in annual sales from year t-2 to year t-1 (where year t=0 is the IPO filing year). *Segments* is calculated as the number of non-empty and unique segment industry codes as reported on Compustat. *Restructuring* is an indicator variable reflecting whether IPO firms engage in restructuring activities or not. This variable equals 1 if the firm has non-zero restructuring costs on a pre-tax basis in year t-1, and 0 otherwise (Cassell et al., 2013; Heese et al., 2017). Similarly, *M&A* is an indicator variable reflecting whether IPO firms engage in merger and acquisition activities or not. This variable equals 1 if the firm has non-zero M&A costs on a pre-tax basis in

---

<sup>28</sup> In the sample, this thesis has one SEC comment letter not addressing detailed comments due to numerous material relating to compliance with the SEC regulations.

year t-1, and 0 otherwise (Cassell et al., 2013; Heese et al., 2017). It is expected that SEC review attributes are positively related to *Sales growth*, *Segments*, *Restructuring*, and *M&A*.

Regarding financial health, this study calculates *Leverage*, which is an indicator of the IPO firm's debt level, as the ratio of total liabilities to total equity in year t-1 (Duro et al., 2017). *Zscore*, which is an indicator of the firm's financial distress, is measured by employing the modified Z-score model for private companies developed by Altman (2013) as follows

$$Zscore_{i,t} = 3.25 + 6.56 \frac{(ACT_{i,t-1} - LCT_{i,t-1})}{AT_{i,t-1}} + 3.56 \frac{RE_{i,t-1}}{AT_{i,t-1}} + 6.72 \frac{EBIT_{i,t-1}}{AT_{i,t-1}} + 1.05 \frac{CEQ_{i,t-1}}{LT_{i,t-1}} \quad (3.2)$$

where:  $ACT_{i,t-1}$  is current assets of firm i in year t-1 ;  $LCT_{i,t-1}$  is current liabilities of firm i in year t-1;  $RE_{i,t-1}$  is retained earnings of firm i in year t-1;  $EBIT_{i,t-1}$  is earning before interest and tax of firm i in year t-1;  $CEQ_{i,t-1}$  is book value of equity of firm i in year t-1;  $AT_{i,t-1}$  is total assets of firm i in year t-1 and  $LT_{i,t-1}$  is total liabilities of firm i in year t-1. A Z-score of higher than 5.85 indicates that the IPO firm has a low risk of bankruptcy. A score of lower than 4.35 indicates that the IPO firm is in financial distress and is likely to go into bankruptcy, while scores in between 4.35 and 5.85 indicate a very first signal for possible bankruptcy (Altman, 2013). *Positive earnings*, which is an indicator of IPO firms' profitability, is measured as an indicator variable which equals to 1 if the firm has net income in year t-1 equal to or higher than zero (Hesse et al., 2017), and 0 otherwise. This thesis calculates *External financing*, which is an indicator of IPO firm's funding activities via new borrowing and stock issue, by using the following equation:

$$\text{External financing}_{i,t-1} = (SSTK_{i,t-1} - PRSTKC_{i,t-1} - DV_{i,t-1}) + (DLTIS_{i,t-1} - DLTR_{i,t-1} - DLCCH_{i,t-1}) \quad (3.3)$$

where:  $SSTK_{i,t-1}$  is sales of common and preferred stock of firm i in year t-1,  $PRSTKC_{i,t-1}$  is purchases of common and preferred stock of firm i in year t-1;  $DV_{i,t-1}$  is dividend made by firm i in year t;  $DLTIS_{i,t-1}$  is long-term debt issued by firm i in year t-1,  $DLTR_{i,t-1}$  is long-term debt reduction of firm i in year t-1 and  $DLCCH_{i,t-1}$  is change in current debt of firm i in year t-1. It is expected that SEC review attributes are positively related to *Leverage*, *Positive earnings* but negatively associated with *Zscore* and *External financing*.

Regarding auditor quality, this study measures *Big4* as an indicator variable which equals 1 if the IPO firm is audited by Big 4 auditors, namely Ernst & Young, Deloitte & Touche, KPMG,

and PricewaterhouseCoopers (Johnston & Petacchi, 2017), and 0 otherwise. *Big 4* is expected to be negatively associated with SEC review attributes.

Regarding corporate governance quality, *CEOchairperson* is measured as an indicator variable which equals 1 if the IPO firm has a CEO who is also the chairperson of the board of directors in year t-1, and 0 otherwise (Hesse et al., 2017). Because the data obtained from Thomson Reuters Eikon is used to construct the variable *CEOchairperson*, there are a considerable number of missing values. Therefore, this study follows Hanlon et al. (2003) and Cassell et al. (2013) and set missing value of *CEOchairperson* to 0. This thesis expects that *CEOchairperson* is positively correlated with SEC review attributes.

### 3.3.4. Empirical tests

Negative binomial regressions are employed to examine the impact of IPO firms' characteristics on SEC review attributes. As stated by Greene (2012), a variable is discrete if the set of its values is finite or countable and these values are obtained by counting its occurrence. In this study, the four dependent variables used, namely, *Duration*, *#Letter*, *#Comments*, *#Themes* are discrete because they all have finite values obtained through the counts of days of the IPO process, the number of comment letters, comments and range of themes in each SEC comment letters. According to Rock et al. (2000), negative binomial regression outperforms other methods in estimating cross-sectional regression on discrete-count dependent variables. Likewise, Colaco et al. (2017); Li & Liu (2017) and Schuldt & Vega (2018), who use similar dependent variables to this study (e.g. the duration of IPO process, the number of SEC revenue recognition comments), employ negative binomial regressions.

Moreover, the distributions of SEC review attributes (*Duration*, *#Letters*, *#Comments*, *#Themes*) are overdispersed since these variables have variances that are greater than their mean values (Hinde & Demetrio, 1998).<sup>29</sup> As a result, negative binomial regressions are preferable to Poisson regressions, another approach for modelling relationships between discrete and countable variables. The Poisson distribution is based on the assumption that the mean and variance values

---

<sup>29</sup> As for *Duration*, the variance ( $\sigma^2 = 15845.60$ ) is approximately 132 times greater than the mean ( $\mu = 120.11$ ). Regarding *#Letters*, the variance ( $\sigma^2 = 8.14$ ) is approximately 3 times greater than the mean ( $\mu = 2.77$ ). Concerning *#Comments*, the variance ( $\sigma^2 = 55.64$ ) is approximately 2 times greater than the mean ( $\mu = 26.63$ ). As for *#Themes*, the variance ( $\sigma^2 = 7.05$ ) is approximately 2 times greater than the mean ( $\mu = 3.50$ ).

are the same. (Hilbe, 2011). In terms of overdispersion, the alpha parameters from likelihood tests show that negative binomial regressions are more suitable than Poisson regressions.<sup>30</sup>

This study employs negative binomial regression to estimate the following baseline model.

$$\begin{aligned} \text{SEC review}_{i,t}(\text{Duration}_{i,t}, \#Letters_{i,t}, \#Comments_{i,t}, \#Themes) = & \alpha_0 + \alpha_1 \text{Size}_{i,t} + \alpha_2 \text{Firm age}_{i,t} + \\ & \text{Business complexity } (\alpha_3 \text{Sale growth}_{i,t} + \alpha_4 \text{Segments}_{i,t} + \alpha_5 \text{Restructuring}_{i,t} + \alpha_6 \text{M\&A}_{i,t}) + \\ & \text{Financial health } (\alpha_7 \text{Leverage}_{i,t} + \alpha_8 \text{External financing}_{i,t} + \alpha_9 \text{Zscore}_{i,t} + \alpha_{10} \text{Positive earnings}_{i,t}) + \\ & \alpha_{11} \text{Big4}_{i,t} + \alpha_{12} \text{CEOchairperson}_{i,t} + \text{FEyear} + \text{FEindustry} + \varepsilon_{i,t} \quad (3.4) \end{aligned}$$

where definitions of these variables are discussed in Section 4.2 and Appendix 1. Following Cassell et al. (2013), industry fixed effects and year fixed effects are included to control for systematic variations in SEC review attributes across different years and two-digits SIC industries.<sup>31</sup> In addition, following Colaco et al. (2018) and within-cluster correlation test, standard errors are robust and clustered at the two-digits SIC industry level.<sup>32</sup> The results reveal that within each two-digit SIC industry cluster for all SEC review attributes including; *Duration*, *#Letters*, *#Comments* and *#Themes*, there are significant correlations across the observations. The test results favour clustering the standard errors at the industry level. Therefore, when estimating Equation 3.4, standard errors are clustered at the industry level in order to mitigate possible correlations across IPO firms within a given industry (Petersen, 2009; Rogers, 1994).<sup>33</sup> The standard errors are also robust to potential heteroskedasticity.

---

<sup>30</sup> The likelihood test of overdispersion is performed in this analysis by running both Poisson regression and negative binomial regression for each pair of SEC review attribute and proxy of IPO firm characteristics, and then the goodness-of-fit values and the overdispersion parameter alpha are obtained. The goodness-of-fit values for Poisson regression are all high, while the overdispersion parameter alpha obtained from negative binomial regression is all significantly different from zero, suggesting that negative binomial regression is more suitable than Poisson regression for minimizing overdispersion. (<https://stats.idre.ucla.edu/stata/faq/how-can-i-analyze-count-data-in-stata/>)

<sup>31</sup> Chi-square test of joint null hypothesis reveals that the coefficients for all S-1 filings years and all two-digit SIC industries are not jointly equal to zero, therefore, this study controls for the year fixed effects and the industry fixed effects in the empirical models. The tests is conducted by applying Stata procedure testparm.

<sup>32</sup> Within-cluster correlation test is undertaken by applying Stata procedure loneway.

<sup>33</sup> Although the within-correlation test also show that within each filing year of S-1, there are significant correlations across the observation, this study does not cluster at the year level since there is no appreciable difference in clustered standard errors as compared with default standard errors. Petersen (2009) suggests using cluster when the clustered standard error is 2-4 time higher than white standard error.

### 3.4. Sample descriptive statistics

#### 3.4.1. Sample distribution

Panel A of Table 3.4 presents the sample distribution by year. The results show that the number of IPOs dramatically increases in 2013 and reaches a peak in 2014 with values of 114 (12.54%) and 123 (13.53%), respectively, in line with an expansion in IPO activity after the enactment of the JOBS Act in 2012.<sup>34</sup> The number of IPOs is lowest in 2008 with a value of 19 (2.09%), which is at the height of the financial crisis in 2008. The number of IPOs receiving initial comment letters is highest in 2006 with a value of 93 (13.10%), which could be because, after deciding to publicly disclose comment letters and IPO firms' response from 12<sup>th</sup> May, 2005, the SEC strengthen their regulatory discipline to decrease information asymmetry, and to protect investors as well as the SEC's own reputation (Boone et al., 2013; Bozanic et al., 2017; Brown et al., 2018; Johnston and Petacchi, 2017). The number of IPOs receiving initial comment letters are also relatively high in 2013 with a value of 90 (12,68%), which is consistent with a dramatic increase in the number of IPOs in 2013.

The number of IPOs receiving initial comment letters is lowest in 2017 with a value of 15 (2.11%), which could be due to less onerous disclosure regulation under the JOBS Act; they are also relatively low in 2008, which is in line with the decline in the number of IPOs. The proportion of IPOs receiving an initial comment letter is the largest in 2009 with a value of 97.56%, which could be due to widespread uncertainty as a result of the financial crisis 2008-2009. The proportion of IPOs receiving an initial comment letter significantly decreases after 2013 and reaches a low in 2017 with a value of 31.91%, perhaps due to the relaxation of disclosure regulation for ECG IPOs under the 2012 JOBS Act. Figure 3.2 visualises the distribution of the sample by year.

Panel B in Table 3.4 presents the sample distribution by industry. The sample includes 15 industry groups, covering 55 industries as classified by two-digit SIC code.<sup>35</sup> 41 of the industries covered represent at least 1% of the sample, implying broad coverage of industries. The number of IPOs is particularly high in Computer equipment & service and is highest in Chemical products with values of 216 (23.76%) and 258 (28.38%), respectively. The number of IPOs is

---

<sup>34</sup> The JOBS Act was enacted in 5<sup>th</sup> April, 2013 which lessens the mandatory reports and compliance on Emerging Growth Company (EGC) IPOs having total annual gross revenues less than \$1 billion in the most recent fiscal year

<sup>35</sup> The grouping of industries is conducted following Teoh et al. (1998).



lowest in Food products with a value of 7 (0.77%). Similarly, the number of IPOs receiving initial comment letters is high in Computer equipment & service and highest in Chemical products with a value of 173 (24.37%) and 177 (24.65%), respectively.

The number of IPOs receiving initial comment letters is lowest in Food products with a value of 7 (1.13%). The proportion of IPOs receiving initial comment letters is largest in Food products, Paper and Paper products, Engineering and Management Services; in each case, 100% of IPOs receive SEC comment letters. The proportion of IPOs receiving initial comment letters is smallest in Health services (66.67%). To some extent, the statistics suggest that if an industry has a higher volume of IPOs, the proportion of IPOs receiving an initial comment letters is lower, perhaps the SEC's high workload may reduce the extensiveness of their reviews.

**Table 3.4. Sample distribution**

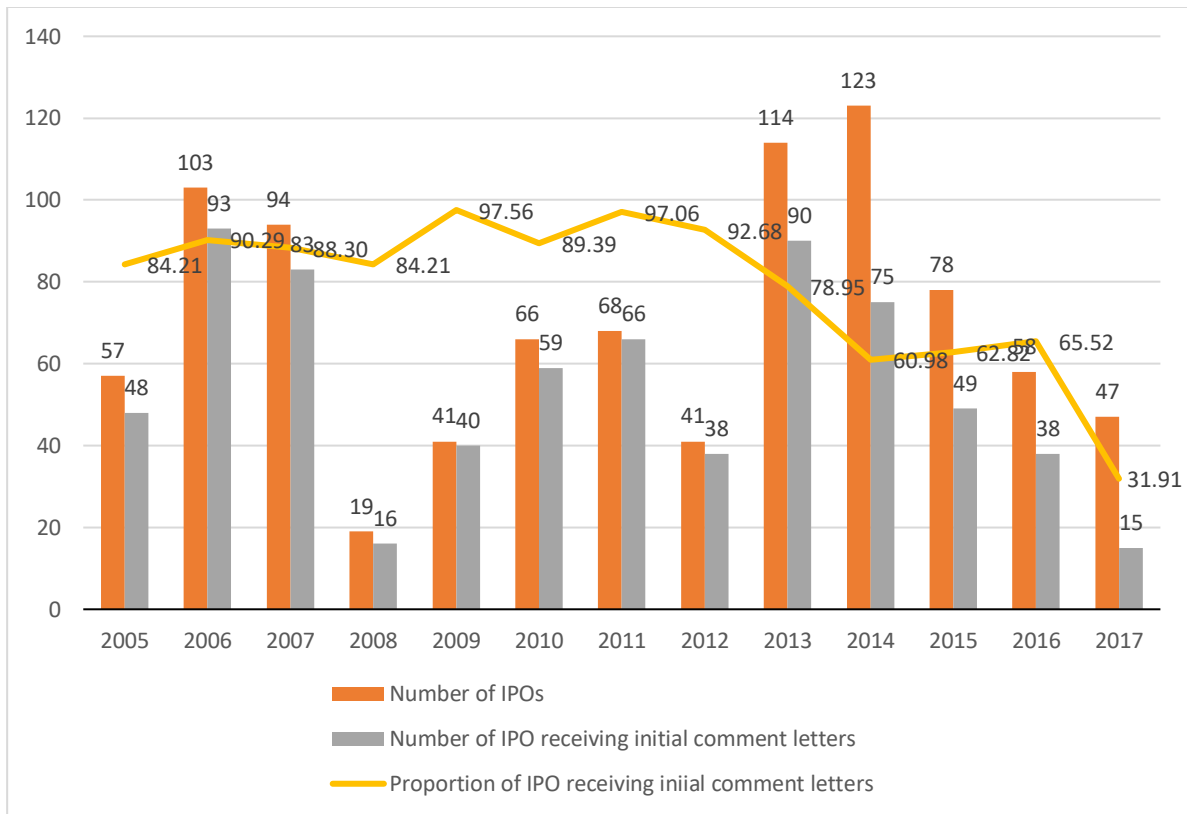
<b>Panel A. Time distribution</b>					
<b>Filing year of S-1</b>	<b>Total IPOs</b>		<b>IPOs receiving initial comment letters</b>		<b>Proportion of IPOs receiving initial comment letters (%)</b>
	<b>N</b>	<b>%</b>	<b>N</b>	<b>%</b>	
2005	57	6.27	48	6.76	84.21
2006	103	11.33	93	13.1	90.29
2007	94	10.34	83	11.69	88.3
2008	19	2.09	16	2.25	84.21
2009	41	4.51	40	5.63	97.56
2010	66	7.26	59	8.31	89.39
2011	68	7.48	66	9.3	97.06
2012	41	4.51	38	5.35	92.68
2013	114	12.54	90	12.68	78.95
2014	123	13.53	75	10.56	60.98
2015	78	8.58	49	6.9	62.82
2016	58	6.38	38	5.35	65.52
2017	47	5.17	15	2.11	31.91
Total	909	100	710	100	78.11

<b>Panel B. Industry distribution</b>					
<b>Industry</b>	<b>Total IPOs</b>		<b>IPOs receiving initial comment letters</b>		<b>Proportion of IPOs receiving initial comment letters (%)</b>
	<b>N</b>	<b>%</b>	<b>N</b>	<b>%</b>	
Oil and Gas	41	4.51	34	4.79	82.93
Food products	7	0.77	7	1.13	100
Paper and paper products	9	0.99	9	1.41	100
Chemical products	258	28.38	177	24.65	68.6
Manufacturing	26	2.86	19	2.68	73.08
Computer equipment & services	216	23.76	173	24.37	80.09
Electronic equipment	63	6.93	53	7.46	84.13
Transportation & public utilities	50	5.5	42	5.92	84
Scientific instruments	68	7.48	48	6.76	70.59
Wholesale trade	20	2.2	19	2.68	95
Retail trade	56	6.16	50	7.04	89.29
Entertainment services	16	1.76	12	1.69	75
Health services	27	2.97	18	2.54	66.67
Engineering & Management Services	11	1.22	11	1.55	100
All others	38	4.18	38	5.35	100
Total	909	100	710	100	78.11

This table presents the distribution of the full sample of 909 IPOs between 2005 and 2017 in terms of number of IPOs, number of IPOs receiving initial comment letters and proportion of IPOs receiving initial comment letters. Panel A present the sample distribution by filing year of initial S-1 filing. Panel B present the sample distribution by industry as classified by two-digits SIC code.

**Figure 3.2. Distribution of the sample over time**



### 3.4.2. Descriptive statistics of SEC review attributes

Table 3.5 provides descriptive statistics for SEC review proxies, including duration of IPO process (*Duration*), the number of comment letters (*#Letters*), the number of comments in the initial comment letter (*#Comments*) and the number of themes (*#Themes*). Panel A presents summary descriptive statistics for the four SEC review attributes. Regarding *Duration*, the mean (median) value of this measure is 120.11 (90). As for *#Letter*, the mean (median) IPO firm receives 2.77 (3) comment letters. Regarding *#Comments*, the mean (median) IPO firm receives 26.63 (22) comments in initial comment letter. In terms of *#Themes*, the mean (median) SEC comment letter addresses 3.50 (4) issue types or themes.

In general, the above results are all lower than comparable findings in the studies of Ertimur & Nondorf (2006) and Li & Liu (2017), who also employ the same measures of SEC reviews of S-1 filings. This may be because sample periods examined by Ertimur & Nondorf (2006) and Li & Liu (2017) are 12<sup>th</sup> May 2005 to 30<sup>th</sup> September 2006 and 12<sup>th</sup> May 2005 to 31<sup>st</sup> December 2011, respectively, while this study focuses a longer time period, from 12<sup>th</sup> May 2005 to 31<sup>st</sup> December 2017. In particular, the sample period employed in this study includes the period after the enactment of the JOBS Act in 2012. The JOBS Act relieved disclosure regulations for EGC IPOs, and hence is likely associated with decreases in the average values of SEC review attributes. It is worth noting that *Duration* and *#Comments* are highly skewed while *#Letters* and *#Themes* are moderately skewed. Furthermore, all four proxies are discrete and countable. Therefore, this would be statistically problematic if these proxies are employed as independent variables within conventional OLS regressions (Rock et al., 2000).

Table 3.5, Panel B presents descriptive statistics for SEC review attributes by year. Generally, the mean (median) values of four of SEC review attributes decrease on average between 2005 to 2017, and especially after 2012. Regarding *Duration*, the mean (median) of this attribute suddenly increase to a peak in 2008 (2008) with a value of 426 (427), which is at the height of financial crisis in 2008. The mean (median) value of *Duration* also slightly increased after 2010 (2011), perhaps due to the higher intensity of SEC reviews to protect investors under the Dodd-Frank Act in 2010. Importantly, the results also reveal a steady decrease in mean (median) value of *Duration* from 2011 (2011) to a low of 36.79 (27) in 2017, which could be due to the relief of disclosure regulation on EGC IPOs under the JOBS Act.

Regarding *#Letters*, a gradual increase in the mean (median) value of this attribute is observed between 2005 and 2008 and reaching a peak in 2008 (at the height of the financial crisis) (2008) with a value of 4.89 (5). A slight increase in mean value of *#Letters* is shown in 2010, when the Dodd-Frank Act was enacted. The results also reveal a steady decrease in the mean (median) value of *#Letters* from 2012, reaching a low of 0.87 (0) in 2017, following the enactment of the JOBS Act.

Concerning *#Comments*, a slight increase in mean (median) value of this attribute is shown in 2010, when the Dodd-Frank Act was enacted. However, a sudden decrease in the mean (median) value of this proxy occurs from 2012 (2011) onwards, reaching a low in 2017 (2017) with a value of 2.96 (0), likely also due to the relief of disclosure regulation on emerging growth companies under the JOBS Act.

In term of *#Themes*, a gradual increase in the mean value of this attribute is observed from 2005 to 2009 (2005 to 2011) and the mean value reaches a peak in 2011 with a value of 5.59, shortly after the enactment of the Dodd Frank Act in 2010. A steady decrease in the mean (median) value of *#Themes* is observed from 2012, reaching a low in 2017 with a value of 0.94 (0), during the post-JOBS Act era. Figure 3.3, Figure 3.4, Figure 3.5, Figure 3.6 display the mean and median value of each SEC review attribute by year, namely, *Duration*, *#Comments*, *#Letters* and *#Themes*, respectively.

Table 3.5, Panel C provides descriptive statistics for SEC review attributes by industry. Regarding *Duration*, the mean (median) value is smallest for Food products (Chemical products) with a value of 90.29 (53.50) and largest for Paper and paper products (Paper and paper products) with a value of 239.88 (185.63). Regarding *#Letters*, the mean (median) value is smallest for Chemical products (Chemical products, Scientific instruments) with a value of 2.09 (2) and largest for Wholesale trade (Paper and paper products, Manufacturing) with a value of 4.38 (4). Regarding *#Comments*, the mean (median) value is smallest for Chemical Products (Chemical Products) with a value of 15.07 (3) and largest for Paper and paper products (Paper and paper products) with a value of 59.33 (60). Concerning *#Themes*, the mean (median) value is smallest for Chemical Products (Chemical Products) with a value of 2.42 (2) and largest for Paper and paper products (Paper and paper products) with a value of 5.42 (5.75). In general, this study

observes that SEC reviews are the most extensive in Paper and Paper Products and the least extensive in the Chemical Products industry, perhaps due to the impact of the SEC's workload.<sup>36</sup>

Table 3.5, Panel D provides descriptive statistics for SEC review attributes by stock exchanges. According to Hegde et al. (2010) and Leuz & Wysocki (2016), small firms prefer listing on NASDAQ due to higher cost efficiency as compared with other main stock exchanges in the U.S (e.g. NYSE, AMEX). The JOBS Act aims to relieve some disclosure regulation on emerging growth or small companies. Therefore, it is possible that SEC reviews of IPOs on NASDAQ, which typically attracts smaller companies, might be less extensive. Consistent with this expectation, the statistics reveal that the mean and median value of each SEC review attribute except *#Themes* are higher for IPOs on NYSE and AMEX than those on NASDAQ.

Table 3.5, Panel E provides summary descriptive statistics for SEC review attributes by reviewers. The table reveals that the number of IPOs receiving initial comment letter is 710 and the number of reviewers is 56, which reflects that on average, each reviewer issues 12.68 of the initial comment letters in the sample. Regarding *Duration*, the mean (median) value of this measure is 149.23 (125.44), which indicates that on average, each reviewer spends 149.23 days reviewing an S-1 filing. The mean (median) value of *#Letters* is 3.50 (3.32), which indicates that on average, each reviewer issues 3.50 comment letters for a S-1 filing. Regarding *#Comments*, the mean (median) of this measure is 36.18 (37), which indicates that on average, each reviewer issues 36.18 comments in the initial comment letter. The mean (median) value of *#Themes* is 4.49 (5) indicating that on average, each reviewer raises issues relating to 4.49 different themes. It can also be seen that the variation in *Duration* and *#Comments* is relatively large with a standard deviation of 123.77 and 18.99, respectively. Appendix 3.4 provides the descriptive statistics of SEC review attributes by reviewers in more details.

Table 3.5, Panel F provides descriptive statistics for SEC review attributes by offices of the SEC's Division of Corporation Finance. The sample includes 10 offices out of the 11 offices currently operating in the Division of Corporation Finance, thus encompassing a broad selection of the offices.<sup>37</sup> Regarding *Duration*, the mean (median) value of this measure is lowest for the Office of Healthcare and Insurance (Office of Healthcare and Insurance) with a value of 94.57 (49.50) and highest for the Office of Transportation and Leisure (Office of Telecommunications)

---

<sup>36</sup> The Paper and Paper products industry has the lowest number of IPOs, the Chemical products has the highest number of IPOs

<sup>37</sup> The sample do not include Office of Financial Services since this study excludes IPO firms operating in financial industries as classified by two-digit SIC codes.

with a value of 166.49 (106). Regarding *#Letters*, the mean (median) value of this measure is lowest for the Office of Healthcare and Insurance (the Office of Healthcare and Insurance) with a value of 1.98 (2) and highest for the Office of Manufacturing and Construction (the Office of Manufacturing and Construction) with a value of 3.88 (4). Regarding *#Comments*, the mean (median) value of this measure is lowest for the Office of Healthcare and Insurance (the Office of Healthcare and Insurance) with a value of 13.39 (2) and highest for the Office of Manufacturing and Construction (the Office of Manufacturing and Construction) with a value of 42.28 (46.5). The mean (median) value of *#Themes* is lowest for the Office of Healthcare and Insurance (the Office of Healthcare and Insurance) with a value of 2.31 (2) and highest for Office of Manufacturing and Construction (the Office of Manufacturing and Construction) with a value of 4.57 (6). In general, it can be seen that SEC reviews are the least extensive when conducted by the Office of Healthcare and Insurance while the Office of Manufacturing and Construction conduct the most intensive reviews.

**Table 3.5. Descriptive statistics for SEC review attributes**

<b>Panel A. Summary descriptive statistics of SEC review attributes</b>						
	<b>N</b>	<b>Mean</b>	<b>p1</b>	<b>p50</b>	<b>p99</b>	<b>S.D.</b>
Duration	909	120.11***	25	90	689	136.14
#Letters	909	2.77***	0	3	9	2.06
#Comments	909	26.63***	0	22	88	26.25
#Themes	909	3.50***	0	4	7	2.43

<b>Panel B. Descriptive statistics of SEC review attributes by year</b>											
<b>Year</b>	<b>N</b>	<b>Duration</b>		<b>#Letters</b>			<b>#Comments</b>			<b>#Themes</b>	
		<b>Mean</b>	<b>Median</b>	<b>Totals</b>	<b>Mean</b>	<b>Median</b>	<b>Totals</b>	<b>Mean</b>	<b>Median</b>	<b>Mean</b>	<b>Median</b>
2005	57	129.04	108	152	2.67	3	2526	44.32	50	4.23	5
2006	103	130.09	107	353	3.43	3	5015	48.69	52	4.51	5
2007	94	149.9	100	325	3.46	3	3963	42.16	44.5	4.64	5
2008	19	426	427	93	4.89	5	846	44.53	42	5	6
2009	41	144.85	105	165	4.02	4	1644	40.1	37	5.39	6
2010	66	217.08	124.5	284	4.3	4	2855	43.26	44	5.27	6
2011	68	188.47	144.5	305	4.49	4	2994	44.03	43	5.59	6
2012	41	131.41	108	141	3.44	3	1269	30.95	37	4.41	5
2013	114	63.58	44.5	240	2.11	2	1274	11.18	4	2.6	2.5
2014	123	73.46	42	203	1.65	1	990	8.05	2	1.98	1
2015	78	73.14	37	134	1.72	1	311	3.99	1	1.6	1
2016	58	69.9	36	82	1.41	1	379	6.53	2	1.88	1.5
2017	47	36.79	27	41	0.87	0	139	2.96	0	0.94	0
<i>Totals</i>	<i>909</i>	<i>120.11</i>	<i>90</i>	<i>2518</i>	<i>2.77</i>	<i>3</i>	<i>24205</i>	<i>26.63</i>	<i>22</i>	<i>3.5</i>	<i>4</i>



**Panel C. Descriptive statistics of SEC review attributes by industry**

Industry	N	Duration		#Letters			#Comments			#Themes	
		Mean	Median	Totals	Mean	Median	Totals	Mean	Median	Mean	Median
Oil and Gas	41	112.15	103	115	2.8	3	1248	30.44	33	4.07	4
Food products	7	90.29	94	17	2.43	2	158	22.57	27	4.43	5
Paper and paper products	9	239.88	185.63	37	4.04	4	459	59.33	60	5.42	5.75
Chemical products	258	97.05	53.5	539	2.09	2	3888	15.07	3	2.42	2
Manufacturing	26	138.8	104.7	98	3.76	4	1004	35.63	39.5	4.37	4.6
Computer equipment & services	216	100.92	88	567	2.6	3	5673	26.7	27.5	3.47	4.6
Electronic equipment	63	136.57	111	208	3.3	3	2057	32.65	36	4.16	5
Transportation & public utilities	50	178.16	132	173	3.22	3.21	2022	39.27	41.43	4.22	4.57
Scientific instruments	68	107.1	83.5	178	2.62	2	1914	28.15	24	3.47	4
Wholesale trade	20	235.15	121	83	4.38	3.5	727	38.91	40.5	4.9	5
Retail trade	56	122.48	105.5	201	3.75	3.81	2099	37.43	41.56	4.78	5.5
Entertainment services	16	95.25	83.5	49	3.19	3.17	547	35.25	33.5	4.03	4.33
Health services	27	107.48	75	84	3.11	3	758	28.07	10	3.85	4
Engineering & Management Services	14	142	92.5	44	3.14	3	507	36.21	40	4.43	5
All others	38	139.75	125.09	125	3.3	3.29	1144	29.69	29.38	3.87	4.33
<i>Totals</i>	<i>909</i>	<i>120.11</i>	<i>90</i>	<i>2518</i>	<i>2.77</i>	<i>3</i>	<i>24205</i>	<i>26.63</i>	<i>22</i>	<i>3.5</i>	<i>4</i>

<b>Panel D. Descriptive statistics of SEC review attributes by exchange listings</b>											
<b>Stock exchange</b>	<b>N</b>	<b>Duration</b>		<b>#Letters</b>			<b>#Comments</b>			<b>#Themes</b>	
		<b>Mean</b>	<b>Median</b>	<b>Totals</b>	<b>Mean</b>	<b>Median</b>	<b>Totals</b>	<b>Mean</b>	<b>Median</b>	<b>Mean</b>	<b>Median</b>
NYSE & AMEX	272	133.96	93	840	3.09	3	8250	30.33	30.5	3.18	3.75
NASDAQ	673	114.2	88	1678	2.63	2	15955	24.05	14	3.35	4
<i>Totals</i>	<i>909</i>	<i>120.11</i>	<i>90</i>	<i>2518</i>	<i>2.77</i>	<i>3</i>	<i>24205</i>	<i>26.63</i>	<i>22</i>	<i>3.5</i>	<i>4</i>

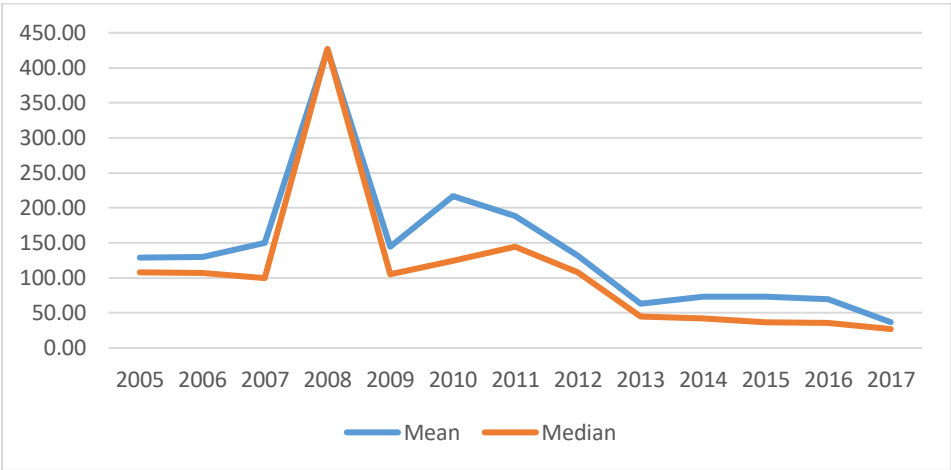
<b>Panel E. Summary descriptive statistics of SEC review attributes by reviewers</b>							
	<b>No. IPOs</b>	<b>No. reviewers</b>	<b>Mean</b>	<b>STD</b>	<b>p1</b>	<b>Median</b>	<b>p99</b>
Duration	710	56	149.23	123.8	27	125.44	699
#Letters	710	56	3.5	1.64	1	3.32	10
#Comments	710	56	36.18	18.9	1	37	81
#Themes	710	56	4.49	1.77	1	5	7

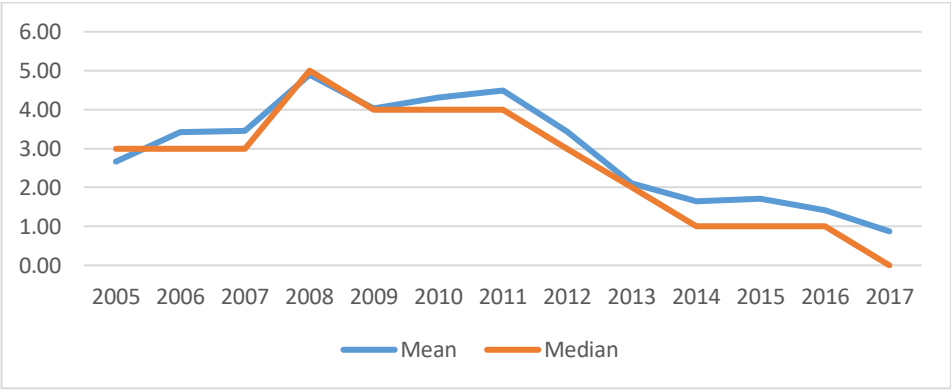
<b>Panel F. Descriptive statistics of SEC review attributes by offices of Division of Corporation Finance</b>											
<b>Office</b>	<b>N</b>	<b>Duration</b>		<b>#Letters</b>			<b>#Comments</b>			<b>#Themes</b>	
		<b>Mean</b>	<b>Median</b>	<b>Totals</b>	<b>Mean</b>	<b>Median</b>	<b>Totals</b>	<b>Mean</b>	<b>Median</b>	<b>Mean</b>	<b>Median</b>
Office of Real Estate and Commodities	9	103.22	94	29	3.22	3	366	40.67	35	4.22	5
Office of Healthcare and Insurance	252	94.57	49.5	498	1.98	2	3375	13.39	2	2.31	2
Office of Information Technologies and Services	189	113.11	92	490	2.59	3	4683	24.78	21	3.81	5
Office of Beverages, Apparel and Mining	44	133.48	96.5	162	3.68	3	1467	33.34	35.5	4.41	5
Office of Natural Resources	55	119.84	103	163	2.96	3	1679	30.53	29	4.18	5
Office of Electronics and Machinery	122	116.58	89.5	361	2.96	3	3589	29.42	30	3.68	4
Office of Telecommunications	57	138.37	106	168	2.95	3	2007	35.21	37	4.19	5
Office of Manufacturing and Construction	74	159.62	104	287	3.88	4	3129	42.28	46.5	4.57	5
Office of Consumer Products	40	137.55	96.5	125	3.13	3	1400	35	38	4.35	5
Office of Transportation and Leisure	67	166.49	91	235	3.51	3	2510	37.46	39	4.19	5
<i>Totals</i>	<i>909</i>	<i>120.11</i>	<i>90</i>	<i>2518</i>	<i>2.77</i>	<i>3</i>	<i>24205</i>	<i>26.63</i>	<i>22</i>	<i>3.5</i>	<i>4</i>

This table presents the descriptive statistics of three SEC review attributes including *Duration*, *#Letters*, *#Comments* and *#Themes*, for the full sample of 909 IPOs between 2005 and 2017. All variables are defined in Appendix 1. Panel A present the summary descriptive statistics of three SEC review attributes. Panel B presents the descriptive statistics of SEC review attributes by filing year of S-1 filing. Panel C presents the descriptive statistics of SEC review attributes by industry as classified by two-digits SIC code. Panel D presents the descriptive statistics of SEC review attributes by exchange listings, including AMEX, NYSE and NASDAQ. Panel E presents the summary descriptive statistics of SEC review attributes by SEC reviewers. Reviewer is the person who signed on the SEC comment letters. Among 710 initial comment letters, 4 comment letters having no signature are not included in this descriptive statistics. Panel F presents the descriptive statistics of SEC review attributes by offices of Division of Corporation Finance. Office by company is collected basing on the 4-digits SIC codes as presented on EDGAR database, SIC code & office list from SEC ([https://www.sec.gov/info/edgar/siccodes.htm?fbclid=IwAR05YInQ45LdvKZX1AJRrg-RQUG8p91Jz4wpm7EEBF13Ak4U2NSW\\_CC8hPo](https://www.sec.gov/info/edgar/siccodes.htm?fbclid=IwAR05YInQ45LdvKZX1AJRrg-RQUG8p91Jz4wpm7EEBF13Ak4U2NSW_CC8hPo)) and name of the offices from SEC (<https://www.sec.gov/divisions/corpfin/ad-lookup.shtml>).

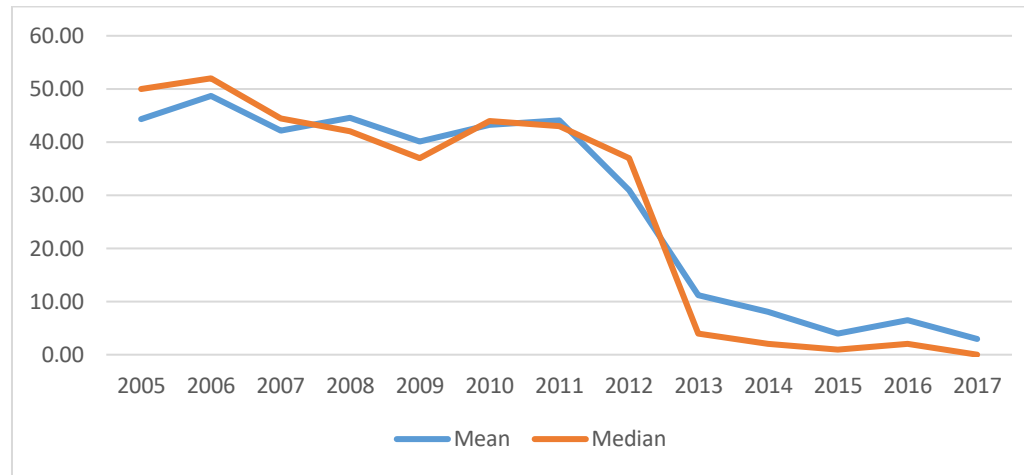
**Figure 3.3. Duration of SEC reviews by year**



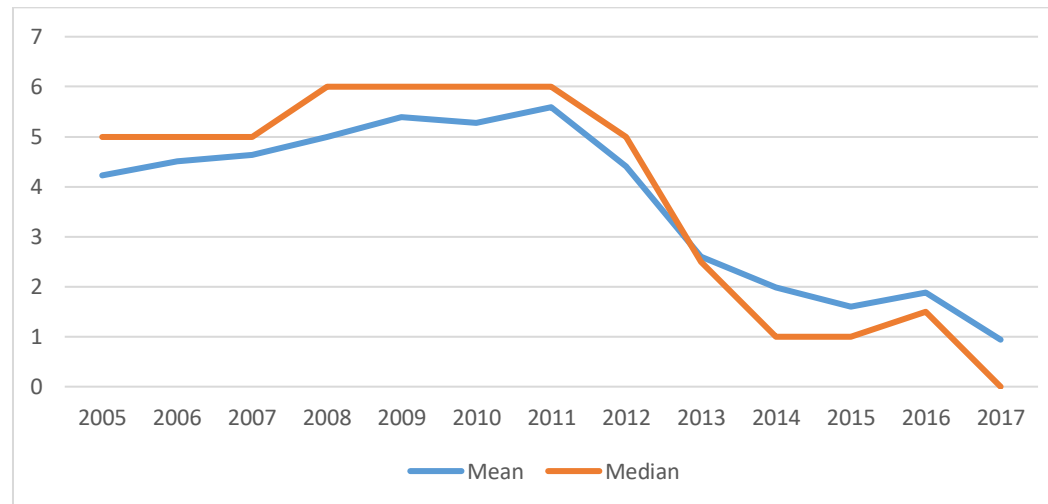
**Figure 3.4. The number of comment letters by year**



**Figure 3.5. The number of comments by year**



**Figure 3.6. The number of themes by year**



### 3.4.3. Descriptive statistics for IPO firm characteristics

Table 3.6 provides descriptive statistics for IPO firm characteristics.<sup>38</sup> Regarding company size, the median value of *Size*, which is based on the firms' total assets, is \$64.89 million, which indicates that on average, U.S. IPOs in the sample are large companies.<sup>39</sup> Concerning company age, the median value of *Age* is 1, which indicates that on average, U.S. IPOs are young, having been established for approximately 1 years.

In terms of business complexity, *Sales growth* is positive on average, with a median value of 30.89%, which indicates that U.S. IPOs generally experience a relatively high growth in sales. The median value of *Segments* is 1, which indicates that on average, U.S. IPOs are not diversified in their areas of operation, generally having only one business segment. The mean value of *Restructuring* is 0.09, which indicates that on average, 9% of U.S. IPOs in the sample engage in restructuring activities. The mean value of *M&A* is 0.12, which indicates that approximately 12% of U.S. IPOs in the sample conduct M&A activities.

Regarding financial health, *Leverage* is negative with a median value of -0.18, which is derived from negative total equity or deficit of U.S. IPOs in the sample. The result indicates that, on average, U.S. IPOs experience accumulated losses in several years and high borrowing cost to cover their losses. The median value of *Zscore* is -0.01, which is lower than 4.35 and indicates that in general, U.S. IPOs have a high probability of bankruptcy. The negative value of *Z-score* is also reflective of the negative total equity of U.S. IPOs in the sample as the book value of equity is one of components in the *Z-score* measure. The mean value of *Positive earnings* is 0.44, which indicates that on average, 44% of U.S. IPOs in the sample make a profit. The median value of *External financing* is 0.06, which indicates that on average, U.S. IPOs' funds acquired from outside sources (debt financing and equity financing) equate to 6% of their total assets, which is a low level of external financing. As for auditor quality, mean value of *Big 4* is 0.81, which indicates that approximately 81% or most of U.S. IPOs in the sample are audited by Big 4 auditors. Concerning corporate governance quality, the mean value of *CEOchairperson* is 0.47,

---

<sup>38</sup> As for continuous or discrete variables (including *Size*, *Leverage*, *External financing*, *Age*, *Segments*, *Zscore*, *IPOs by industry*, *Herfindahl index*), this study uses median value rather than mean value to discuss the results in order to eliminate statistical noise caused by outliers. As for binary variable (including *Restructuring*, *M&A firms*, *Positive earnings*, *CEOchairperson*), this study uses mean value to discuss the results.

<sup>39</sup> This study follows classification used by Internal Revenue Service (IRS), which is a U.S. government agency responsible for collecting taxes and administering tax laws. Particularly, following IRS, U.S. businesses are classified as small (or large) when they have the total assets less (or greater) than \$10 million.

which indicates that around 47% of U.S. IPOs in the sample have a CEO who is also the chairperson of the board of directors.

**Table 3.6. Descriptive statistics of IPO firms' characteristics**

	<b>N</b>	<b>Mean</b>	<b>STD</b>	<b>p1</b>	<b>Median</b>	<b>p99</b>
<b>Company size</b>						
Size	882	786.2***	5113.65	0.289	64.89***	10487.35
<b>Company age</b>						
Age	909	2.85***	5.85	0	1***	32
<b>Business complexity</b>						
Sale growth	577	233.75***	2413.92	-100	30.89***	3006.25
Segments	869	1.44***	1.09	1	1***	6
Restructuring	909	0.09***	0.29	0	0***	1
M&A	909	0.12***	0.33	0	0***	1
<b>Financial health</b>						
Leverage	879	-25.47***	733.69	-28.75	-0.18***	42.46
Z-score	826	-13.35***	66.49	-263.23	-0.01***	17.05
Positive earnings	872	0.44***	0.5	0	0***	1
External financing	769	0.32***	1.24	-2.25	0.06***	3.32
<b>Auditor quality</b>						
Big 4	885	0.81***	0.39	0	1***	1
<b>Corporate governance quality</b>						
CEOchairperson	403	0.47***	0.5	0	0***	1

This table presents the descriptive statistics of the IPO firms' characteristics for the full sample of 909 IPOs between 2005 and 2017. The IPO firm's characteristics include *Size*, *Age*, *Sale growth*, *Segments*, *Restructuring*, *M&A*, *Leverage*, *Z-score*, *Positive earnings*, *External financing*, *Big 4*, *CEOchairperson*. All variables are defined in Appendix 1.

#### 3.4.4. Correlation matrix of SEC review attributes and IPO firms' characteristics.

A correlation matrix for key variables including SEC review attributes and IPO firms' characteristics is presented in Table 3.7. Specifically, positive correlations are observed between *#Letters*, *#Comments*, *#Themes* and *Size*, in line with the arguments of more complication and violations in reports prepared by bigger firms, resulting in more extensive SEC reviews (Cassell et al., 2013; Cassell et al., 2019; Cunningham & Leidner, 2019; Eiler & Kutcher, 2016; Ertimur & Nondorf, 2006; Heese et al., 2017; Johnston & Petacchi, 2017; Li & Liu, 2017; Wang, 2016).

In addition, the results show positive correlations between all SEC review attributes and *Age*, consistent with arguments that older firms experience more extensive SEC reviews (Baugh et al., 2017; Cassell et al., 2013; Chen & Johnston, 2010; Colaco et al., 2018; Heese et al., 2017; Johnston & Petacchi, 2017). Furthermore, it can be seen that *Age* is positively correlated with *Size*, suggesting that older firms are also larger. Correlations between all SEC review attributes and *Segments* are also positive, supporting the argument that reports prepared by firms having more business segments tend to be more complex, therefore attracting more intensive SEC reviews (Cassell et al., 2013).

Correlations between *#Letters*, *#Comments*, *#Themes* and *Restructuring* are also positive, in line with the argument that reports prepared by firms conducting restructuring activities are more complex, and therefore attract more extensive SEC reviews (Baugh et al., 2017; Cassell et al., 2013; Wang, 2016). *Restructuring* is also found to be positively correlated with *Size*, suggesting that restructuring activities are more likely to be conducted by larger firms. Furthermore, negative correlations between *Duration*, *#Comments* and *M&A* are identified, suggesting that IPO firms that are conducting M&A might gain easier access to capital markets, i.e. face less intensive regulatory scrutiny (Hsu et al., 2012).

A negative correlation between *Duration* and *Leverage* is observed, which is inconsistent with prior studies which document that firms with higher debt levels are likely to attract more SEC scrutiny (Duro et al., 2017; Ryans, 2015). However, as stated in section 3.4.3, on average, U.S IPOs in the sample experience negative leverage since they have negative total equity or deficit probably due to accumulated losses in several years. Therefore, SEC scrutiny may be more extensive on firms having lower or more negative leverage resulting from higher level of negative total equity. Positive correlations are also observed between all SEC review attributes and *Positive earnings*, consistent with the argument of greater income-increasing earning

management by firms going public (Teoh et al., 1998b), resulting in more intensive SEC reviews (Baugh et al., 2017; Wang, 2016).

A negative correlation is observed between *#Themes* and *External financing*, in agreement with extant studies documenting that IPO firms conducting external financing might have higher disclosure quality (Ettredge et al., 2011; Lang & Lundholm, 1993), suggesting less extensive SEC scrutiny ( Baugh et al., 2017; Cassel et al., 2013; Heese et al., 2017; Wang, 2016).

Finally, a positive correlation between *#Comments* and *CEOchairperson* is identified, which is in line with the argument that when the board is chaired by a member of executive management, the board's monitoring effectiveness is weaker, resulting in more extensive SEC scrutiny (Cassell et al., 2013; Ettredge et al., 2011; Heese et al., 2017; Robinson et al., 2011).



**Table 3.7. Pearson correlation matrix of SEC review attributes and IPO firms' characteristics**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
(1) Duration	1															
(2) #Letters	0.59*** (0.00)	1														
(3) #Comments	0.35*** (0.00)	0.66*** (0.00)	1													
(4) #Themes	0.31*** (0.00)	0.66*** (0.00)	0.80*** (0.00)	1												
(5) Size	0.01 (0.70)	0.06* (0.07)	0.10*** (0.00)	0.08** (0.02)	1											
(6) Age	0.15*** (0.00)	0.17*** (0.00)	0.11*** (0.00)	0.13*** (0.00)	0.51*** (0.00)	1										
(7) Sale growth	-0.03 (0.42)	-0.03 (0.52)	-0.04 (0.34)	-0.04 (0.36)	-0.01 (0.73)	-0.03 (0.52)	1									
(8) Segments	0.15*** (0.00)	0.14*** (0.00)	0.19*** (0.00)	0.16*** (0.00)	0.20*** (0.00)	0.21*** (0.00)	-0.04 (0.40)	1								
(9) Restructuring	-0.01 (0.72)	0.07** (0.04)	0.09*** (0.01)	0.11*** (0.00)	0.18*** (0.00)	0.12*** (0.00)	-0.03 (0.51)	0.18*** (0.00)	1							
(10) M&A	-0.06* (0.06)	-0.04 (0.22)	-0.06* (0.07)	0.02 (0.59)	0.05 (0.14)	0.08** (0.02)	-0.03 (0.44)	0.12*** (0.00)	0.31*** (0.00)	1						
(11) Leverage	-0.18*** (0.00)	0.05 (0.17)	0.03 (0.34)	0.05 (0.16)	-0.01 (0.90)	0.01 (0.73)	-0.01 (0.93)	-0.21*** (0.00)	0.01 (0.72)	0.01 (0.69)	1					
(12) Z-score	0.03 (0.35)	0.03 (0.38)	0.06 (0.47)	0.02 (0.51)	0.04 (0.29)	0.06* (0.08)	-0.11*** (0.01)	0.09*** (0.01)	0.08** (0.03)	0.08*** (0.01)	-0.01 (0.79)	1				
(13) Positive earnings	0.16*** (0.00)	0.23*** (0.00)	0.29*** (0.00)	0.27*** (0.00)	0.09*** (0.01)	0.15*** (0.00)	0.01 (0.84)	0.31*** (0.00)	0.21*** (0.00)	0.16*** (0.00)	-0.04 (0.26)	0.21*** (0.00)	1			
(14) External financing	-0.04 (0.23)	-0.04 (0.25)	-0.02 (0.49)	-0.06* (0.09)	-0.03 (0.39)	-0.05 (0.13)	0.07 (0.13)	-0.08** (0.02)	-0.06* (0.10)	-0.05 (0.20)	-0.01 (0.74)	-0.30*** (0.00)	-0.20*** (0.00)	1		
(15) Big 4	0.01 (0.80)	-0.03 (0.45)	-0.01 (0.90)	0.02 (0.57)	0.06* (0.08)	0.08** (0.02)	0.02 (0.70)	0.01 (0.72)	0.09*** (0.01)	0.07** (0.03)	-0.02 (0.61)	0.14*** (0.00)	-0.01 (0.82)	-0.06* (0.09)	1	
(16) CEOchairperson	0.03 (0.50)	0.03 (0.49)	0.18*** (0.00)	0.02 (0.53)	-0.06 (0.21)	0.01 (0.97)	0.05 (0.37)	0.06 (0.23)	-0.02 (0.72)	-0.01 (0.84)	0.04 (0.49)	-0.09* (0.08)	-0.06 (0.22)	0.05 (0.33)	-0.06 (0.25)	1

This table presents the Pearson correlation matrix of the key variables employed in this study on the full sample of 909 IPOs between 2005 and 2017. All variables are defined in Appendix 1. Two-tailed p-values are reported in parentheses below correlation coefficients. . \*, \*\*, and \*\*\* denote significance at the 10%, 5%, and 1% levels, respectively.

### 3.5. Multivariate analysis

A series of multivariate analyses are conducted by estimating negative binomial regressions of the form expressed in Equation 3.4, in which dependent variable is one of four SEC review attributes including; *Duration*, *#Letters*, *#Comments* or *#Themes*, and independent variables are the aforementioned IPO firm's characteristics. The results are presented in Table 3.8, whereby model (1), (2), (3), (4) employs *Duration*, *#Letters*, *#Comments*, *#Themes* as dependent variable, respectively.

The results show positive effects of *Size* on all four SEC review attributes, indicating that the SEC spend more time reviewing S-1 filings prepared by bigger IPO firms and also provide more letters, more comments and comment on a wider range of themes. The findings are in line with arguments that bigger firms attract more SEC scrutiny (Cassell et al., 2013; Cassell et al., 2019; Cunningham & Leidner, 2019; Eiler & Kutcher, 2016; Ertimur & Nondorf, 2006; Heese et al., 2017; Johnston & Petacchi, 2017; Li & Liu, 2017; Wang, 2016) as they are likely to be more complicated (Boone et al., 2013; Chaplinsky et al., 2017) and have informational breaches (Correia, 2014).

The results also reveal positive effects of *Age* on *Duration* and *#Letters*, indicating that the SEC spend more time and provide more comment letters when reviewing older firms. The findings are in agreement with the conjecture that older firms, who might be more complicated and diversified (Chaplinsky et al., 2017; Doyle et al., 2007), experience more extensive SEC reviews (Baugh et al., 2017; Cassell et al., 2013; Chen & Johnston, 2010; Colaco et al., 2018; Heese et al., 2017; Johnston & Petacchi, 2017).

Regarding business complexity, this study identifies a negative relationship between *Duration* and *Sales growth*, indicating that the SEC spend more time reviewing S-1 filings prepared by firms with lower sales growth. Although inconsistent with prior expectations, these findings are not surprising given that, under the JOBS Act, the SEC may raise more concerns about IPO firms' incentives to manage sales downwards in order to be eligible for EGC status under the Act.<sup>40</sup> Cassell et al. (2013) also identify that as compared with firms not receiving any comment letter, firms receiving comment letters have lower sales growth.

---

<sup>40</sup> Approximately 51% IPOs in the sample are going public in the post –JOBS Act period (2012-2017). Under the Act, EGC status is given to company having total annual gross revenues less than \$1 billion.

A positive relationship between *Segments* and *#Themes* is also observed, suggesting that the SEC tend to comment on a wider range of themes when reviewing IPO firms with more business segments. The finding is consistent with the argument that firms with more segments have more complexity in their business, and thus attract more SEC scrutiny (Cassell et al., 2013). Additionally, it is identified that *M&A* is positively associated with *#Comments* and *#Themes*, indicating that the SEC tend to issue more comments and comment on a wider of themes for IPO firms conducting merger and acquisitions activity. The findings are in line with the conjecture that company complexity is higher for firms conducting M&A activities who therefore attract more SEC scrutiny (Baugh et al., 2017; Cassell et al., 2013; Duro et al., 2017; Heese et al., 2017).

In terms of financial health, negative relationships between *Z-score* and all four SEC review attributes are also identified, indicating that the SEC are likely to spend more time, provide more comment letters, more comments and comment on a wider range of themes when reviewing S-1 filings prepared by IPO firms having a higher probability of bankruptcy. The findings are in agreement with the expectation that financially-distressed firms, who are more likely to be noncompliant with reporting regulation (Begley et al., 1996; Brazel et al., 2009; Dechow et al. 1996; Ettredge et al., 2011; Schwartz & Soo, 1995), experience more extensive SEC reviews (Cassell et al., 2013).

A positive coefficient on *Positive earnings* is observed in the *Duration* regression, suggesting that the SEC spend more time reviewing profitable firms, in line with the argument that SEC reviews are more extensive for firms reporting profits (Baugh et al., 2017; Wang, 2016) as they might be indicative of misleading accounting information, since there are strong incentives for IPO firms to report positive earnings to attract investors (Teoh et al., 1998a).

A negative relationship between *Duration* and *External financing* is also identified, suggesting that the SEC spends less time reviewing S-1 filings prepared by firms with higher external funding via new borrowings and stock issues. The finding supports the argument that IPO firms that previously issued debt or equity experience less extensive SEC reviews (Baugh et al., 2017; Cassel et al., 2013; Heese et al., 2017; Wang, 2016) as their disclosure quality and reporting compliance might be higher (Ettredge et al., 2011; Lang & Lundholm, 1993).

Furthermore, the results reveal that *Big4* has a negative impact on *Duration* and *#Comments*, indicating that the SEC are likely to spend less time and provide fewer comments when reviewing IPO firms audited by Big 4 auditors. The findings support the argument that firms

audited by Big 4 auditors attract less SEC scrutiny (Cassell et al., 2013; Cassell et al., 2019; Colaco et al., 2018) as they are less likely to have reporting deficiencies (Dechow et al., 1996; Ettredge et al., 2011; Ertimur and Nondorf, 2006; Robinson et al., 2011).

Overall, novel results are obtained relating to the sensitivities of SEC reviews of S-1 filings to a range of IPO firm characteristics including; company size, firm age, business complexity as indicated by sales growth, the number of segments, M&A activities, financial health as indicated by the probabilities of bankruptcy, earnings number, external financing activities, and auditor quality.

**Table 3.8. Multivariate analysis -Negative binomial regression**

	<b>Duration</b> <b>(1)</b>	<b>#Letters</b> <b>(2)</b>	<b>#Comments</b> <b>(3)</b>	<b>#Themes</b> <b>(4)</b>
<b>Company size</b>				
Size	0.001*** (4.01)	0.001** (2.25)	0.001*** (3.94)	0.001*** (3.39)
<b>Company age</b>				
Age	0.037*** (7.60)	0.027*** (5.49)	0.008 (0.80)	0.008 (1.35)
<b>Business complexity</b>				
Sale growth	-0.001*** (-6.01)	0.001 (0.10)	0.001 (0.92)	0.001 (0.27)
Segments	0.01 (0.41)	0.016 (0.67)	0.056 (1.44)	0.034** (2.00)
Restructuring	-0.014 (-0.10)	0.180 (1.50)	0.400 (1.56)	0.181 (1.44)
M&A	-0.016 (-0.21)	0.040 (0.38)	0.399** (2.24)	0.152* (1.75)
<b>Financial health</b>				
Leverage	-0.002 (-0.51)	-0.001 (-0.21)	-0.004 (-1.04)	-0.001 (-0.31)
Z-score	-0.003*** (-7.50)	-0.002*** (-6.01)	-0.003* (-1.80)	-0.003*** (-3.99)
Positive earnings	0.123*** (2.66)	0.029 (0.58)	0.128 (1.15)	-0.01 (-0.19)
External financing	-0.079*** (-4.23)	-0.005 (-0.18)	0.001 (0.00)	-0.035 (-0.69)
<b>Auditor quality</b>				
Big 4	-0.218*** (-2.56)	-0.006 (-0.08)	-0.328** (-2.05)	0.016 (0.25)
<b>Corporate governance quality</b>				
CEOchairperson	0.044 (0.71)	0.044 (0.58)	-0.044 (-0.59)	-0.025 (-0.54)
FE year	Included	Included	Included	Included
FE industry	Included	Included	Included	Included
N	455	455	455	455
Pseudo R2	0.0990	0.1543	0.0752	0.1278

This table presents the results of the multivariate analysis on the determinants of SEC review attributes for the sample of IPOs filing S-1 between 2005 and 2017. Negative binomial regression is employed in this analysis. Dependent variables are SEC review attributes including *Duration*, *#Letters*, *#Comments*, *#Themes*. Independent variables are IPO firm characteristics (*Size*, *Age*, *Sales growth*, *Segments*, *Restructuring*, *M&A*, *Leverage*, *Z-score*, *Positive earnings*, *External financing*, *Big4*, *CEOchairperson*). All variables are defined in Appendix 1. Results from Z-statistics are presented in parentheses below coefficient estimates, and are based on robust standard errors clustered at the industry level. \*, \*\*, and \*\*\* denote significance at the 10%, 5%, and 1% levels, respectively, based on a two-tailed test.

### 3.6. Additional tests

#### 3.6.1. Issue types and the costs of remediation

The length of time between the date when IPO firms make the initial S-1 filing to the date when the IPO is declared effective (*Duration*) as well as the number of revisions, as measured by the number of comment letters during the IPO process (*#Letters*) may reflect not only the extensiveness of SEC reviews but also the cost of comment letter remediation (Cassell et al., 2013). The intuition is that longer response durations and more revision rounds suggest higher remediation costs with regard to IPO firms' internal and external resources (e.g. IPO firm staffs' working time, audit fees, lawyer fees). In this section, this study conducts the first additional examination to investigate how the severity of issue types affects the remediation cost. Specifically, this study examines 6 issue types including (1) core accounting (*#Core accounting issues*); (2) non-core accounting (*#Non-core accounting issues*); (3) offering-related (*#Offering issues*); (4) business-related (*#Business issues*); (5) corporate governance-related (*#Corporate governance issues*) and (6) disclosure-related issues (*#Disclosure issues*). This thesis calculates these variables by counting the number of comments highlighted in the initial SEC comment letters about core-accounting, non-core accounting, offering, business, and corporate governance disclosure issues in the initial S-1 filing of each IPO firms, respectively. If the SEC do not issue comment letters for initial S-1 filings, or they do not issue any comment letters during their review process, or they do not provide detailed comments in their letters due to matters relating to compliance with the SEC regulations, *#Core-accounting issues*, *#Non-core accounting issues*, *#Offering issues*, *#Business issues*, *#Governance issues*, *#Disclosure issues*, are set equal to zero. Again, these variables are calculated by using the data obtained from the coding of comment letters which is based on the Naïve Bayes algorithm to identify specific issues highlighted in the SEC's comment letters (Section 3.3.2).

Using negative binomial regressions, this study employs the proxies of remediation (i.e. *Duration* and *#Letters*) as dependent variables, the proxies of SEC comment themes as independent variables and IPO firms characteristics as control variables. Table 3.9 reports the results of the examination in which *Duration* is dependent variable in Model (1) and *#Letters* is dependent variable in Model (2). The results reveal positive coefficients of *#Core accounting issues* and *#Business issues* on *Duration* and positive coefficients of *#Core accounting issues*, *#Non-core accounting issues*, *#Business issues* and *#Disclosure issues* on *#Letters*, indicating that more comments on core accounting issues and business issues increase the cost of

remediation in terms of the length of times and the number of rounds to close the review conversation. More comments on non-core accounting issues and disclosure issues also increase the remediation costs in terms of the number of rounds. Furthermore, in both Model (1) and (2), the magnitude of coefficients on *#Core Accounting Issues* are higher than that of coefficients on other independent variables, suggesting that comments on core accounting issues have the highest cost of remediation.

**Table 3.9. Sensitivity of the cost of remediation to comment types**

	Duration (1)	#Letters (2)
#Core-accounting issues	0.012*** (3.07)	0.016*** (2.99)
#Non-core-accounting issues	0.012 (0.46)	0.031** (2.2)
#Offering issues	0.011 (0.62)	0.01 (0.6)
#Business issues	0.011** (2.5)	0.014*** (5.91)
#Governance issues	-0.015 (-0.57)	0.019 (1.53)
#Disclosure issues	-0.001 (-0.13)	0.011*** (6.28)
Size	0.001*** (2.8)	0.001 (0.44)
Age	0.036*** (6.84)	0.024*** (6.31)
Sale growth	-0.001*** (-5.79)	-0.001 (-0.34)
Segments	0.007 (0.25)	-0.001 (-0.05)
Restructuring	-0.007 (-0.05)	0.106 (1.32)
M&A	-0.047 (-0.78)	0.046 (0.51)
Leverage	-0.002 (-0.49)	-0.001 (-0.62)
Z-score	-0.002*** (-7.99)	-0.002*** (-5.44)
Positive earnings	0.099** (2.43)	-0.027 (-0.57)
External financing	-0.078*** (-3.91)	-0.006 (-0.27)
Big 4	-0.189** (-2.11)	0.07 (0.95)
CEOchairperson	0.043 (0.83)	0.008 (0.12)
FE year	Included	Included
FE industry	Included	Included
N	455	455
Pseudo R2	0.1037	0.1934

This table presents the results of the analysis of association between the number of comment topics and remediation costs for the sample of IPOs filing S-1 between 2005 and 2017. Negative binomial regression is employed in this analysis. Dependent variables are the remediation costs including *Duration* and *#Letters*. Independent variables are the number of comment topics including *#Core-accounting issues*, *#Non-core-accounting issues*, *#Offering issues*, *#Business issues*, *#Governance issues*, *#Disclosure issues*). Control variables are IPO firm characteristics including *Size*, *Age*, *Sale growth*, *Segments*, *Restructuring*, *M&A*, *Leverage*, *Z-score*, *Positive earnings*, *External financing*, *Big4*, *CEOchairperson*. All variables are defined in Appendix 1. Results from Z-statistics are presented in parentheses coefficient estimates, and are based on robust standard errors clustered at the industry level. \*, \*\*, and \*\*\* denote significance at the 10%, 5%, and 1% levels, respectively, based on a two-tailed test.



### 3.6.2. Impact of the financial crisis

In the second additional test, this study investigates whether the global financial crisis of 2008-2009 has any impact on the extensiveness of SEC reviews of IPO registration statement and if so, whether the crisis has any moderating effect on the sensitivity of SEC reviews to IPO firm characteristics. The global financial crisis of 2008-2009, which is known as the worst crisis since the Stock Market Crash of 1929, caused systemic risks, contagion, regulatory failures and increasing risk-taking behaviours (Claessens & Kodres, 2014). The financial crisis resulted in securities regulation reforms as well as additional reporting and disclosure requirements (Leuz & Wysocki, 2008).

Watts & Zimmerman (1986) claim that crises can strengthen the scrutiny of politicians and regulators for regulated firms. Blackburne (2014) also observes that the SEC increased the estimated budget for the Division of Corporation Finance in 2008 in order to conduct more thorough reviews of corporate disclosures during the financial crisis. Colaco et al. (2018) provide evidence that the duration of IPO processes increased during the period of the financial crisis 2008-2009. In the descriptive statistics of SEC review attributes (Section 3.4.2), it was identified that the value of *Duration* and *#Letters* reached a peak in 2008, during the height of the global financial crisis. This study, therefore, conjectures that during the financial crisis, SEC reviews of IPO registration statements became more extensive and that the SEC became more sensitive to IPO firm characteristics that indicate potential deficiencies in IPO disclosures.

Table 3.10 presents the results on the impact of the global financial crisis 2008-2009 on SEC reviews (column 1, 3, 5), as well as the moderating effect of the crisis on the association between SEC review attributes and IPO firm characteristics (column 2, 4, 6). Negative binomial regressions are employed in this analysis. Dependent variables are SEC review attributes, including *Duration*, *#Letters* and *#Themes*.<sup>41</sup> Independent variables of interest are *Financial crisis* which is an indicator variable equals to 1 if the filing year of firm *i*'s S-1 is 2008 or 2009, and 0 if the filing year is from 2005 to 2007 or from 2010 to 2011 (Colaco et al., 2018).<sup>42</sup>

---

<sup>41</sup> This study does not show the analysis in which *#Comments* is employed as dependent variable and do not employ *#Comments* in the moderating analysis since there is no significant effects of *Financial crisis* on *#Comments* as presented in Appendix 3.4.

<sup>42</sup> The period of 2012-2017 is not included in the measure of *Financial crisis* in order to mitigate the impact of the JOBS Act enacted from 2012.

Interactions between *Financial crisis* and the proxies of IPO firm characteristics are also included.

The results in columns 1, 3, and 5 of Table 3.10 reveal positive effects of *Financial crisis* on all three SEC review attributes (*Duration*, *#Letters* and *#Themes*), indicating that during the global financial crisis period, SEC reviews became more extensive as the SEC spent more time reviewing IPO registration statements and also provided more comment letters and comment on a wider range of themes, consistent with the expectation outlined above.

Regarding the moderating effects of the financial crisis on the sensitivity of SEC reviews to IPO firm characteristics, it is observed in column 2 that the coefficients on *Size\*Financial crisis* and *External financing\*Financial crisis* are significantly positive, indicating that, during the financial crisis period, the SEC is more likely to spend more time reviewing IPO registration statements prepared by bigger IPO firms, IPO firms having higher external funding. In column 4, positive coefficients on *Size\*Financial crisis* and *External financing\*Financial crisis* are identified, indicating that, during the financial crisis period, the SEC were more likely to provide more comment letters for bigger IPO firms and IPO firms having higher external funding. In column 6, the results show a positive coefficient on *Size\*Financial crisis*, and negative coefficient on *Z-score\*Financial crisis*, indicating that, during the financial crisis period, the SEC were more likely to comment on a wider range of themes for bigger IPO firms and IPO having higher probabilities of bankruptcy.

Overall, consistent with expectations, the findings suggest that, during the financial crisis period, The increase in the extensiveness of SEC reviews for bigger IPO firms and IPO firms with higher probabilities of bankruptcy, who might have potential deficiencies in reporting quality, is more pronounced. The findings also reveal that IPO firms with higher external funding were more likely to experience more extensive SEC reviews during the financial crisis, perhaps due to the SEC's concerns about the trustworthiness of bank lending practices, a channel of the firms' external funding, during the crisis (Cox, 2018).

**Table 3.10. The sensitivity of SEC reviews to IPO firms' characteristics during financial crisis 2008-2009**

	Duration		#Letters		#Themes	
	(1)	(2)	(3)	(4)	(5)	(6)
<b>Financial crisis</b>	0.42*** (4.71)	0.459 (0.81)	0.196*** (2.63)	0.581 (1.45)	0.157** (2.42)	0.228 (0.97)
<b>Company size</b>						
Size	0.001 (0.56)	-0.001** (-2.29)	0.001* (1.65)	-0.001 (-0.25)	-0.001 (-0.71)	-0.001 (-1.33)
Size*Financial crisis		0.001*** (4.23)		0.001*** (5.4)		0.001* (1.87)
<b>Company age</b>						
Age	0.032*** (5.36)	0.028** (2.39)	0.028*** (5.4)	0.027*** (5.43)	0.004 (0.75)	0.002 (0.47)
Age*Financial crisis		-0.037 (-1.03)		-0.021 (-1.52)		0.006 (0.54)
<b>Business complexity</b>						
Sale growth	-0.001 (-1.57)	-0.001 (-1.17)	-0.001 (-0.53)	-0.001 (-0.44)	0.001** (2.21)	0.001*** (2.65)
Sale growth*Financial crisis		-0.002 (-0.49)		0.001 (0.14)		-0.001 (-0.44)
Segments	-0.006 (-0.24)	-0.028 (-1.14)	-0.001 (-0.01)	0.007 (0.31)	0.023 (0.96)	0.038 (1.47)
Segments*Financial crisis		0.017 (0.15)		-0.195 (-1.01)		-0.135 (-1.08)
Restructuring	-0.19 (-1.02)	-0.065 (-0.42)	0.023 (0.17)	0.018 (0.12)	0.036 (0.49)	0.067 (0.6)
Restructuring*Financial crisis		-1.064 (-1.59)		-0.155 (-0.45)		0.08 (0.3)
M&A	-0.433*** (-6.84)	-0.332*** (-5.06)	-0.199 (-1.2)	-0.243 (-1.54)	0.028 (0.16)	-0.019 (-0.08)
M&A*Financial crisis		-0.474 (-1.34)		0.823 (1.53)		0.612 (1.11)
<b>Financial health</b>						
Leverage	-0.011*** (-6.51)	-0.011*** (-5.88)	-0.001 (-0.05)	-0.001 (-0.09)	0.002 (1.38)	0.001 (0.65)
Leverage*Financial crisis		0.002 (0.09)		-0.001 (-0.03)		0.005 (0.48)
Z-score	-0.003*** (-3.54)	-0.003** (-2.41)	0.002 (1.11)	0.003 (0.97)	-0.001 (-0.53)	-0.001 (-0.35)
Z-score*Financial crisis		0.002 (0.04)		-0.015 (-0.62)		-0.036* (-1.87)
Positive earnings	-0.012 (-0.11)	0.028 (0.2)	-0.096 (-1.17)	-0.067 (-0.67)	-0.065 (-1.12)	-0.067 (-0.99)
Positive earnings*Financial crisis		-0.387 (-0.49)		0.008 (0.02)		0.485 (1.39)
External financing	-0.257*** (-5.19)	-0.287*** (-5.21)	-0.067 (-1.06)	-0.08 (-1.08)	0.079* (1.73)	0.083* (1.81)
External financing*Financial crisis		1.929* (1.72)		1.804** (2.39)		1.22 (1.3)
<b>Auditor quality</b>						
Big 4	0.115 (0.89)	0.092 (0.68)	-0.126 (-1.19)	-0.149 (-1.26)	-0.002 (-0.03)	-0.009 (-0.11)
Big 4*Financial crisis		0.061 (0.19)		-0.413 (-1.28)		-0.399 (-1.34)
<b>Corporate governance quality</b>						
CEOchairperson	0.003 (0.04)	-0.065 (-0.84)	0.1 (1.11)	0.096 (0.92)	0.009 (0.13)	-0.006 (-0.08)
CEOchairperson*Financial crisis		-0.086 (-0.26)		-0.113 (-0.62)		0.091 (0.87)
FE industry	Included	Included	Included	Included	Included	Included
N	238	238	238	238	238	238
Pseudo R2	0.0615	0.0752	0.0652	0.081	0.0301	0.038

This tables presents results of the analysis of the impact of the financial crisis 2008-2009 on the sensitivity of SEC reviews to IPO firm characteristics on the sample of 238 IPOs between 2005-2011. The period of 2012-2017 is not included in this analysis in order to mitigate the impact of the JOBS Act enacted in 2012. Negative binomial regression is employed in this analysis. Dependent variables are SEC review attributes including *Duration*, *#Letters* and *#Themes*. Independent variables are *Financial crisis*, IPO firm characteristics (*Size*, *Age*, *Sale growth*, *Segments*, *Restructuring*, *M&A*, *Leverage*, *Z-score*, *Positive earnings*, *External financing*, *Big4*, *CEOchairperson*) and their interactions with *Financial crisis*. All variables are defined in Appendix 1. Results from Z-statistics are presented in parentheses below coefficient estimates, and are based on robust standard errors clustered at the industry level. \*, \*\*, and \*\*\* denote significance at the 10%, 5%, and 1% levels, respectively, based on a two-tailed test.

### **3.7. Conclusion**

This study investigates how a host of IPO firm characteristics affect the extensiveness of SEC reviews of S-1 filings, as indicated by the duration of the IPO process, the number of comment letters issued by the SEC on each S-1 filing, the number of comments within comment letters, and the number of themes commented upon the initial S-1 filings issued by the SEC.

Contributing to previous literature, this study provides new and broad evidence about the sensitivity of SEC S-1 reviews to IPO firm characteristics. Specifically, for a sample of 909 IPO firms over the period 12<sup>th</sup> May 2005 to 31<sup>st</sup> December 2017, this study identifies that the SEC spend more time reviewing S-1 filings, issue more comment letters, more comments and wider range of themes for initial S-1 filings prepared by bigger IPO firms. Older IPO firms experience longer SEC review duration and receive more comment letters. Regarding the impact of IPO firms' business complexity, the results reveal that SEC reviews are likely to be more extensive when reviewing IPO firms who have greater complexity in their business, which may be related to lower reporting quality. Specifically, IPO firms having more business segments are identified to receive wider range of themes in SEC comment letters. More comments and wider range of themes in SEC comment letters are also received by IPO firms conducting M&A activities. However, IPO firms with lower sales growth, who might have less business complexity, are observed to experience longer SEC review duration, probably due the SEC's concerns that these firms might manage sales downward in order to be eligible for EGC status under the JOBS Act.

In terms of financial health, IPO firms having a higher probability of bankruptcy are identified to have longer SEC reviews, receive more comment letters, more comments and more themes in the comment letters. More profitable IPO firms, who may be more likely to have disclosed misleading accounting information, are also observed to experience longer SEC reviews. The results also reveal that shorter review times are experienced by IPO firms using more external financing who are believed to have higher disclosure quality. With regard to auditor quality, this study observes shorter reviewing time and fewer comments are experienced by IPO firms audited by Big4 auditors. Overall, the findings suggest that SEC reviews are likely to be more extensive when IPO firms display characteristics that indicate potential deficiencies in informational quality of their IPO registration statements.

In addition, the results suggest that IPO firms incur higher cost of remediation when receiving comments on core accounting issues, non-core accounting issues, business issues, and disclosure issues, as compared with other issues. Furthermore, comments on core accounting issues are observed to have the highest cost of remediation. Furthermore, the results also suggest that, during the period of the global financial crisis, SEC reviews became disproportionately more extensive for bigger IPO firms, IPO firms having higher external financing, and IPO firms with a higher probability of bankruptcy.

The findings should be of interest to practitioners in terms of providing a better understanding of the SEC's S-1 review process, specifically, which factors might attract SEC attention. In addition, the findings are insightful to investors, auditors, regulators and other stakeholders, who employ SEC S-1 comment letters to evaluate the quality of S-1 filings as well as IPO firms' reporting compliance. The sensitivity of SEC review extensiveness to firm characteristics indicating potential informational deficiencies (e.g. high complexity, poor financial health, low auditor quality), to some extent implies that SEC comment letters can be considered as valuable and reliable source of information about going-public firms. Specifically, the findings imply that SEC comment letters can be used to identify undisclosed firm performance as well as obtain information about the quality of S-1 disclosures.

As for IPO issuers, the findings imply that choosing high-quality auditors (e.g. Big 4) to perform audit procedures could shorten IPO approval process. Because high-quality auditors can increase confidence in the IPO firm's disclosures, which may reduce regulatory scrutiny (Alhadab & Clacher, 2018). However, it is unclear whether this reduced scrutiny is associated with sufficient regulatory cost reductions to justify the audit fee premium associated with appointing a Big 4 auditor. In addition, findings relating to the relationship between remediation costs and S1 filings' issue types should be useful to issuers as remediation costs might affect IPO firms' capability to enter capital markets (Deloitte, 2013; Johnson, 2010). Specifically, core accounting issues are observed to result in the highest cost of remediation, implying that IPO firms should pay more attention to potential issues in their financial statements to reduce remediation costs and speed up the IPO process.

Furthermore, foreign issuers tend to face stricter reporting requirements when listing in the U.S. (e.g., those enforced by the SEC), as well as relatively strong investor protections (Ghosh & He, 2016). If the foreign issuer successfully completes an IPO in the U.S., it would be a good signal about their credibility, hence attracting investors (Ghosh & He, 2016). Similarly, Doidge

et al. (2001) also state it is widely regarded that foreign firms listing on the U.S. stock markets benefit from enhanced prestige, cheaper cost of capital, larger shareholder base and higher liquidity as compared with listing in other countries (e.g., Canada, Hongkong, France, Germany). How to meet the SEC's reporting requirements is always a challenge for domestic IPOs, so it will be even more difficult for foreign IPOs. Therefore, the results of this study on which firms' characteristics may attract the attention of the SEC will certainly be more useful to foreign issuers.

In addition, underlying regulatory oversight of capital markets is likely to be comparable in other nations. For example, according to Boskovic et al. (2010), securities regulations in the EU (e.g., the Market in Financial Instruments Directive 2004/39/EC (MiFID)) and United States (e.g., the 1933 Securities Act) have a similar focus on investor protection, fair and orderly markets, and price transparency as well as similar approval procedures for issuing firms.<sup>43</sup> Silvia (2006) also states that supervisory authorities in the United Kingdom and the United States maintain similar goals and missions in monitoring the capital market. The Securities and Exchange Commission (SEC) of the US, the Financial Services Authority (FSA) of the UK, the European Securities and Markets Authority (ESMA) are all members of the International Organisation of Securities Commissions (IOSCO), who share similar 2003 IOSCO Core Principles of Securities Regulation (Boskovic et al., 2010). Therefore, findings in this study about the focus of the SEC on firms' characteristics in the U.S context may be applicable to other countries. Furthermore, the findings may have implications for legislators in other countries such as South Korea (Kim, 2019), Canada (Murphy et al., 2020) who are seeking to replicate the filing review process of the US markets.

While providing evidence on the determinants of SEC reviews on S-1 filings, this study does not explore whether SEC reviews are effective in addressing deficiencies in the information quality of S-1 filings. There have been extensive arguments about the effectiveness of SEC reviews of IPO registration statements. On the one hand, prior research support the effectiveness of SEC reviews in detecting informational issues around IPOs (Ertimur & Nondorf, 2006; Colaco et al., 2018, Schuldt & Vega, 2018 and Lowry, 2020) and improving the IPO informational environment (Ertimur & Nondorf, 2006; Gupta & Israelsen, 2015; Li & Liu, 2017; Schuldt & Vega, 2018 and Lowry, 2020). On the other hand, the effectiveness of SEC reviews is observed to be constrained by some external factors, such as political

---

<sup>43</sup> <https://openknowledge.worldbank.org/bitstream/handle/10986/13528/52460.pdf?sequence=1&isAllowed=y>

connections and the JOBS Act (Johnston & Petacchi, 2017 and Chaplinsky et al., 2017). Future research on the sensitivity of SEC reviews to information quality of S-1 filings would therefore be informative. In addition, with the aim of filling the gap in the extant literature on firm-level factors associated with the SEC review, this study solely focuses on IPO firms' characteristics and their impact on the SEC review extensiveness. Emphasis is placed on firm characteristics in this study because firm characteristics are identified to be among the most important factors on the SEC review of corporate disclosures (e.g., 10-K, 8-K) than S-1 filings, hence, it is worthwhile to investigate the influence of firm characteristics on the SEC S-1 review. Nevertheless, it is worth noting that factors other than firm-level factors may also have some impact on the SEC review extensiveness as suggested by recent research, e.g. the SEC workload (Köchling et al., 2021). Future research would be useful to investigate the incremental impact of factors other than firm-level factors on the extensiveness of the IPO approval process, e.g. the recent regulatory change, the allocation of the SEC's budgetary resources. Furthermore, attention should be given to whether *Duration* is an effective indicator for the extensiveness of SEC reviews. This proxy could cover more than just the SEC review period, especially, the time lag between the date when SEC complete their review and date of publishing their comment letters. Consequently, there might be factors other than SEC reviews affecting the length of IPO processes, such as market timing or litigation. Therefore, results on the determinants of *Duration* should be considered with this limitation in mind.

## **4. De-burdening the IPO approval process: SEC reviews under the JOBS Act**

### **4.1. Introduction**

Responding to a decade-long decrease in IPO activity, Title I of the Jumpstart Our Business Startups (JOBS) Act, enacted on 5<sup>th</sup> April 2012, attempted to facilitate the IPO process for emerging growth companies (EGCs).<sup>44</sup> In particular, the “de-burdening” provision sought to reduce certain accounting and disclosure requirements in an attempt to make the IPO approval process cheaper and quicker. Before an IPO can be completed, the registration statements and prospectus information must be reviewed and approved by the SEC, in order to ensure the completeness and integrity of the information that investors receive. An excessively lengthy and burdensome approval process, however, risks putting-off companies from conducting IPOs altogether. This study seeks to quantify the impact of the JOBS Act on the duration of the approval process, as well as the volume and scope of comments issued by the SEC. Dramatic reductions in all measures under the JOBS Act are documented.

Prior studies have examined other impacts of the JOBS Act, in terms of the content of IPO firms’ disclosures (Gupta & Israelsen, 2015), the volume of IPOs (Dambra et al., 2015), the financial costs of going public (Chaplinsky et al., 2017), post-IPO performance (Lowry et al., 2020), as well as its impact on the information environment (Barth et al., 2017; Gupta & Israelsen, 2015 and Lowry et al., 2020). For example, Chaplinsky et al. (2017) identify no measurable reduction in IPO direct costs (e.g. underwriter fees, legal fees, accountancy fees) as a result of the JOBS Act, although indirect costs (i.e. underpricing) have increased substantially. This is likely due to the deterioration of the information environment, namely lower transparency and higher information uncertainty, leading to an increased cost of capital (Chaplinsky et al., 2017). Furthermore, while IPO volumes increased during the first two years of the post-JOBS era, they have largely fallen again since (Zeidel, 2016). Taken together, these findings imply a moderate beneficial impact of the Act in facilitating the IPO process at best.

Currently, little is known of the extent to which the JOBS Act led to de-burdening of the IPO approval process. Agarwal et al. (2017) and Lowry et al. (2020) are the only studies to analyse variations in SEC comment letters in its aftermath. Agarwal et al. (2017) find that after the enactment of the JOBS Act, SEC comment letters are generally more negative in tone, contain

---

<sup>44</sup> EGC status is afforded to companies having total annual gross revenues less than \$1 billion.



more forceful suggestions, and focus more on hard information (e.g. about prices, dates and accounts). Lowry et al. (2020) observe that in the post-JOBS Act era, the SEC appears to reduce the focus on liquidity and executive compensation in their comment letters. However, the literature currently lacks a systematic evaluation of the extent to which the regulatory process has relaxed under the JOBS Act. Understanding the extent to which the JOBS Act (if at all) de-burdened the IPO approval process (e.g. the extent of revisions required by the SEC) is important to help evaluate the efficacy of the initiative. This is important not only to regulators but also to investors, auditors and other stakeholders, who often use SEC comment letters as one indicator of information quality (Li & Liu, 2017).

Using a sample of 722 U.S. EGC-scale IPOs (henceforth EGC IPOs) between 2005 and 2017, this study finds the evidence of substantial decreases in the duration of the IPO approval process, the number of comment letters issued by the SEC, as well as the volume and range of themes covered by comments in initial SEC comment letters.<sup>45</sup> Specifically, controlling for other factors, this study observes that EGC IPOs on average attract 62.6% fewer comment letters, and that the number of comments (themes) in initial comment letters reduces by 120.8% (71.72%) following the JOBS Act. It is also observed that the average duration of the IPO approval reduces by as much as 62.3% for EGC IPOs, although similar reductions are seen for Non-EGC IPOs. Overall, the results document substantial de-burdening of the IPO approval process, particularly for EGC IPOs.

In further tests, the extent of post-JOBS reductions in the number of comment letters and themes are observed to be less pronounced in more highly concentrated industries, suggesting the SEC are conscious to maintain scrutiny in areas where the proprietary costs of disclosure, and therefore information uncertainty, are high. Finally, this study finds that under the JOBS Act, SEC comments focus proportionately more on non-core accounting issues and issues directly related to the offering, but proportionately less on general business issues and potential disclosure deficiencies.

This study makes two incremental contributions to the extant literature on the IPO approval process and the effects of the JOBS Act. First, this study provides evidence that the JOBS Act,

---

<sup>45</sup> Since the JOBS Act mainly relaxes disclosure requirements for Emerging Growth Company IPOs, this study examines a sample of companies that satisfy the criterion to be eligible for EGC status under the act. Throughout this paper, this study therefore uses the EGC label in a broad sense to refer to IPOs of companies who would satisfy the criterion to be eligible for EGC status under the act, but did not necessarily go public with formal EGC status.

despite not reducing IPO costs (Chaplinsky et al., 2017), led to substantial de-burdening of the IPO approval process, particularly through reduced volume and scope of comments issued by the SEC. The findings in this regard yield important policy implications, confirming the materialization of the Act's intended effects of easing the IPO on-ramp. Second, this study demonstrates the degree of de-burdening to be moderated by the level of market concentration, suggesting that the SEC retain discretionary scrutiny to ensure sufficient disclosure by firms conducting IPOs in more highly concentrated industries. This is likely due to heightened need for investor protection given high information uncertainty as a result of proprietary disclosure costs (Robinson et al., 2011; Ali et al., 2014; Dambra et al., 2015 ).

The remainder of the paper is structured as follows. Section 4.2 presents the institutional background, prior literature, and expectations development. Section 4.3 discusses the methodology and data. Section 4.4 provides the summary statistics. The empirical analyses are presented in Section 4.5, while Section 4.6 concludes the chapter.

## **4.2. Literature review**

### **4.2.1. “De-burdening” provisions under the JOBS Act**

On 5<sup>th</sup> April 2012, the Jumpstart Our Business Startups (JOBS) Act was signed into law, among other things, appealing to the SEC to establish rules on research, capital formation, disclosure, and registration requirements. The primary motivation for the Act was to encourage more companies to conduct IPOs by easing the associated costs and disclosure and compliance requirements (Forbes, 2013; Gao et al., 2013). The preceding decade saw increased regulation, e.g. via the Sarbanes-Oxley Act, arguably imposing prohibitive compliance costs on firms pursuing IPOs, in terms of time and money (Keating, 2012), dampening the volume of IPOs. Moreover, the global financial crisis of 2008/2009 drove a deep decline in IPO activity, which through the JOBS Act the U.S. government sought to reverse. The JOBS Act particularly focused on encouraging IPOs by Emerging Growth Companies (EGCs), firms with total annual gross revenues less than \$1 billion in the most recent fiscal year.

The assumptions of iron triangle theory and congressional dominance theory both state that the bureaucracy (e.g. the SEC) will strictly carry out regulations authorised by Congress as Congress control the bureaucracy's budgetary allocation. Dambra et al. (2015) empirically analyse the effect of the JOBS Act on the number of IPOs and observe an increase in IPO volume in the period immediately following its enactment, suggesting that the JOBS Act to

some extent achieve Congress' target of revitalizing IPO activity through the relaxation of IPO registration requirements. They also document that the SEC satisfy “de-burdening” provisions of the JOBS Act by expediting the IPO review process as indicated by shorter IPO registration duration, on average, in the post-JOBS period than that in the pre-JOBS period. Examining the range of topics within SEC comment letters, Lowry et al. (2020) document a reduction in the number of words on liquidity and executive compensation under the JOBS Act. They also observe a decrease in IPO registration period length after the passage of the JOBS Act. In addition, they find that after the JOBS Act enactment, the first prospectuses (S-1 filings) are less different to the final prospectuses (424 filings) in terms of the number of words, suggesting that the SEC might issue fewer comments on IPO registration statements. Overall, the assumptions of iron triangle theory and congressional dominance theory and prior research supports the view that the SEC might satisfy the “de-burdening” provisions of the JOBS Act by reducing the extensiveness of their reviews after the JOBS Act enactment.

The first hypothesis, therefore, is stated in an alternative form, as follows.

*H1<sub>alternative</sub>: SEC reviews of IPO registration statements are likely to be less extensive under the JOBS Act.*

#### **4.2.2. The JOBS Act and informational problems**

Prior research on impacts of the JOBS Act provide evidence about the reduction in the quality of informational environment under the Act. Barth et al. (2017) examine the effects of the JOBS Act on information uncertainty in the IPO market, while Lowry et al. (2020) investigate its effects on information revelation, information asymmetry around IPOs as well as uncertainty, liquidity, insider sales, and post-IPO performance. In general, these studies find that, as feared, the Act exacerbated information problems. Examining the effects of the JOBS Act on direct issuance costs, including accounting, legal, and underwriting fees for EGC IPOs, Chaplinsky et al. (2017) document that while the JOBS Act directly eliminates certain restrictions and requirements, it may also reduce the ability of regulators to address information deficiencies. Moreover, as the spirit of the Act is to de-burden the IPO process, the SEC may exert discretionary effort to lessen the extensiveness of their reviews. On the other hand, as the JOBS Act resulted in reduced transparency and exacerbated information problems (Barth et al., 2017, Chaplinsky et al., 2017; Gupta & Israelsen, 2015; Lowry et al., 2020), the SEC may

decide to increase the extensiveness of their reviews in order to protect investors from potentially inaccurate or misleading disclosures.

The assumptions of public interest theory state that the regulatory agencies strive to serve the public interest regarding monitoring and modifying inefficient markets. The aforementioned studies (Ertimur & Nondorf, 2006; Colaco et al., 2018 and Schuldt & Vega, 2018) provide evidence that SEC scrutiny of registration statements is more extensive under conditions of high information uncertainty and low reporting quality. Agarwal et al. (2017) evaluate the impact of the JOBS Act on IPO firms' disclosures and find that IPO firms reduce accounting disclosures after the Act. While such reduction is allowed under the JOBS Act, SEC comment letters are observed to concentrate more on the quantitative content of IPO registration statements and become more negative in tone and more forceful in the recommendations they make after the enactment of the JOBS Act in order to reduce potential problems of information asymmetry. It is possible, however, that this is explained by the SEC narrowing their focus on only the most pervasive disclosure issues. It is also worth noting that Agarwal et al. (2017) examine changes in the contents and styles of SEC comment letters rather than changes in the volume and breadth of SEC critiques in the aftermath of the JOBS Act. In this vein, the expectation is that information problems occurring after the enactment of the JOBS Act might increase the extensiveness of SEC reviews.

There are reasons, however, to expect the impact of the JOBS Act on SEC reviews to be heterogeneous, varying according to the level of competition in each industry. Ali et al. (2014) demonstrate that, due to high proprietary costs of disclosure, firms operating in highly-concentrated markets disclose less information, which increases information uncertainty. Similarly, Robinson et al. (2011) find that high competition levels lead managers to avoid the proprietary costs of disclosure by releasing less important information, which increases uncertainty. The removal of certain mandatory reporting requirements by the JOBS Act allowed firms to avoid disclosing on issues where proprietary costs are high (Barth et al., 2017), which led to a pronounced increase in IPO activity by firms in more concentrated industries (Dambra et al., 2015). Issuers in more concentrated industries may also face increased incentives to engage in opportunistic disclosure (e.g. earnings management), in order to protect their competitive position (Cheng et al., 2013).

While the uptake of greater disclosure exemptions under the JOBS Act by IPO firms in more concentrated industries may mechanically lead to fewer comments by SEC reviewers, the

omission of business-critical information may on the other hand encourage a more extensive SEC review. As previously discussed, SEC reviews are seen to be more extensive under conditions of high information uncertainty (Ertimur & Nondorf, 2006; Chen & Johnston, 2010; Colaco et al., 2018). While this study expects the SEC to conform with the spirit of the JOBS Act in terms of reducing *excessive* burden in the IPO approval process, the business-critical nature of information omissions by firms facing high proprietary disclosure costs is likely to change this dynamic measurably. As the SEC are charged with ensuring IPO firms report “meaningful financial and other information to the public” (SEC, 2013), this study, therefore, posits the second hypothesis, in alternative form, as follows.

*H2<sub>alternative</sub>: The reductions in the extensiveness of SEC reviews following the JOBS Act to be less pronounced for IPOs in more highly concentrated industries.*

### **4.3. Research design**

#### **4.3.1. Sample selection**

The Thomson Reuters Eikon database is employed to obtain an initial sample of U.S. IPOs filed on NYSE, NASDAQ and AMEX between 12<sup>th</sup> May 2005 and 31<sup>st</sup> December 2017,<sup>46</sup> including data on the date of initial S-1 filings and the date which the IPO becomes effective. Following prior studies, this study focuses on IPO firms offering common shares and excludes IPOs with an offering price less than \$5 per share, American Depositary Receipts (ADRs) and financial firms, unit issues and simultaneous offerings. Furthermore, for the sake of standardisation, IPO firms who do not file S-1 filings are excluded. Accounting data are then obtained from Compustat, and corporate governance data are obtained from Thomson Reuters Eikon. The final sample consists of 799 IPOs with all necessary data available, of which 722 are classified as EGC IPOs due to having less than \$1 billion in revenues in their most recent fiscal year (including 351 in the pre-JOBS Act era, and 371 filed under the JOBS Act).<sup>47</sup> The sample selection process is detailed in Table 4.1. For each IPO in the sample, all relevant SEC comment letters are manually identified and collected from the SEC’s EDGAR database.<sup>48</sup>

---

<sup>46</sup> SEC comment letters were only released publicly as of 12th May 2005.

<sup>47</sup> Though EGC status only began to be extended under the JOBS Act, this study also classifies pre-JOBS IPOs as EGCs using the same criterion in order to evaluate the impact of the Act on the class of companies that are targeted by many of the Act’s provisions.

<sup>48</sup> <https://www.sec.gov/edgar/searchedgar/companysearch.html>

**Table 4.1. Sample selection**

	<b>Number of IPOs</b>
<b>U.S. IPOs (on NASDAQ, NYSE, AMEX) with first registration statements filed between 12/05/2005 and 31/12/2017 (collected from Thomson Eikon)</b>	<b>3525</b>
<i>Less: IPOs with offering price less than \$5 per share</i>	(1,202)
<i>Less: Simultaneous offerings and unit offerings</i>	(56)
<i>Less: American Depository Receipts and other financial firms</i>	(733)
<i>Less: IPOs that do not offer common shares</i>	(532)
<i>Less: IPO firms that do not file an S-1</i>	(93)
<i>Less: IPOs with missing accounting and/or corporate governance data</i>	(110)
<b>Final sample</b>	
<b>-All IPOs</b>	<b>799</b>
<b>-Of which: EGC IPOs</b>	<b>722</b>
• <b>In pre-JOBS Act period</b>	<b>351</b>
• <b>In post-JOBS Act period</b>	<b>371</b>

#### **4.3.2. Key variables**

This study examines four main attributes of the IPO approval process, including; the duration of the IPO process (*Duration*); the number of SEC comment letters (*#Letters*); the number of individual comments in the initial comment letter (*#Comments*); and the number of themes cited in the initial comment letter (*#Themes*).

*Duration* is measured by calculating the number of days from the filing date of initial S-1 form to the date when the IPO becomes effective. This measure represents the length of the SEC review process for each IPO firm. According to Ertimur & Nondorf (2006), although this period covers not only the SEC review period but also other events (e.g. road shows, execution of underwriting agreement) in the IPO process, it is commonly considered to be a positive function of the extensiveness of the SEC's review. Colaco et al. (2018) suggest that IPO duration indicates multiple layers of oversight from regulators.

*#Letters* is calculated by counting the number of comment letters that the SEC issues to each IPO firm during their IPO approval process, as listed on the EDGAR database.

*#Comments* is calculated by counting the number of comments in the initial SEC comment letter issued to each IPO firm. If no comment letter is issued by the SEC, *#Comments* is set equal to zero.

*#Themes* is calculated by counting the number of different types of issues highlighted in initial SEC comment letters, in accordance with the thematic coding of the data (described in section 3.3.2). If no comment letter is issued by the SEC, *#Themes* is set equal to zero.

*JOBS Act* is an indicator variable equals to 1 if filing year of firm *i*'s S-1 is from 2012, when the JOBS Act was enacted, to 2017, and 0 otherwise.

*EGC* is an indicator variable equals to 1 if IPO firm has total annual gross revenues that are less than \$1 billion in the most recent fiscal year, and 0 otherwise.

#### **4.3.3. Control variables**

Following Cassell et al. (2013), Duro et al. (2017), Heese et al. (2017) and Johnston & Petacchi (2017), who identify various firm characteristics that affect SEC reviews, this study includes controls for company size (*LnSize*), company age (*Age*), business complexity (*Segments*, *Restructuring*, *M&A*), audit quality (*Big4*), corporate governance characteristics (*CEOchairperson*), and financial health, including; debt level (*Leverage*), financial distress (*Zscore*) and profitability (*Positive earnings*).

This study estimates *LnSize* as the natural logarithm of total assets reported in the latest fiscal year prior to the year that the initial S-1 is filed (year *t-1*) (Brown et al., 2018). Following Heese et al. (2017), *Age* is calculated as the number of years since the firm first appeared on Compustat to year *t-1*. *Segments* is calculated as the number of unique segment industry codes in year *t-1*, as reported on Compustat. *Restructuring* is an indicator variable reflecting whether IPO firms engage in restructuring activities or not, and is set equal to 1 if the firm has non-zero restructuring costs on a pre-tax basis in year *t-1*, and 0 otherwise (Cassell et al., 2013; Heese et al., 2017). *M&A* is an indicator variable reflecting whether IPO firms engage in merger and acquisition activities or not, and is set equal to 1 if the firm has non-zero acquisition or merger costs on a pre-tax basis in year *t-1*, and 0 otherwise (Cassell et al., 2013; Heese et al., 2017). *Leverage* is calculated as the ratio of total liabilities to total equity in year *t-1* (Duro et al., 2017). *Zscore* is a measure of bankruptcy risk as at year *t-1*, calculated using the modified Z-score model for private companies developed by Altman (2013).

*Positive earnings* is a measure of profitability, and is constructed as an indicator variable set equal to 1 if the firm has net income in year *t-1* equal or higher than zero, and 0 otherwise (Hesse et al., 2017). *Big 4* is an indicator variable equal to 1 if the firm is audited by one of the

Big 4 accounting firms in year t-1, and 0 otherwise (Johnston & Petacchi, 2017). *CEOchairperson* is an inverse measure of the strength of internal monitoring mechanisms, and is calculated as an indicator variable which equals 1 if the CEO is also the chairperson of the board of directors in year t-1, and 0 otherwise (Hesse et al., 2017).

More detailed definitions of these variables are presented in Appendix 1.1 .

#### 4.3.4. Empirical tests

In order to examine the impact of the JOBS Act on each SEC S-1 review attribute, this study estimates the following model using negative binomial regression:<sup>49</sup>

$$\begin{aligned} \text{SEC review}_{i,t} = & \beta_0 + \beta_1 \text{JOBS Act}_{i,t} + \beta_2 \text{LnSize}_{i,t-1} + \beta_3 \text{Leverage}_{i,t-1} + \beta_4 \text{Firm age}_{i,t-1} + \\ & \beta_5 \text{Segments}_{i,t-1} + \beta_6 \text{Zscore}_{i,t-1} + \beta_7 \text{Big4}_{i,t-1} + \beta_8 \text{Restructuring}_{i,t-1} + \beta_9 \text{M\&A}_{i,t-1} + \\ & \beta_{10} \text{Positive earnings}_{i,t-1} + \beta_{11} \text{CEOchairperson}_{i,t-1} + \text{IndFE} + \varepsilon_{i,t} \end{aligned} \quad (4.1)$$

where *SEC review*<sub>*i,t*</sub> denotes each of the main SEC review attributes in turn, namely *Duration*<sub>*i,t*</sub>, *Letters*<sub>*i,t*</sub>, *Comments*<sub>*i,t*</sub>, and *Issue types*<sub>*i,t*</sub>; and *JOBS Act*<sub>*i,t*</sub> as an indicator variable which is equal to 1 if the S-1 filing year is in the post-JOBS Act period (2012 to 2017), and 0 otherwise. All other variables are as defined previously and in Appendix 1.1.<sup>50</sup>

The intention of the JOBS Act is to de-burden the IPO approval process with particular focus on firms eligible for EGC status. Therefore, this study estimates the augmented version of main model, as specified by Eq. (4.2) below, in order to benchmark the impact of the JOBS Act on EGC IPOs against a control sample of non-EGC IPOs (i.e., firms that do not satisfy the criterion for EGC eligibility):

---

<sup>49</sup> This study employs negative binomial regression since the dependent variables are discrete, i.e. they are counts of the number of days in the IPO process; comment letters; comments; and themes. According to Rock et al. (2000), this would be statistically problematic if discrete and countable variables are employed as independent variables within conventional OLS regressions. Negative binomial regression outperforms other methods in estimating cross-sectional regression on discrete-count dependent variables. Moreover, the distributions of SEC review attributes display signs of overdispersion since these variables have variances that are greater than their mean values, which does not satisfy the assumption of Poisson regression. The alpha parameters from likelihood tests of overdispersion also demonstrate that negative binomial regressions are more appropriate than Poisson regressions in terms of overdispersion.

<sup>50</sup> The results remain consistent if Eq.(4.1) includes the variable *sales growth*, which equals the percentage change in annual sales of firm *i* from year t-2 to year t-1. However, due to limited data availability, sales growth is omitted from the model. Appendix 4.1 presents the results obtained from Model 4.1) including *sales growth*.



$$\begin{aligned}
\text{SEC review}_{i,t} = & \beta_0 + \beta_1 \text{JOBS Act}_{i,t} + \beta_2 \text{EGC}_{i,t} + \beta_3 \text{JOBS Act}_{i,t} * \text{EGC}_{i,t} + \beta_4 \text{LnSize}_{i,t-1} + \\
& \beta_5 \text{Leverage}_{i,t-1} + \beta_6 \text{Firm age}_{i,t-1} + \beta_7 \text{Segments}_{i,t-1} + \beta_8 \text{Zscore}_{i,t-1} + \beta_9 \text{Big4}_{i,t-1} + \\
& \beta_{10} \text{Restructuring}_{i,t-1} + \beta_{11} \text{M\&A}_{i,t-1} + \beta_{12} \text{Positive earnings}_{i,t-1} + \\
& \beta_{13} \text{CEOchairperson}_{i,t-1} + \text{IndFE} + \varepsilon_{i,t} \quad (4.2)
\end{aligned}$$

In addition to the variables specified above, this study includes an additional explanatory variable  $EGC_{i,t}$ , equal to 1 for IPOs eligible for EGC status, 0 otherwise, as well as an interaction between  $JOBS Act_{i,t}$  and  $EGC_{i,t}$ . The ex-ante expectation for  $\beta_3$  is to be significantly negative in all cases, implying a greater reduction in the volume and breadth of SEC reviews as a result of the JOBS Act for EGC IPOs.

#### 4.4. Summary statistics

Figure 4.1 presents the distribution of the sample of 799 IPOs (including 722 EGC and 77 non-EGC IPOs) by year, over the period 2005 to 2017, showing how the volume of IPO filings in the sample varies over time. After a low of 17 IPO filings during the height of financial crisis in 2008, the volume increases dramatically following enactment of the JOBS Act, starting in 2013 and reaching a peak of 110 IPO filings in 2014, suggesting the Act to be successful in stimulating IPO activity, at least in the initial post-JOBS period (Dambra et al., 2015).

From 2015, however, an apparent reversal of this trend is observed, with the level in 2017 (46 filings) sitting below that of 2011 (56 filings), immediately prior to the enactment of the Act. The proportion of IPOs qualifying as EGCs is consistently high (i.e. between 82-95%) throughout the sample period. This is consistent with the observations of Chaplinsky et al. (2017), who identify that firms qualifying as EGCs account for the vast majority of IPOs.

**Figure 4.1. Sample distribution by year.**

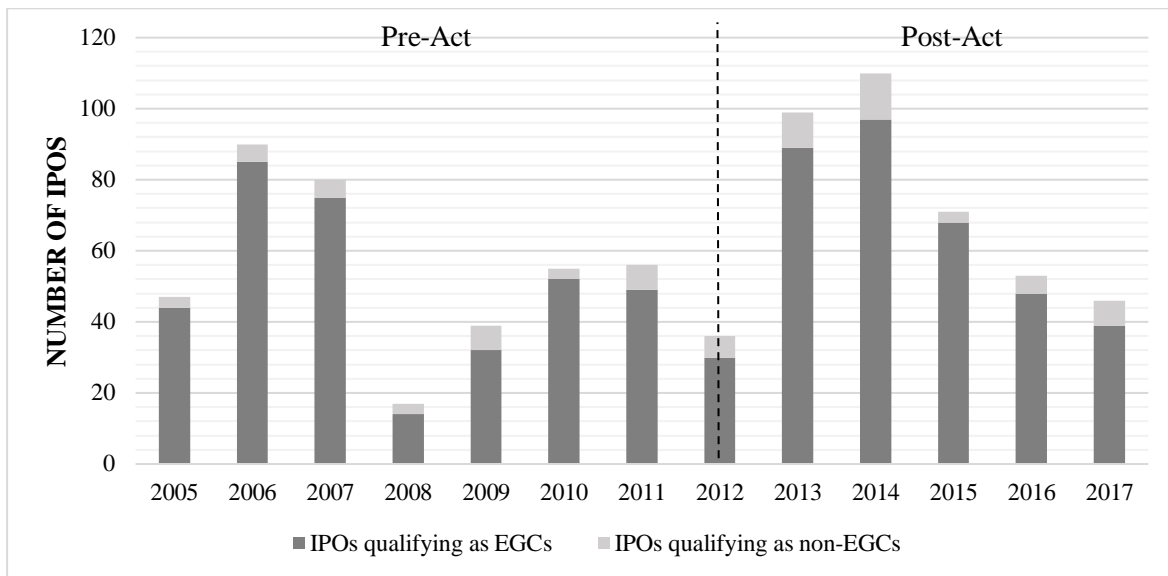


Table 4.2 provides the descriptive statistics of variables employed in main analyses. In Panel A, focusing on EGC IPOs, it is reported that the mean (median): *Duration* of SEC reviews is 103.32 (84) days; *#Letter* is 2.56 (2); *#Comments* in the initial comment letter is 24.52 (11); and *#Themes* addressed in comment letters is 3.27 (4). These statistics all appear to be lower than comparable measures employed by studies examining SEC reviews of S-1 filings in the pre-JOBS era (i.e. Ertimur & Nondorf, 2006; and Li & Liu, 2017), consistent with significant de-burdening as a result of the JOBS Act. Significant differences between EGC and Non-EGC IPOs are also observed, namely that reviews of EGC S-1 filings are on average shorter, and involve fewer SEC comment letters, comments, and a narrower range of themes.

**Table 4.2. Descriptive statistics**

**Panel A. Summary descriptive statistics of variables in empirical tests**

	EGC IPOs (N = 722)					Non-EGC IPOs (N = 77)					Difference in mean
	Mean	STD	p1	Median	p99	Mean	STD	p1	Median	p99	
Duration	103.32	95.10	24	84	504	185.44	252.36	26	99	1659	-82.12***
#Letters	2.56	1.95	0	2	8	3.71	2.51	0	3	17	-1.15***
#Comments	24.52	25.87	0	11	88	39.77	24.62	0	36	104	-15.25***
#Themes	3.27	2.45	0	4	7	4.99	1.95	0	6	7	-1.72***
JOBS Act	0.51	0.50	0	1	1	0.57	0.50	0	1	1	-0.06
LnSize	3.95	1.60	-1.23	3.92	7.52	7.83	0.93	5.36	7.82	10.26	-3.88***
Leverage	-1.71	41.14	-31.87	-0.22	26.89	-278.66	2475.52	-21718	3.16	107.40	276.95***
Firm age	2.09	2.98	0	1	13	7.42	12.50	0	4	62	-5.33***
Segments	1.28	0.87	1	1	5	2.49	1.62	1	2	8	-1.21***
Z-score	-15.55	70.63	-299.41	-2.07	17.25	3.89	1.71	-4.48	4.01	7.52	-19.44**
Big 4	0.81	0.39	0	1	1	0.97	0.16	0	1	1	-0.16***
Restructuring	0.06	0.24	0	0	1	0.39	0.49	0	0	1	-0.33***
M&A	0.10	0.30	0	0	1	0.38	0.49	0	0	1	-0.28***
Positive earnings	0.36	0.48	0	0	1	0.96	0.19	0	1	1	-0.60***
CEOchairperson	0.21	0.40	0	0	1	0.29	0.45	0	0	1	-0.08*

**Panel B. Descriptive statistics for SEC review attributes in pre- and post-JOBS Act period**

SEC review attributes	Pre-JOBS Act (N=351)		Post-JOBS Act (N=371)		Difference in mean	Difference in median
	Mean	Median	Mean	Median		
	Duration	147.84	111	61.20		
#Letters	3.69	4	1.49	1	-59.62%***	-75.00%***
#Comments	44.05	46	6.03	1	-86.31%***	-97.83%***
#Themes	4.95	5	1.68	1	-66.06%***	-80.00%***

This table presents the descriptive statistics of the sample of 722 EGC IPOs and 77 Non-EGC IPOs going public between 12<sup>th</sup> May 2005 and 31<sup>st</sup> December 2017. Panel A presents summary descriptive statistics for the variables employed in empirical tests and compares differences in mean value of these variables between EGC and Non-EGC IPOs. Key variables include SEC review attributes (*Duration*, *#Letters*, *#Comments*, *#Themes*), which are dependent variables, and *JOBS Act*, which is the independent variable of interest. Control variables include IPO firm characteristics (*LnSize*, *Leverage*, *Firm age*, *Segments*, *Z-score*, *Big 4*, *Restructuring*, *M&A*, *Positive earnings*, *CEOchairperson*). All variables are defined in Appendix 1.1. T-tests and Wilcoxon sign rank tests are employed to examine differences in means and medians from zero, respectively. Panel B presents the analyses of differences in SEC review attributes between the pre- and post-JOBS Act period for a sample of 722 EGC IPOs between 2005 and 2017. The analyses of differences are performed using two-sample t-tests and nonparametric Wilcoxon rank-sum tests for significant differences in mean and median values, respectively. \*, \*\*, \*\*\* indicate statistical significance at the 10%, 5%, and 1% level, respectively.

It is also observed in Panel A of Table 4.2 that the characteristics of EGC firms differ to those of Non-EGC firms in a number of important ways, namely: EGC firms tend to be smaller, more highly levered, younger, operate in fewer segments, and have a high probability of bankruptcy (*Zscore*).<sup>51</sup> In addition, they are less likely to be audited by one of the Big 4 audit firms, engage in restructuring and M&A activities, they are less likely to be profitable, but are more likely to have CEOchairperson separation.

In Panel B of Table 4.2, the univariate tests of differences in SEC review attributes before and after the enactment of the JOBS Act are presented for EGC firms. Overall, significant and sizable reduction in all four measures following the JOBS are observed. Specifically, using two-sample t-tests of differences in means, this study observes: a 58.6% reduction in average *Duration*; a 59.6% reduction in average *#Letters*; an 86.3% reduction in average *#Comments*;

<sup>51</sup> Mean value of Leverage is negative, which is derived from negative total equity or deficit of EGC IPOs in the sample.

and a 66.1% reduction in average *#Themes* following the enactment of the JOBS Act. Even more pronounced reductions in median values, according to Wilcoxon signed-rank test statistics, are observed in the final column. Together, these tests reveal very substantial de-burdening of the IPO approval process in the era since the enactment of the JOBS Act.

## 4.5. Empirical results

### 4.5.1. Impact of the JOBS Act on SEC reviews

Multivariate analyses commence by examining the impact of the JOBS Act for EGC IPOs, specifically. Table 4.3 presents results from estimation of Eq. (4.1) using each of the dependent variables *Duration*, *#Letters*, *#Comments* and *#Themes*. Consistent with the univariate tests in Table 4.2, and the notion that the JOBS Act led to de-burdening of the IPO approval process for EGC firms, a significantly negative coefficient on *JOBS Act* is observed in each case. Controlling for other factors, the results imply that post-JOBS EGC filers enjoy reduced *Duration*, *#Letters*, *#Comments* and *#Themes* by on average 93.56 days (63.28%), 2.31 letters (62.60%), 53.20 comments (120.77%) and 3.55 themes (71.72%), respectively, as compared with pre-JOBS levels.<sup>52</sup>

The above findings suggest the JOBS Act was successful in relieving the regulatory burden on EGC issuers, a key intention of the Act in order to revitalise the IPO market (Forbes, 2013; Gao et al. 2013). These findings are also in agreement with arguments that the SEC adjust their style in reviewing IPO prospectuses prepared by ECGs after the enactment of the JOBS Act (Agarwal et al., 2017). However, while Agarwal et al. (2017) document that individual comments become more negatively worded, on average, the findings of this study show that they also become less voluminous and narrower in scope.

---

<sup>52</sup> The marginal effects of a negative binomial regression is calculated as described by Hilbe (2011). In negative binomial regression, the coefficient on an independent variable reflects a unit change in the log of the expected count of the dependent variable when the independent variable changes by one unit. Appendix 4.2 present the results of marginal effects in more detailed.

**Table 4.3. Effects of JOBS Act on SEC review attributes**

	<b>Duration (1)</b>	<b>#Letters (2)</b>	<b>#Comments (3)</b>	<b>#Themes (4)</b>
JOBS Act	-0.902*** (-20.32)	-0.903*** (-13.92)	-2.047*** (-15.66)	-1.087*** (-13.95)
LnSize	-0.106*** (-2.89)	-0.040 (-1.51)	-0.106* (-1.91)	-0.040*** (-2.82)
Leverage	0.001* (1.77)	0.001 (1.63)	-0.001 (-0.05)	0.001 (0.30)
Firm age	0.005 (0.32)	0.013 (0.81)	0.057 (1.43)	0.015 (1.34)
Segments	-0.018 (-0.43)	-0.009 (-0.36)	0.085* (1.72)	0.008 (0.44)
Z-score	0.001* (1.70)	-0.001** (-2.44)	-0.001 (-1.09)	-0.001*** (-6.86)
Big 4	-0.033 (-0.49)	-0.050 (-0.91)	-0.086 (-0.61)	0.022 (0.36)
Restructuring	0.062 (0.52)	0.078 (0.92)	-0.233 (-1.14)	-0.055 (-0.72)
M&A	0.065 (1.08)	0.022 (0.38)	0.266*** (3.08)	0.203*** (3.25)
Positive earnings	0.306*** (3.04)	0.140* (1.78)	0.334*** (4.39)	0.079* (1.89)
CEOchairperson	-0.039 (-0.56)	0.031 (0.56)	0.123 (1.15)	0.011 (0.22)
Industry FE	Included	Included	Included	Included
N	722	722	722	722
Pseudo R2	0.0507	0.1232	0.0648	0.1344

This table presents the results of the multivariate analysis of effect of JOBS Act 2012 on SEC review attributes for the sample of 722 EGC-eligible IPOs between 2005 and 2017. Negative binomial regression is employed in this analysis. Dependent variables are SEC review attributes including *Duration*, *#Letters*, *#Comments* and *#Themes*. Independent variable of interest is *JOBS Act*. Control variables are IPO firm characteristics, including *LnSize*, *Leverage*, *Firm age*, *Segments*, *Z-score*, *Big4*, *Restructuring*, *M&A*, *Positive earnings*, *CEOchairperson*. All variables are defined in Appendix 1.1. The regressions include industry fixed effects using two-digit SIC code. Results from Z-statistics are presented in parentheses below coefficient estimates, and are based on robust standard errors clustered at the two-digit SIC industry level. \*, \*\*, and \*\*\* denote significance at the 10%, 5%, and 1% levels, respectively, based on a two-tailed test.

While this study observes significant reductions in all four review attributes for EGCs in the post-JOBS era, it is possible that they are explained by factors other than the enactment of the JOBS Act, *per se*.<sup>53</sup> In order to draw a more robust link to the JOBS Act, this study contrasts changes in review attributes for EGC IPOs with a control sample of non-EGC IPOs by augmenting Eq. (4.2) to include the variable *EGC*, as well as the interaction term *EGC\*JOBS Act*, to distinguish the impact of the JOBS Act on the extensiveness of SEC reviews between EGC IPOs and non-EGC IPOs. The JOBS Act focused specifically on de-burdening the IPO approval process for EGCs, therefore this study expects differences to be more pronounced for EGC IPOs.

Results from estimations of Eq. (4.2) are presented in Table 4.4. Overall, significantly negative coefficients on *JOBS Act* × *EGC* are observed in the *#Letters*, *#Comments*, and *#Themes* regressions (models 2-4), indicating the reduction observed in these attributes is experienced mostly by EGC IPOs. Some evidence is obtained of a reduction in *#Letters* for Non-EGC IPOs (negative coefficient on *JOBS Act* in model 2, significant at 10%), however to a much lesser degree than EGC IPOs. There is also some evidence that *#Themes* may have actually increased for Non-EGC IPOs, as indicated by a positive coefficient on *JOBS Act* in model 4.

On the other hand, the results in model 1 of Table 4.4 imply that changes in *Duration* following the JOBS Act are not significantly different for EGC IPOs than for Non-EGC IPOs (the coefficient on *JOBS Act* × *EGC* is insignificant in model 1). However, a significantly lower average *Duration* is observed for EGC IPOs in the pre-JOBS era (significantly negative coefficient on *EGC* in model 1). Therefore, the proportional change for EGC IPOs may still be greater than for Non-EGC IPOs. It is worth noting that while *Duration* is often employed as a measure of the extensiveness of the IPO approval process, IPO duration may also be driven by other factors, e.g., market timing.

---

<sup>53</sup> In untabulated results of univariate tests, this study also observes significant decreases in *Duration*, *#Letters*, and *#Comments* following the JOBS Act for EGC-ineligible IPOs (i.e. larger firms, not specifically focused upon by the Act), suggesting that part of the change may be driven by factors other than the JOBS Act.

**Table 4.4. Differences in the effects of the JOBS Act on SEC review attributes between EGC IPOs and non-EGC IPOs**

	<b>Duration</b> (1)	<b>#Letters</b> (2)	<b>#Comments</b> (3)	<b>#Themes</b> (4)
JOBS Act	-0.810*** (-3.73)	-0.273** (-1.98)	-0.119 (-0.56)	0.201* (1.69)
EGC	-0.652** (-2.55)	-0.104 (-0.69)	0.021 (0.09)	0.165 (1.41)
JOBS Act * EGC	-0.077 (-0.34)	-0.615*** (-3.64)	-1.913*** (-6.46)	-1.259*** (-8.83)
LnSize	-0.102*** (-2.82)	-0.038 (-1.53)	-0.094* (-1.84)	-0.030** (-2.22)
Leverage	-0.001*** (-6.27)	0.001** (2.22)	0.001*** (4.82)	0.001*** (3.15)
Firm age	0.018** (2.30)	0.020** (2.13)	0.016* (1.65)	0.006 (1.30)
Segments	-0.005 (-0.18)	0.002 (0.09)	0.057* (1.69)	0.018 (0.99)
Z-score	0.001 (1.46)	-0.001*** (-2.69)	-0.001 (-1.32)	-0.001*** (-7.97)
Big 4	-0.015 (-0.23)	-0.045 (-0.80)	-0.060 (-0.45)	0.025 (0.44)
Restructuring	0.083 (0.69)	0.096 (1.12)	-0.097 (-0.67)	-0.002 (-0.03)
M&A	-0.011 (-0.16)	-0.033 (-0.55)	0.195* (1.74)	0.110 (1.46)
Positive earnings	0.271*** (2.65)	0.102 (1.17)	0.302*** (3.27)	0.059 (1.28)
CEOchairperson	-0.032 (-0.51)	0.042 (0.90)	0.146 (1.45)	0.033 (0.69)
Industry FE	Included	Included	Included	Included
N	799	799	799	799
Pseudo R2	0.0539	0.1224	0.0629	0.1361

This table presents the results of the examination of whether the effects of the JOBS Act 2012 on SEC review attributes are unique to EGC-eligible IPOs on sample of 799 IPOs between 2005 and 2017. Negative binomial regression is employed in this analysis. Dependent variables are SEC review including *Duration*, *#Letters*, *#Comments* and *#Themes*. Independent variable of interest are *JOBS Act*, *EGC* and interaction term between *JOBS Act* and *EGC*. Control variables are IPO firm characteristics, including *LnSize*, *Leverage*, *Firm age*, *Segments*, *Z-score*, *Big4*, *Restructuring*, *M&A*, *Positive earnings*, *CEOchairperson*. All variables are defined in Appendix 1.1. The regressions include industry fixed effects using two-digit SIC code. Results from Z-statistics are presented in parentheses below coefficient estimates and are based on robust standard errors clustered at the two-digit SIC industry level. \*, \*\*, and \*\*\* denote significance at the 10%, 5%, and 1% levels, respectively, based on a two-tailed test.



#### 4.5.2. The moderating role of industry concentration

As discussed in Section 4.2.2, heterogeneity is expected in the impact of the JOBS Act depending on the level of industry concentration. Specifically, this study expects less pronounced effects for IPOs in more concentrated industries where competition, and therefore proprietary cost concerns and consequently information uncertainty, are higher. Therefore, Eq. (4.1) is augmented to include an additional explanatory variable, the *Herfindahl Index* measure of market concentration, as well as a *Herfindahl Index* x *JOBS Act* interaction, where *Herfindahl Index* is calculated as follows:

$$\text{Herfindahl Index}_j = \sum_{i=1}^n \left( \frac{\text{sales}_{t-1,ij}}{\text{sales}_{t-1,j}} \right)^2 \quad (4.3)$$

where  $\text{sales}_{t-1,ij}$  is firm  $i$ 's sales in industry  $j$  in year  $t-1$ , as defined by two-digit SIC codes,  $\text{sales}_{t-1,j}$  is the sum of sales for all firms in industry  $j$  in year  $t-1$  (Wang, 2016). Results from these additional analyses are presented in Table 4.5. In particular, a significantly positive coefficient on *Herfindahl Index*\**JOBS Act* is observed in models 2 and 4, suggesting less pronounced reductions in *#Letters* and *#Themes* for IPOs in more concentrated industries. At the maximum *Herfindahl Index* value of 1, the post-JOBS reduction on the log of expected counts for *#Letters*, and *#Themes* narrows to -0.29 units (-1.02 + 0.73), and -0.40 units (-1.24 + 0.84), respectively.<sup>54</sup> In other words, the marginal effects suggest that at the maximum *Herfindahl Index* value of 1, the post-JOBS reduction on *#Letters*, and *#Themes* narrows on average to - 0.75 comment letters, and - 1.30 themes, respectively.

On the other hand, changes in *Duration* and *#Comments* do not appear to vary with the level of industry concentration (*Herfindahl Index*\**JOBS Act* are insignificant in model 1 and 3). Overall, these results imply that decreases in the number of SEC comment letters and themes under the JOBS Act are less pronounced in markets with higher concentration, where information uncertainty might be higher and information quality are expected to be lower due to higher proprietary costs of disclosure (Ali et al., 2014; Robinson et al., 2011). In these cases, more intensive SEC reviews should be more beneficial in terms of investor protection (Chen & Johnston, 2010; Colaco et al., 2018; Ertimur & Nondorf, 2006).

---

<sup>54</sup> Appendix 4.3 present the results of marginal effects in more detailed.

**Table 4.5. Moderating effect of the Herfindahl index on impact of JOBS Act on SEC review**

	<b>Duration (1)</b>	<b>#Letters (2)</b>	<b>#Comments (3)</b>	<b>#Themes (4)</b>
JOBS Act	-0.895*** (-17.38)	-1.022*** (-11.48)	-2.191*** (-9.8)	-1.236*** (-11.34)
Herfindahl index	0.226 (1.06)	0.140 (0.94)	0.053 (0.24)	-0.062 (-0.72)
JOBS Act*Herfindahl index	0.122 (0.46)	0.728*** (2.79)	1.088 (1.55)	0.837*** (2.72)
LnSize	-0.105*** (-2.97)	-0.030 (-1.33)	-0.058 (-1.15)	-0.016 (-0.97)
Leverage	0.001 (1.21)	0.001 (1.25)	-0.001 (-1.58)	-0.001 (-0.23)
Firm age	-0.008 (-1.2)	0.001 (0.18)	0.019 (0.66)	0.005 (1.10)
Segments	0.019 (0.54)	0.007 (0.26)	0.100** (2.10)	0.011 (0.76)
Z-score	0.001 (1.00)	-0.001*** (-3.24)	-0.001 (-0.97)	-0.001*** (-5.45)
Big 4	0.016 (0.27)	-0.033 (-0.63)	-0.097 (-0.74)	-0.002 (-0.05)
Restructuring	0.035 (0.30)	0.061 (0.90)	-0.175 (-0.83)	-0.060 (-0.84)
M&A	0.083 (1.36)	0.052 (1.14)	0.265** (2.26)	0.19*** (2.71)
Positive earnings	0.247** (2.50)	0.117 (1.48)	0.322*** (3.15)	0.096* (1.77)
CEOchairperson	-0.044 (-0.68)	0.046 (0.85)	0.155 (1.54)	0.005 (0.08)
N	722	722	722	722
Pseudo R2	0.0436	0.1075	0.0563	0.1166

This table presents the results of the moderating effect of Herfindahl index on the impact of JOBS Act on the SEC review attributes for the sample of 722 EGC-eligible IPOs between 2005 and 2017. Negative binomial regression is employed in this analysis. Dependent variables are SEC review attributes including *Duration*, *#Letters*, *#Comments* and *#Themes*. Independent variables of interest are *JOBS Act* and *Herfindahl Index*. Moderating effects is indicated by interaction is *Herfindahl Index\*JOBS Act*. All variables are defined in Appendix 1.1. Results from Z-statistics are presented in parentheses below coefficient estimates, and are based on robust standard errors clustered at the two-digit SIC industry level. \*, \*\*, and \*\*\* denote significance at the 10%, 5%, and 1% levels, respectively, based on a two-tailed test.

#### 4.6. Additional test

Further multivariate analyses using negative binomial regression are conducted in order to examine the effects of the JOBS Act on the proportion of comments relating to each theme (*%Core accounting issues, %Non-core accounting issues, %Offering comments, %Business issues, %Corporate governance issues, %Disclosure issues*). The data used in this analysis are derived from the coding of SEC initial comment letters issued to EGC IPOs using Naïve Bayes machine learning. The definition of these variables are provided in Appendix 1.1. Table 4.6 shows the effects of the JOBS Act on the proportion of comments in each theme.

The results reveal that the estimated coefficient on *JOBS Act* is significantly positive for *%Non-core accounting issues* and *%Offering issues*, but significantly negative for *%Business issues* and *%Disclosure issues*. The results indicate that, after the passing of the JOBS Act, the SEC focus more on non-core accounting issues and offering issues, but less on business issues and disclosure issues. Particularly, in post-JOBS Act period, the percentage of non-core accounting and offering-related comments marginally increase by on average 2.15% (76.79%) and 4.54% (97.42%), respectively, but the proportion of business and disclosure-related comments decrease by on average 5.58% (18.07%) and 8.75% (21.37%), respectively, as compared with pre-JOBS Act period (as per the  $\beta_1$  coefficients in models 1, 2, 3, 5, respectively).<sup>55</sup> No significant differences in the proportion of core accounting and corporate governance-related comments are observed.

---

<sup>55</sup> Appendix present the descriptive statistics and the marginal effects of the he percentage of each theme (*%Core accounting issues, %Non-core accounting issues, %Offering issues, %Business issues, %Corporate governance issues, %Disclosure issues*) in more details.

**Table 4.6. Impact of JOBS Act 2012 on types of issues of initial S-1 filings mentioned in SEC comment letters**

	<u>%Core accounting issues</u>	<u>%Non-core accounting issues</u>	<u>%Offering issues</u>	<u>%Business issues</u>	<u>%Corporate governance issues</u>	<u>%Disclosure issues</u>
JOBS Act	0.052 (0.45)	0.587* (1.88)	0.683** (2.19)	-0.180** (-2.16)	-0.374 (-1.14)	-0.247*** (-3.96)
LnSize	-0.009 (-0.18)	0.108 (0.53)	-0.076 (-1.23)	-0.055 (-1.14)	0.205** (2.28)	0.041* (1.95)
Leverage	-0.001 (-0.83)	-0.001** (-2.28)	0.001 (0.71)	0.001 (0.52)	0.003* (1.67)	0.001** (2.25)
Firm age	0.027 (1.01)	0.002 (0.04)	0.072*** (2.76)	-0.033 (-1.57)	-0.076 (-0.94)	-0.029** (-2.30)
Segments	0.035 (0.68)	0.051 (0.54)	0.123* (1.72)	-0.028 (-0.97)	-0.115 (-1.08)	0.003 (0.12)
Z-score	0.001 (1.54)	0.001 (0.21)	-0.001 (-1.37)	0.001 (0.60)	-0.002*** (-2.6)	-0.001 (-0.53)
Big 4	-0.096 (-0.98)	0.027 (0.12)	0.045 (0.43)	0.077 (0.99)	-0.789*** (-4.33)	-0.018 (-0.28)
Restructuring	-0.443** (-2.37)	-0.480 (-1.15)	-0.237* (-1.76)	-0.117 (-0.46)	-0.332 (-0.74)	0.342** (2.48)
M&A	0.066 (0.60)	-0.237 (-0.50)	0.101 (0.25)	0.342*** (4.55)	-0.545 (-1.00)	-0.236*** (-3.48)
Positive earnings	-0.155 (-1.27)	0.156 (0.63)	-0.106 (-1.18)	0.056 (1.18)	-0.677*** (-2.69)	0.118** (2.12)
CEOchairperson	0.009 (0.08)	-0.868** (-2.51)	0.054 (0.45)	0.042 (0.53)	0.378 (1.49)	-0.013 (-0.20)
Industry FE	Included	Included	Included	Included	Included	Included
N	546	546	546	546	546	546
Pseudo R2	0.0148	0.0236	0.0258	0.0087	0.0242	0.014

This table presents the results of the multivariate analysis of the effect of the JOBS Act in 2012 on the percentage of each theme (*%Core accounting issues*, *%Non-core accounting issues*, *%Offering issues*, *%Business issues*, *%Corporate governance issues*, *%Disclosure issues*) mentioned in SEC comment letters issued to EGC-eligible IPOs. Negative binomial regression is employed in these analyses. Control variables are IPO firm characteristics, including *LnSize*, *Leverage*, *BM*, *Firm age*, *Segments*, *Z-score*, *Big4*, *Restructuring*, *M&A*, *Positive earnings*, *CEO-chairperson*. All variables are defined in Appendix 1.1. The regressions include industry fixed effects using two-digit SIC code. Results from Z-statistics are presented in parentheses below coefficient estimates, and are based on robust standard errors clustered at the two-digit SIC industry level. \*, \*\*, and \*\*\* denote significance at the 10%, 5%, and 1% levels, respectively, based on a two-tailed test.

#### **4.7. Conclusion**

This study evaluates the efficacy of the JOBS Act in de-burdening the IPO approval process. In particular, this study examines changes in the duration of the IPO approval process, as well as the volume and nature of comments issued by the SEC following their review of S-1 filings. This thesis is thereby able to provide rich evidence on the broad impact of the JOBS Act on the regulatory approval process for firms going public in U.S. markets.

Using a sample of 722 EGC IPOs filing S-1 registration statements between 2005 and 2017, as well as a control sample of 77 Non-EGC IPOs, substantial de-burdening of the IPO approval process following enactment of the JOBS Act is observed. Specifically, this study finds that the SEC issue fewer comment letters, and that initial comment letters include fewer comments, and covering a narrower range of themes, in the post-JOBS era. Furthermore, a pronounced reduction in the duration of the approval process is observed under the JOBS Act, though this is not unique to EGC IPOs, and therefore may be driven by factors other than the JOBS Act.

Further tests reveal that the extent of de-burdening is less pronounced for IPOs in more concentrated industries, where competition and the proprietary costs of disclosure, and therefore information uncertainty, are higher. It is also found that post-JOBS comment letters focus proportionally more on non-core accounting issues and matters directly related to the offering, but proportionately less on general business matters and potential disclosure deficiencies.

This study sheds important new light on the sizeable extent of de-burdening of the IPO approval process in the aftermath of the JOBS Act, particularly in regards to EGC IPOs. While the Act was intended to make IPOs easier and cheaper to conduct, thereby encouraging more firms to go public, prior studies document that it exacerbated information problems (Barth et al., 2017), thereby increasing underpricing, with no significant reduction in direct IPO costs (Chaplinsky et al., 2017). This thesis provides complementary evidence that, while the JOBS Act may not have reduced IPO costs, it introduced substantial de-burdening of regulatory compliance, in terms of the extensiveness of SEC reviews.

This chapter also provides novel evidence on the heterogeneous effects of the JOBS Act on the extent of de-burdening given the level of industry concentration and proprietary cost concerns. These findings are consistent with SEC reviews serving to protect investors, particularly when

information problems are expected ex-ante to be high. Findings presented in this chapter also question the appropriateness of using IPO duration as a proxy for regulatory scrutiny, given that the findings using this measure are inconsistent with prior expectations and empirical findings using the other more direct measures of SEC scrutiny (e.g. the number of SEC comments).

This study offers a number of policy implications. The decrease in SEC reviews extensiveness under the JOBS Act identified in this study implies that investor protection might be also reduced after the Act enactment. While the SEC's proprietary cost concerns are also observed in the post-JOBS period, this might not compensate for the limited scope of SEC reviews under the Act. Chaplinsky et al. (2017) also argue that, despite several benefits to issuers offered by the JOBS Act, the cost of capital still increases considerably under the Act. For that reason, after the JOBS Act enactment, investors should pay attention to potential informational matters resulting from the relaxed registration requirements when obtaining information from IPO registration statements as well as the SEC comment letters when making investing decision.

In addition, the findings that the IPO approval process is de-burdened and hence sped up under the JOBS Act should be of interest to IPO firms who are considering whether they should adopt EGC status when going public in the period of the Act enactment. Furthermore, foreign IPO firms seeking to enter the US capital markets have a range of funding options. In particular, a foreign issuer may decide whether to make a public offering in the United States, which would expose the issuer to stricter securities reporting and disclosure obligations than other countries having a lower degree of monitoring mechanisms, e.g., Japan, France, Germany, Korea, Italy (Leuz et al., 2003). The JOBS Act is applied to both domestic and foreign issuers. Therefore, the findings in this study about the reporting de-burdening of the U.S. IPO approval process under the JOBS Act would be of interest to foreign issuers as they can not only take distinct advantages of being listed in the U.S. stock exchanges but also enjoy a much warmer welcome in the U.S in terms of the relaxing reporting requirements under the JOBS Act. However, IPO issuers should also note that competition in the stock markets might be more severe as there are more firms going public under the JOBS Act (Dambra et al., 2015). Therefore, IPO issuers should keep their competitive strength as well as market competition in mind when deciding to conduct IPOs under the JOBS Act.

While this study provides evidence on substantial changes in the nature of SEC S-1 reviews following the JOBS Act, the findings do not, in themselves, speak to the quality of information

within IPO registration statements under the Act. *Ceteris paribus*, more extensive revision requirements by the SEC are likely to increase information quality to an extent, however if the impact of the JOBS Act is to mitigate an *excessive* burden, the benefits in terms of facilitating capital formation may still exceed the costs from reduced information quality. On the other hand, many post-JOBS IPO firms provide offsetting voluntary disclosure to mitigate information problems (Barth et al., 2017), thus the net effect on IPO disclosure quality is ambiguous. This chapter therefore concludes with a call for further examination of how the de-burdening provisions of the JOBS Act have affected the quality of S-1 disclosures, considering this to be a fruitful and important topic for future research.

In addition, as EGC IPOs have the option of taking reporting exemptions under the JOBS Act, such as providing two years rather than three years of financial statements as well as reduced disclosure within the compensation discussion and analysis (CD&A), IPO registration statements may be less informative as a result. It is estimated that 50% (95%) of EGC IPOs are observed to take exemptions in relation to reduced financial statement (CD&A) disclosure (Chaplinsky et al. , 2017). It is possible that reductions in SEC review extensiveness may be due to reduction in the contents of IPO registration statements, rather than “de-burdening” of the SEC review process, *per se*. Therefore, future research would be useful to clarify the mechanical association between the reduction in the contents of IPO registration statements and the decrease in the extensiveness of SEC reviews.

## **5. Do SEC reviews effectively address earnings quality? Evidence from IPO registration statements**

### **5.1. Introduction**

Earnings are one of the key operational factors on which investors base their evaluations of the performance of firms that are going-public. Consequently, corporate managers are incentivised to manage earnings to obtain a high offering price. Around an IPO, managers commonly have strong incentives to undertake earnings management because (1) IPO markets are characterised by high information asymmetry between the IPO firms and market participants (e.g. investors, regulators), and (2) reporting favourable earnings numbers would increase the probability of completing IPOs successfully, which is vital to the issuers since a successful IPO creates valuable capital resources for business expansion as well as repayment of outstanding debt (Alhadab et al., 2015; Ducharme et al., 2001; Gounopoulos and Pham, 2018; Teoh et al., 1998b, Teoh and Wong, 2002). This study aims to investigate the association between the extensiveness of SEC reviews and the degree of earnings management within IPO firms' registration statements. As consistency is one of the main principles of regulatory effectiveness, this association can somewhat reflect the effectiveness of SEC reviews in addressing informational deficiencies in IPO registration statements.<sup>56</sup>

The Securities and Exchange Commission (SEC) have long raised concern that erosion in the quality of financial reporting as a result of aggressive earnings management practices may have a harmful impact on investors' decisions, such as obscuring "the true consequences of management's decisions" (Levitt, 1998). For this reason, the Division of Risk, Strategy, and Financial Innovation recently designed a set of quantitative analytics to reliably identify poor accounting quality, consisting of direct indicators of earnings management and factors that predict engagement in earnings management (Lewis, 2012).

The Division of Corporate Finance is responsible for conducting the SEC's monitoring roles in reviewing information quality of all IPO firms' registration statements (i.e. S-1 filings) to guarantee that investors are "...provided with material information and to prevent fraud and misrepresentation in the public offering ..." (SEC, 2001, p.1). If any deficiency in an IPO firm's registration statements is identified (e.g. poor accounting quality), the Division issues a

---

<sup>56</sup> The Better Regulation Task Force, set up by the British government in 1997, emphasised five principles of effective regulatory settings including proportionality, accountability, consistency, transparency and targeting. (<https://publications.parliament.uk/pa/ld200304/ldselect/ldconst/68/6810.htm>)



comment letter bringing the deficiency up with the IPO firm. Ascertaining the effectiveness of SEC reviews of IPO registration statements is important since there is typically limited information publicly available about IPO firms at the time of going-public. Investors therefore commonly rely on SEC comment letters for an evaluation of the firm's earnings quality and the credibility of the firm's preliminary financial reports (Johnston & Petacchi, 2017).

There have been extensive arguments about the effectiveness of SEC reviews of IPO registration statements. On the one hand, Bayless (2020), SEC Chief Accountant - Division of Corporation Finance, reported many considerable accomplishments of their reviews (e.g., the detection of various deficiencies in IPOs' financial statements). Previous research also provides evidence that SEC reviews can be effective in detecting informational problems around IPOs and in improving the IPO information environment. Specifically, previous studies find that the SEC increase the extensiveness of their reviews in response to potentially material deficiencies in the information environment around IPOs, such as weak corporation governance (Ertimur & Nondorf, 2006), ex-ante information uncertainty (Colaco et al., 2018) and engagement in earnings management (Schuldt & Vega, 2018). The extensiveness of SEC reviews of IPO registration statements is also observed to be a good predictor of ex-post uncertainty and performance (Colaco et al., 2018, Lowry, 2020).

Furthermore, previous research also provides evidence that SEC reviews are effective in improving the quality of the information environment around IPOs, in particular, resulting in decreased post-IPO information asymmetry (Ertimur & Nondorf, 2006) and information uncertainty (Gupta & Israelsen, 2015), more IPO disclosures (Li & Liu, 2017; Lowry, 2020), reduced offer prices, amendments to IPOs' registration statements, better long-run performance (Li & Liu, 2017), fewer price revisions, fewer revisions in offering volume and amount (Lowry, 2020) and a lower degree of earnings management (Schuldt & Vega, 2018).

On the other hand, in July 2014, Robert P. Casey, United States Senator raised his concerns about the effectiveness of SEC reviews of IPO disclosures by Chinese firms listing in the U.S.<sup>57</sup> Johnston & Petacchi (2017) also suggest that the effectiveness of SEC reviews is lower when there exist political connections with reporting firms. Furthermore, the passing of the JOBS

---

<sup>57</sup> <https://www.casey.senate.gov/newsroom/releases/casey-to-sec-protect-us-investors-in-chinese-ipos-transactions-could-leave-us-investors-with-few-safeguards-if-they-invest-in-shell-corporations>

Act in 2012 is also suggested to constrain and reduce regulators' ability to mitigate deficiencies in EGC firms' IPO disclosures (Chaplinsky et al., 2017; New York Times, 2012).

Thus far, Schuldt & Vega (2018) is the only paper examining the effectiveness of SEC reviews in addressing earnings quality of IPO registration statements. Employing a sample of 290 IPO filings from 2004 to 2009 and using discretionary revenues as a proxy of earnings management, the authors identify that more revenue recognition comments are received by IPO firms with a higher level of earnings management in years prior to the IPO, and that this results in a lower level of earnings management after the IPO. As Schuldt & Vega (2018) focus on the period before the enactment of the Dodd-Frank in 2010 and the JOBS Act in 2012, it is important to ascertain whether and to what extent the effectiveness of SEC reviews has been affected by these substantive regulatory changes.

In addition, examination of a broader range of earnings management proxies is required to establish a more comprehensive view of the extent to which SEC reviews are sensitive to earnings management around IPOs. For example, it is still unclear whether SEC reviews are effective in addressing accruals-based earnings management (AEM) and real earnings management (REM), which have been shown to be pervasive among IPO firms (Ahmad-Zaluki et al., 2011; Alhadab & Clacher, 2018; Alhadab et al., 2015, 2016; Chahine et al., 2012; Gao et al., 2017; Gounopoulos & Pham, 2017, 2018; Kouwenberg & Thontirawong, 2016; Gemma et al., 2009; Teoh et al., 1998a, b).

Motivated by the arguments above and the current gap in the academic literature, the purpose of this study is to examine whether the SEC review process is effective in detecting and addressing earnings management within IPO firms' registration statements. Specifically, this study investigates whether IPO firms displaying higher levels of income-increasing AEM and REM attract greater SEC regulatory scrutiny. In addition, it is explored whether the degree to which the extensiveness of SEC reviews is sensitive to income-increasing earnings management by IPO firms decreased after the passing of the 2012 JOBS Act.

Using a sample of 799 IPOs filing on U.S. exchanges between May 2005 and December 2017, this study examines the sensitivity of SEC reviews to: (1) accruals-based earnings management, which involves the exercise of discretionary accounting choices in recognizing accruals, and (2) real earnings management, which involves the modification of the timing or nature of real activities such as sales and discretionary expenses. The extensiveness of SEC regulatory

scrutiny is measured as: (a) the duration of the IPO approval process; (b) the number of comment letters issued by the SEC; (c) the range of themes addressed by SEC comments; (d) the number of core-accounting-related comments; and (e) the number of non-core-accounting-related comments in initial SEC comment letters.

Consistent with SEC reviews being effective in addressing the information quality of IPO registration statements, the findings reveal that IPO firms with higher levels of AEM are likely to: experience longer SEC reviews; receive more comment letters and on a wider range of themes; and receive more core-accounting-related comments. Furthermore, the findings also show that the SEC are likely to spend more time reviewing disclosures of IPO firms with higher discretionary-expense-based real earnings management.

On the other hand, this study identifies that IPO firms exhibiting higher sales-based real earning management typically have shorter, rather than longer, SEC reviews and receive less non-core-accounting-related comments, suggesting that SEC reviews are not similarly sensitive to all forms of earnings management. These findings are of a similar vein to those of Cohen et al. (2008) and Graham et al. (2005) who suggest that auditors, investors and regulators are less likely to uncover sale-based earnings management. Gounopoulos & Pham (2017) and Alhadab & Clacher (2018) explain that high sales growth is a typical feature of IPO firms, which may make the detection of increased sales through sales-based manipulation more difficult.

Regarding the effects of the JOBS Act on the sensitivity of SEC reviews to income-increasing earnings management, this study shows that after the passing of the JOBS Act in 2012, comments on a wider range of themes are provided by the SEC to EGC IPOs having higher degree of AEM. EGC IPOs having lower degree of discretionary-expense-based earnings management also receive wider range of themes and more core-accounting-related comments in the post-JOBS Act era. The findings suggest that the SEC focus more on specific content within EGC IPOs' registration statements to constrain misstatement in IPO disclosures, in order to ensure the investor protection, perhaps due to the SEC's concern about a lower quality IPO information environment under the Act (Gupta & Israelsen, 2015; Agarwal et al., 2017; Chaplinsky et al., 2017; Barth et al., 2017).

Ineffectiveness of SEC reviews in addressing EGC IPOs' sales-based earnings management is also observed in the post-JOBS Act period, as indicated by more comment letters and comments on a wider range of themes being received by EGC IPOs having higher levels of

abnormal cash flows from operations. This suggests the SEC may concern about the IPO firms managing sales downwards in order to be eligible for EGC status under the Act.<sup>58</sup>

This study offers three main contributions to the literature examining the effectiveness of the SEC's oversight of information quality within corporate disclosures. First, to the author's knowledge, this study is the first to demonstrate that the SEC are effective in detecting income-increasing earning management through accruals-based and discretionary-expenses-based manipulations by IPO firms when preparing their registration statements. These findings are of importance to investors and other market participants who rely on SEC comment letters to gain more information for their evaluation of the IPO firms' performance. Specifically, the results suggest that greater SEC regulatory oversight may effectively signal lower quality of the earnings numbers disclosed by IPO firms in their registration statements.

Second, this study is the first to identify that SEC reviews do not appear to effectively identify sales manipulation by IPO firms. The finding should be of interest to investors and other stakeholders as it implies that SEC reviews are not sufficient to address all forms of earnings management within IPO registration statements. Specifically, the findings suggest that investors and other stakeholders should pay more attention when collecting sales-related information from SEC comment letters to make their own decision about the quality of earnings reported in S-1 filings. The finding also implies that SEC reviews could do better to adequately protect investors from manipulation in the form of sales-based REM.

Third, this study also contributes to the extant literature on the effects of the JOBS Act on SEC regulatory oversight of IPO registration statements. Specifically, this study is the first to provide evidence that despite concerns to the contrary, SEC reviews continue to be effective in detecting the EGC IPO firms' AEM and REM after the passing of the JOBS Act in 2012. These findings are informative to investors in that they suggest that although the JOBS Act may limit the scope of SEC reviews in some respects, SEC comments letters remain a reliable source of information regarding the quality of earnings information provided by IPO firms, with the exception of sales-based REM.

The remainder of the chapter is organised as follows. Section 5.2 reviews the relevant literature and develops the hypotheses for the study. The sampling procedure, description of variables

---

<sup>58</sup> EGC status is given to companies having total annual gross revenues less than \$1 billion.

and the design of empirical tests are discussed in Section 5.3. Section 5.4 presents the summary statistics. The empirical results are presented and discussed in Section 5.5, while Section 5.6 concludes the chapter.

## **5.2.Literature review**

### **5.2.1. Earnings management around IPOs**

The extant literature presents competing arguments regarding earnings management around IPOs. On the one hand, supporting the intuition that issuers may have incentives to increase the transparency of the information environment around their IPOs in order to reduce their cost of capital, some studies identify that, by use of accounting choices, IPO issuers tend to communicate their actual and valuable private information to stakeholders in order to signal their future performance (Fields et al., 2001; Guay et al., 1996; Herbohn et al., 2010; Kallunki & Martikainen, 2003; Louis & Robinson, 2005; Palepu & Healy, 1993; Subramanyam, 1996; Watts & Zimmerman, 1978).

On the other hand, a growing number of studies provide evidence of opportunistic earnings management around IPOs. Aharony et al. (1993) and Friedlan (1994) observe that issuers have compelling incentives to boost earnings numbers by engaging in accruals earnings management before IPOs. Teoh et al. (1998a) identify income-increasing earnings management conducted by self-interested managers in the IPO year, as indicated by systematically positive values of abnormal accruals. The authors also identify a negative relationship between abnormal accruals and post-IPO long-run stock performance, suggesting that earnings numbers are distorted to delude shareholders. Various later studies also support the presence of aggressive earnings management to exaggerate earnings numbers around IPOs (Ahmad-Zaluki et al., 2011; Alhadab & Clacher, 2018; Alhadab et al., 2015, 2016; Chahine et al., 2012; Gao et al., 2017; Gounopoulos & Pham, 2017, 2018; Kouwenberg & Thontirawong, 2016; Gemma et al., 2009).

However, the evidence on opportunistic earnings management around IPOs is not always supportive. Ball & Shivakumar (2008) provide evidence of high disclosure quality around IPOs, indicating that IPO issuers are more likely to engage in accounting conservatism rather than accounting manipulation in their financial reporting, in response to stringent oversight from capital market participants such as regulators, auditors and analysts. However, Lo (2008) argues that Ball & Shivakumar (2008) possibly omit from their sample IPO firms that engage in earning management, since they focus only on firms with high similarity between the initial

prospectus and the finalised financial statements. In addition, Lo (2008) suggests that IPO managers may still manage their earnings through REM, which Ball & Shivakumar (2008) do not consider. Taking the literature together, the findings suggest that IPO firms are likely to have strong incentives to engage in earnings management in order to inflate reported earnings.

Studies on earnings management in the IPO context mostly focus on the presence of accrual manipulation around IPOs and show a tendency by IPO managers toward income-increasing earnings management (Alhadab & Clacher, 2018; Aharony et al., 1993; DuCharme, 2001, 2004; Gounopoulos & Pham, 2017; Friedlan, 1994; Lee and Masulis, 2011; Marquardt and Wiedman, 2004; Morsfield and Tan, 2006; Teoh et al., 1998b). Recently, a growing number of studies on REM (Cohen, Dey, & Lys, 2008; Gunny, 2010; Roychowdhury, 2006; Zang, 2012) have stimulated additional interest in investigating whether such activities are undertaken in the IPO context.

Darrough & Rangan (2005) provide evidence that IPO firms tend to boost reported earnings in the IPO year by lowering their research and development (R&D) expenses. Alhadab & Clacher (2018), Alhadab et al. (2015), Gounopoulos & Pham (2017), and Wongsunwai (2013) report that IPO firms engage in both AEM and REM during the IPO year in order to inflate reported earnings. Alhadab et al. (2016) observe that as compared with IPO firms listing on the more heavily regulated UK Main Market, IPO firms listing on the lightly regulated UK Alternative Investment Market are more likely to conduct AEM and sales-based REM. Overall, these studies provide evidence that IPO firms are likely to employ both real and accruals earnings management to opportunistically manage the earning numbers.

### **5.2.2. SEC reviews and the IPO information environment**

Public interest theory assumes that regulators would not be troubled by failures in the information environment and could more effectively obtain information to evaluate and correct the wrongdoing. Opportunistic earnings management is argued to be constrained by extensive oversight of financial information provided in prospectuses, and as a result IPO firms would tend toward accounting conservatism rather than accounting manipulation before their IPOs (Ball & Shivakumar, 2008; Venkataraman et al., 2008). Filatotchev et al. (2019) also suggest that regulatory pressures (e.g. investor protection and private litigation) are important factors affecting the probability and degree of earnings management and provide evidence that greater

SEC enforcement and private litigation lead to reductions in the degree of earnings management.

Similar evidence is provided by Bushman & Piotroski (2006), Bushman et al. (2005) and Leuz et al. (2003), who identify that variations in the intensity of investor protection across countries is associated with the degree of earnings management. Specifically, the degree of earnings management is found to be greater in countries with less extensive investor protection. Supporting the argument that market monitors such as regulators and intermediaries may reduce incentives for firms to engage in earning management activities around IPO events, Sletten et al. (2018) observe that abnormal accruals around lockup expiration are positive for less-scrutinised firms.

Some prior literature also provide evidence about the sensitivity of SEC reviews of IPO registration statements to potentially material deficiencies in the information environment around IPOs. Ertimur & Nondorf (2006) observe more SEC comments are issued for IPO firms with weaker corporate governance mechanisms, who have outside, independent blockholders, as compared with other IPO firms.<sup>59</sup> In addition, the authors identify a positive relationship between CEO beneficial ownership, as measured by the percentage of shares held by the CEO before the IPO, and the number of SEC comments.<sup>60</sup> These findings may somewhat reflect the effectiveness of SEC reviews in addressing weakness in IPO firms' corporate governance, resulting in poor accounting quality in the form of earnings management. According to Dechow et al. (1996), firms with weaker corporate governance mechanisms may have stronger incentives to conduct earnings management activities.

Examining the length of the IPO process, which reflects multiple layers of oversight by underwriters, auditors, institutional investors, listing exchanges, venture capitalists, and regulators, Colaco et al. (2018) document that longer IPOs are associated with more ex-ante uncertainty about future cash flows, and that that this may be due to greater SEC scrutiny.<sup>61</sup> In addition, Colaco et al. (2018) find a positive association between the length of the registration

---

<sup>59</sup>According to Edmans (2014), the presence of external blockholders may create problems for corporate governance mechanism since they may deprive private rights of control or acting in their self-interest rather maximizing firm value.

<sup>60</sup> CEO holding the large number of shares may have excessive control of IPO process and do not permit the experts to enhance the process quality (Ertimur & Nondorf, 2006).

<sup>61</sup> Colaco et al. (2018) define an IPO firms facing greater ex-ante information uncertainty as those being older, having more intensive price revision, lower reputation of underwriter and auditor, smaller underwriter compensation, more amendments and greater standard deviation of industry returns.

process and the level of underpricing, and suggest that the number of days spent in registration, which includes the period of regulatory scrutiny, can be a useful predictor of uncertainty in IPO valuations. Furthermore, the authors show that the registration period is longer for IPO firms having higher post-IPO volatility, higher standard deviation of post-IPO earnings per share (EPS), higher standard deviation of long-term growth forecast and lower stock/operating performance in the aftermarket, indicating that the length of the registration process is also a reliable predictor of IPO firms' ex-post uncertainty and performance. As a whole, Colaco et al. (2018) argue that the length of the IPO process, which covers the process of regulatory oversight, is a good indicator of IPO firms' information quality.

Similarly, focusing on specific topics in SEC comment letters, Lowry (2020) claims that the extensiveness of SEC reviews could be considered as a signal of deficiencies in the information quality of IPO firms' disclosures. Specifically, the author identifies that IPO firms receiving more SEC comments about revenue recognition matters are likely to have a greater degree of uncertainty as indicated by the level of post-IPO volatility, illiquidity, and the presence of insider sales. Furthermore, the SEC's attention to revenue recognition is also observed as a reliable indicator of IPO firms' stock performance, with evidence that SEC comments about revenue recognition are associated with significantly lower post-IPO abnormal returns in the first half-year and the first year.

In addition, Lowry (2020) provides evidence that IPO firms receiving more SEC letters and greater SEC concerns about revenue recognition are more likely to withdraw their offer, again supporting the argument that the degree of SEC oversight provides a negative signal regarding the quality of the issue. Notably, among topics addressed in SEC comment letters, Lowry (2020) demonstrates that SEC comments about revenue recognition in IPO disclosures are the most useful indicator of the firm's potential outlook. Taken together, Lowry's (2020) findings imply that IPO firms experiencing more intensive SEC oversight, particularly more SEC concerns on issues related to revenue recognition, are likely to have more obscure disclosures and poorer future prospects.

Focusing on SEC intervention in IPO firms' earnings management practices, Schuldt & Vega (2018) report that IPOs firms displaying higher degrees of earnings management before their IPOs, as indicated by income-decreasing discretionary revenues, are likely to receive more SEC comments on revenue recognition issues, suggesting that the SEC effectively address income-decreasing earnings management activity. Overall, there exists a general consensus in



the prior literature that the extensiveness of SEC reviews of IPO registration statements is a good indicator of IPO firms' information quality (e.g., the quality of accounting information) and may effectively address deficiencies in the information environment around the IPOs.

In addition, a broad body of literature shows that SEC reviews enhance the quality of the information environment around IPOs. Ertimur & Nondorf (2006) identify that more SEC comments and more issues addressed in SEC letters are likely to decrease the level of post-IPO information asymmetry, as measured by dollar trading depth. Gupta & Israelsen (2015) observe that when SEC comment letters issued to IPO firms contain more pages and more comments, information uncertainty following IPOs is lower, as indicated by higher probability of informed trading.

Li & Liu (2017) examine the effects of SEC reviews on price formation of IPO firms and observe that IPO firms receiving more SEC comment letters are likely to revise their offer prices downwards to a larger extent, disclose more on the commented topics, spend more time in their IPO waiting periods, provide more amendments and have better long-run performance. In this vein, the authors additionally identify that the sensitivity of IPO firms' downward price revision to SEC comment letters is more pronounced for IPO firms with stronger incentives to aggressively hype their stocks. Furthermore, the authors find no significant relationship between SEC comment letters and underpricing at the first trading date, suggesting that SEC comment letters are likely to decrease the variation in pricing disclosure among similar IPO firms. Taking the findings together, Li & Liu (2017) suggest that SEC letters may restrain going-public firms from hyping their stock to entice investors into becoming overly optimistic about the firm's future prospects. They also urge IPO firms to enhance their reporting quality.

Similarly, Lowry (2020) provides evidence that IPO firms receiving more SEC comment letters and letters with more wording on the topics of revenue recognition, capitalization, and liquidity are likely to have fewer price revisions, and fewer revisions to offering volumes and amounts, suggesting that SEC intervention constrains IPO firms from building up an upwardly distorted picture. Furthermore, the author finds prospectuses to be longer when prepared by IPO firms receiving more SEC comments letters as well as more words in IPO firms' disclosure on the themes commented upon, indicating that SEC intervention urges IPO firms to disclose more information in their prospectuses, thereby increasing the transparency of the IPO information environment.

Examining changes in IPO firms' earnings management under SEC scrutiny, Schuldt & Vega (2018) provide evidence that IPO firms receiving more SEC comments on revenue recognition issues are likely to have a lower degree of income-decreasing earnings management in the post-IPO period, suggesting the SEC is effective in constraining earnings management practices.

Taken together, the findings in the aforementioned studies imply that SEC reviews of IPO registrations provide beneficial information effects by improving the quality of the information environment around IPOs. To some extent, this suggests that SEC reviews effectively address deficiencies in the information environment around the IPOs. Based on the assumptions of public interest theory, the findings in the literature, as well as the institution background (discussed in section 2.2), this study posits the first hypothesis, in alternative form, as follows.

*H1<sub>alternative</sub>: IPO firms engaging in greater income-increasing earnings management when preparing S-1 filings are likely to experience more extensive SEC reviews.*

However, it is also worth noting that only two of the above studies (i.e. Gupta & Israelsen, 2015; Lowry, 2020) have evaluated the effectiveness of SEC reviews under the JOBS Act. As discussed in the next section, the findings of earlier studies may therefore not generalise to the sample considered herein, due to the substantive relaxation of IPO disclosure regulation that has occurred over the last decade. Though Gupta & Israelsen (2015) and Lowry (2020) examine the post-JOBS Act period, they do not consider the interrelation between SEC reviews and earnings managements, specifically.

### **5.2.3. SEC reviews under the JOBS Act**

The Jumpstart Our Business Startups (JOBS) Act, enacted on 5th April 2012, aimed to revitalise IPO activities by Emerging Growth Companies (EGCs) in the U.S. through reducing certain accounting and disclosure requirements, e.g., within IPO registration statements. It is discussed in Chapter 4 that SEC reviews have become much less extensive under the JOBS Act, as indicated by a reduction in the number of comment letters, comments, and the range of themes. On the other hand, the JOBS Act, in attempting to reduce the reporting burden on EGC IPOs, resulted in decreased transparency in the IPO information environment (Agarwal et al., 2017; Barth et al., 2017; Chaplinsky et al., 2017; Gupta & Israelsen, 2015).

Gupta & Israelsen (2015) provide evidence that after the enactment of the JOBS Act, EGC IPO firms disclose less hard (tangible) information, suggesting a reduction in information

transparency, and also higher information uncertainty, as measured by underpricing and the probability of informed trading.<sup>62</sup> Similarly, Agarwal et al. (2017) find that EGCs IPOs reduced disclosure of accounting information and incurred greater underpricing after the passing of the JOBS Act. Likewise, Chaplinsky et al. (2017) observe that EGC IPOs experience greater underpricing during the first day of trading as compared with non-EGC IPOs. Barth et al. (2017) also identify that EGC IPOs have greater underpricing and post-IPO volatility than non-EGC IPOs, and that information uncertainty is positively related with the implementation of exemptions under the JOBS Act provisions. This study also observes that after the JOBS Act enactment, IPO firms are more likely to engage in earnings management (Appendix 5.1)

Under public interest theory, it is believed that regulatory bodies are not constrained by any informational failures and are able to monitor and remedy misconduct. As discussed in Section 2.4.1, under circumstances of increased information uncertainty and reduced transparency the SEC conduct more extensive reviews so as to provide more protection to investors. Specifically, Colaco et al. (2017), Ertimur & Nondorf (2006) and Lowry (2020) observe that SEC reviews of IPO registration statements are more extensive when there is more uncertainty in the IPO information environment. Moreover, Agarwal et al. (2017) provide evidence that under the passing of the JOBS Act, the tone of SEC comment letters is more negative and forceful and that the SEC also concentrate more on accounting information in spite of relaxation under the JOBS Act, suggesting the SEC became more vigilant due to potential informational problems under the JOBS Act. In addition, it is discussed in Chapter 4 that the decrease in the extensiveness of SEC reviews under the JOBS Act is less pronounced in markets with higher concentration, where there is likely to be greater information uncertainty due to greater proprietary costs of disclosure (Robinson et al., 2011; Ali et al., 2014).

Taking the above findings together, an expectation is formed that the passing of the JOBS Act in 2012 resulted in less intensive SEC reviews. However, when information problems are perceived to be high, the SEC are expected to be more vigilant in order to maintain their objectives of protecting investors, despite the provisions to de-burden the IPO approval process under the Act. Therefore, based on the assumptions of public interest theory, the findings in literature and institutional background as discussed above, the second hypothesis, in alternative form, is stated as follows.

---

<sup>62</sup> Hard information, as defined by Liberti & Petersen (2019), is quantity information which is not difficult to store and transfer.

*H2<sub>alternative</sub>: The increase in SEC review extensiveness for EGC IPOs having higher level of income-increasing earnings management is more pronounced under the JOBS Act.*

### **5.3. Research design**

#### **5.3.1. Sample selection**

This study begins by obtaining a sample of U.S. IPO filings on NYSE, NASDAQ and AMEX between 12<sup>th</sup> May 2005 and 31<sup>st</sup> December 2017 from the Thomson Reuters Eikon New Issues database. IPOs with offering prices less than \$5 per share, American Depositary Receipts (ADRs), financial firms, unit issues, simultaneous offerings, withdrawn IPOs and IPOs who do not use S-1 filings as their registration statements are removed, similar to prior studies (Gounopoulos and Pham, 2017, 2018; Lee, 2011; Li and Liu, 2017; Sletten et al., 2018). This sample is then matched with accounting data from the Compustat and Thomson Reuters Eikon databases.

The final sample contains 799 IPOs with non-missing data, including 722 EGC IPOs. Data for the SEC review attributes are hand collected from SEC comment letters issued for each IPO in the sample. For each IPO firm, the initial SEC comment letter for each IPO is obtained from the SEC's EDGAR database. Specifically, initial SEC comment letters are identified as "UPLOAD" documents filed within the period from the filing date of initial S-1 to the IPO date, with the subject "Re: [...] Registration Statement on Form S-1 [...]". Data on the date of initial S-1 filings and the IPO effective date are collected from the Thomson Reuters Eikon database.

#### **5.3.2. Variables**

##### **5.3.2.1. SEC review attributes**

Five proxies are employed to measure the extensiveness of the SEC review process, to be used as dependent variables in this study: the duration of the SEC review process, or the number of days from the filing date of the initial S-1 to the effective date of the IPO (*Duration*); the number of comment letters (*#Letters*); the number of issue types (*#Themes*); the number of core-accounting-related comments (*#Core-accounting issues*); and the number of non-core-accounting-related comments (*#Non-core-accounting issues*). Determination of the theme of

SEC comments is performed via the application of a Naïve Bayes machine learning algorithm, as described in Chapter 3.

### **5.3.2.2. Earnings management measures**

Engagement in earnings management by IPO firms is measured by three metrics, including abnormal accruals to capture accrual-based earnings management (Dechow et al., 1995; DeFond and Subramanyam, 1998; Jones, 1991; Kothari et al., 2005; Teoh et al., 1998b), as well as abnormal cash flow from operations and abnormal discretionary expenses to capture REM (Roychowdhury, 2006). The higher the extent of earnings management by the IPO firms, the more likely it is that S-1 filings prepared by issuers have low quality of earning numbers.

#### *Accruals-based earnings management*

Regarding abnormal accruals, this study concentrates on total accruals (TACC) in order to gain a comprehensive picture of managers' discretionary accounting behaviour (Cecchini et al., 2012). This proxy is also employed in the majority of studies on accruals earnings management within the IPO context (Ball & Shivakumar, 2008; Fan, 2007; Gounopoulos & Pham, 2017, 2018; Lee & Masulis, 2011; K. Lo et al., 2017; Teoh et al., 1998a). Following prior studies (Gounopoulos & Pham, 2017, 2018; Lo et al., 2017), abnormal accruals are estimated using the modified Jones (1991) model developed by Dechow et al. (1995).

Botsari and Meeks (2008) find that the modified Jones model outperforms alternative models in overcoming several problems with measuring discretionary accruals. This study employs the cross-sectional version of the modified Jones model, which is developed by DeFond & Jiambalvo (1994), rather than the time-series version since the time-series version is impracticable in the IPO context due to the lack of historical accounting data. In addition, the cross-sectional approach, where the model is separately estimated for IPO firms in each industry in each year, is more likely to filter out changes in accruals deriving from changes in industry conditions in a specific year.

Specifically, as outlined in Jones (1991), total accruals consists of two components, namely discretionary accruals (DACC) and non-discretionary accruals (NDACC) as shown in Equation 5.1. NDACC reflect company performance and is forecasted by measuring the change in sales

and gross property, plant and equipment. DACC reflect managers' discretionary accounting choices and is estimated as the difference between TACC and NDACC.<sup>63</sup>

$$\text{TACC} = \text{DACC} + \text{NDACC} \quad (5.1)$$

Following Alhadab & Clacher (2018); Fan (2007); Gounopoulos & Pham (2017, 2018); Teoh et al. (1998a), this study employs the statement-of-cash-flows method to calculate the total accruals ( $\text{TACC}_{i,t-1}$ ) of firm  $i$  in year  $t-1$  ( $t$  is filing year of S-1 form) as shown in Equation 5.2 below:<sup>64</sup>

$$\text{TACC}_{i,t-1} = \text{EBXI}_{i,t-1} - (\text{CFO}_{i,t-1} - \text{XI}_{i,t-1}) \quad (5.2)$$

where  $\text{EBXI}_{i,t-1}$  denotes earnings before extraordinary items and discontinued operations of firm  $i$  in year  $t-1$ ;  $\text{CFO}_{i,t-1}$  is total cash flow from operations of firm  $i$  in year  $t-1$ ; and  $\text{XI}_{i,t-1}$  is discontinued operations and extraordinary items of firm  $i$  in year  $t-1$ .

NDACC is then estimated by running the cross-sectional version of modified Jones model for all firms on Compustat in the same filing year and two-digit SIC code industry. The model is run for each year and each two-digit SIC industry, where there are at least ten observations.<sup>65</sup> Jones (1991) suggests that the change in sales and gross Property, Plant and Equipment (PPE) are two major factors explaining differences in accrual levels, and therefore, these two factors are included into the model. Each variable is deflated by the lagged total assets of firm  $i$  in year  $t-2$  ( $\text{TA}_{i,t-2}$ ) as a correction for heteroscedasticity. All variables are winsorised at the 1<sup>st</sup> and 99<sup>th</sup> percentiles to mitigate the effects of outliers. The model is presented in Equation 5.3 below:

$$\frac{\text{TACC}_{i,t-1}}{\text{TA}_{i,t-2}} = \alpha_1 \left( \frac{1}{\text{TA}_{i,t-2}} \right) + \alpha_2 \left( \frac{\Delta \text{REV}_{i,t-1}}{\text{TA}_{i,t-2}} \right) + \alpha_3 \left( \frac{\text{PPE}_{i,t-1}}{\text{TA}_{i,t-2}} \right) + \varepsilon_{i,t-1} \quad (5.3)$$

where  $\Delta \text{REV}_{i,t}$  is the change in total sales of firm  $i$  from year  $t-2$  to year  $t-1$ ;  $\text{PPE}_{i,t}$  is the gross value of property, plant and equipment of firm  $i$  in year  $t-1$ .

---

<sup>63</sup> Specifically, the discretionary accruals is calculated as the difference between total accruals and non-discretionary accruals

<sup>64</sup> There are two methods often employed in various prior literature, including statement-of-cash-flows method (CFM) and balance-sheet method (BSM) (Ronen and Yaari, 2008). When comparing these two methods, Hribar and Collins (2002) find that total accruals captured by the CFM are superior since it mitigates the non-articulation problem of the BSM.

<sup>65</sup> Following Francis et al. (2012), this study also excludes from the estimations IPO firms issuing their IPOs within 2 years of the issuers in the sample.

Non-discretionary accruals ( $NDACC_{i,t-1}$ ) of firm  $i$  in year  $t-1$  are calculated by multiplying  $\alpha_1$ ,  $\alpha_2$ ,  $\alpha_3$  estimated in Equation 5.3 by the reciprocal of the total assets in the prior year, the scaled change in cash sales (the change in revenues minus the change in account receivables), and the gross value of PPE in the prior year, respectively, as shown in Equation 5.4.

$$NDACC_{i,t-1} = \hat{\alpha}_1 \left( \frac{1}{TA_{i,t-2}} \right) + \hat{\alpha}_2 \left( \frac{\Delta REV_{i,t-1} - \Delta AR_{i,t-1}}{TA_{i,t-2}} \right) + \hat{\alpha}_3 \left( \frac{PPE_{i,t-1}}{TA_{i,t-2}} \right) \quad (5.4)$$

where:  $\Delta AR_{i,t-1}$  is the change in accounts receivable of firm  $i$  from year  $t-2$  to year  $t-1$ . Dechow et al (1995) argue that managers might easily exercise their discretion to manage earnings over their choices of credit sales policies. Therefore, in order to avoid bias in the Jones model, the change in accounts receivable should be deducted from the change in sales in order to filter out any changes in sales which result from earnings management.

The discretionary accruals ( $DACC_{i,t}$ ) of firm  $i$  in year  $t-1$  are then calculated as per Equation 5.5:

$$DACC_{i,t-1} = \frac{TACC_{i,t-1}}{TA_{i,t-2}} - NDACC_{i,t-1} \quad (5.5)$$

Prior studies express concern about the misspecification of the modified Jones model due to the correlation between abnormal accruals and firm performance, as identified by Dechow et al. (1995). Therefore, to avoid this issue, this study also adjusts for the abnormal accruals of performance-matched non-IPO firms by applying procedure developed by Kothari et al. (2005). Specifically, this study matches the abnormal accruals of the issuers in the sample to those of a non-IPO peer who is in the same two-digit SIC industry and year and has the closest return on assets (ROA). The matched peer's abnormal accruals is then deducted from the issuer's abnormal accruals to obtain the performance-matched abnormal accruals for the issuer (denoted DACC in the analyses that follow).

#### *Real earnings management*

This study uses two proxies of REM, which are abnormal cash flow from operation and abnormal discretionary expense using the specification of the Dechow et al. (1998) model, as

developed by Roychowdhury (2006). Roychowdhury (2006) assumes that in order to reduce reported losses, managers may manipulate real activities by; (1) boosting sales in the short-term, by reducing selling prices or implementing loose credit policies; (2) reducing discretionary expenditures such as general and administrative expense, R&D expense and advertising expense; and/or (3) reducing abnormal production costs. Hence, REM activities might be signalled by abnormally low cash flow from operations, discretionary expenses, or abnormally high production costs.<sup>66</sup>

Normal cash flow from operations and discretionary expenses are estimated for all firms on Compustat in the same filing year and two-digit SIC code industry, using linear models, as shown in Equations 5.6 and 5.7, respectively. This study also employs the cross-sectional approach to estimate these models with the restriction that there must be least ten observations in each industry-year group. All variables are winsorised at the 1<sup>st</sup> and 99<sup>th</sup> percentiles to mitigate the effects of outliers.

$$\frac{CFO_{i,t-1}}{TA_{i,t-2}} = \beta_1 \frac{1}{TA_{i,t-2}} + \beta_2 \frac{REV_{i,t-1}}{TA_{i,t-2}} + \beta_3 \frac{\Delta REV_{i,t-1}}{TA_{i,t-2}} + \varepsilon_{i,t-1} \quad (5.6)$$

$$\frac{DISEXP_{i,t-1}}{TA_{i,t-2}} = \beta_1 \frac{1}{TA_{i,t-2}} + \beta_2 \frac{REV_{i,t-2}}{TA_{i,t-2}} + \varepsilon_{i,t-1} \quad (5.7)$$

$CFO_{i,t-1}$  is cash flow from operations of firm  $i$  in year  $t-1$ ;  $DISEXP_{i,t-1}$  is discretionary expenses, being the sum of selling, general and administrative (SG&A) expense, R&D expense and advertising expense;  $TA_{i,t-2}$  is lagged total assets of firm  $i$  in year  $t-2$ ;  $REV_{i,t-1}$  is total sales of firm  $i$  in year  $t-1$ ; and  $\Delta REV_{i,t-1}$  is change in total sales of firm  $i$  from year  $t-2$  to year  $t-1$ .<sup>67</sup>

The abnormal values of cash flow from operation ( $ACFO_{i,t-1}$ ) and discretionary expense ( $ADISEXP_{i,t-1}$ ) are calculated as the actual values of CFO and DISEXP minus the normal values estimated using the coefficients estimated from Equation 5.6 and 5.7, as shown in Equations 5.8 and 5.9 below:

---

<sup>66</sup> As discussed, this study is unable to employ abnormal production costs as a measure of real earnings management.

<sup>67</sup> Due to the limited data availability of R&D and advertising expense, this study follows Ali & Zhang (2015) by setting the values of these expenses to 0 if their data are missing but data for selling, general, and administrative expense is available.



$$ACFO_{i,t-1} = \frac{CFO_{i,t-1}}{TA_{i,t-2}} - (\widehat{\beta}_1 \frac{1}{TA_{i,t-2}} + \widehat{\beta}_2 \frac{REV_{i,t-1}}{TA_{i,t-2}} + \widehat{\beta}_3 \frac{\Delta REV_{i,t-1}}{TA_{i,t-2}}) \quad (5.8)$$

$$ADISEXP_{i,t-1} = \frac{DISEXP_{i,t-1}}{TA_{i,t-2}} - (\widehat{\beta}_1 \frac{1}{TA_{i,t-2}} + \widehat{\beta}_2 \frac{REV_{i,t-2}}{TA_{i,t-2}}) \quad (5.9)$$

Furthermore, this study also matches abnormal cash flow from operations and abnormal discretionary expenses of issuers in the sample to those of a non-IPO peer that is in the same two-digit SIC industry and year and has the closest ROA, to calculate performance-matched measures of abnormal cash flow from operations and abnormal discretionary expenses (denoted ACFO and ADISEXP in the analyses that follow).

Abnormal production costs (Roychowdhury, 2006; Cohen et al., 2008) are not employed as a proxy of REM within this study for three reasons. First, it is less probable that IPO firms tend to manage earnings by manipulating production costs since they are in the early phases of their life cycles (Wongsunwai, 2013). Second, Alhadab & Clacher (2018) show that manipulating earnings via production costs is a tool that is mostly employed by managers of manufacturing firms, and only 45 IPOs accounting for 5.63% of the sample operate in this industry. Third, due to limitations in the availability of data for sales two years prior to IPO year (required to calculate  $\Delta Sale_{i,t-1}$ ), this study is unable to estimate abnormal production costs.

### 5.3.2.3. Control variables

Following Cassell et al. (2013), Duro et al. (2017), Ertimur & Nondorf (2006), Ettredge et al. (2011), Heese et al., (2017), Johnston & Petacchi (2017) and Robinson et al. (2011), firm characteristics that have been shown to predict the extensiveness of SEC reviews are included as control variables. Specifically, this study controls for firm size (*LnSize*), firm age (*Age*) business complexity (*Segments*, *Restructuring*, *M&A*), expecting that larger, older firms, firm having more operational segments and firms engaging in restructuring and M&A activities may have more complexity in their business and therefore tend to attract greater SEC scrutiny (Cassell et al., 2013; Heese et al., 2017).

Specifically, *LnSize* is measured as the natural logarithm of total assets of firm *i* in year *t*-1 (Brown et al., 2018). Following Heese et al. (2017), *Firm age* is measured as the number of years since the firm first appeared on Compustat up to year *t*-1. *Segments* is measured as the

number of unique segment industry codes reported on Compustat for year t-1 (Cassell et al., 2013). *Restructuring* is set equal to 1 if the firm has non-zero restructuring costs on a pre-tax basis in year t-1 (i.e. the IPO firm has engaged in restructuring activities) and 0 otherwise (Cassell et al., 2013; Heese et al., 2017). *M&A* is set equal to 1 if firm i has non-zero acquisition or merger costs on a pre-tax basis in year t-1 (i.e. the IPO firm has engaged in merger and acquisition activities) and 0 otherwise (Cassell et al., 2013; Heese et al., 2017).

This study also includes a control variable for audit quality (*Big 4*) following Johnston & Petacchi, (2017) who suggest that firms audited by Big 4 auditors are more likely to be considered to be providing high-quality disclosures and therefore attract less SEC oversight. Specifically, *Big 4* is set equal to 1 if the firm's auditor in year t-1 is one of the Big 4 accounting firms, and 0 otherwise (Johnston & Petacchi, 2017).

In addition, corporate governance characteristics may affect the extent of SEC scrutiny. For instance, when an IPO firm has duality between the CEO and chairperson positions, monitoring by the board may be less effective, and consequently the firm may be subjected to more extensive SEC oversight (Ertimur & Nondorf, 2006; Ettredge et al., 2011; Robinson et al., 2011; Cassell et al., 2013). This study therefore includes *CEOchairperson* as a control variable indicating the quality of the IPO firm's internal monitoring mechanisms. This proxy is measured as an indicator variable which equals 1 if the firm has a CEO that is also the chair of the board in year t, and 0 otherwise (Hesse et al., 2017).

Furthermore, IPO firms' financial health, including; debt levels (*Leverage*) and the likelihood of financial distress (*Zscore*), are also added as control variables. SEC scrutiny is expected to be more extensive for firms with higher debt levels (i.e. higher leverage) (Duro et al., 2017) or are in financial distress (Heese et al., 2017), as they are less likely to be GAAP compliant (Dechow et al., 1996; Brazel et al., 2009). Specifically, *Leverage* is calculated as the ratio of total liabilities to total equity in year t-1 (Duro et al., 2017). *Zscore* is measured by applying the modified Z-score model for private companies as described in Appendix 1.1 (Altman, 2013).

In addition, this study also includes a control for the impact of the 2012 JOBS Act (*JOBS Act*). The JOBS Act was enacted to reduce the reporting burden on EGC IPOs by relaxing some public reporting requirements, suggesting that there are likely to be significant changes in SEC review attributes under the Act. The SEC are identified to have altered their tone and focus

within comment letters (Agarwal et al., 2017), as well as the extensiveness of their reviews under the Act, as evidenced in Chapter 4 of this thesis. Specifically, *JOBS Act* is set equal to 1 for IPOs filed between 2012 and 2017, and 0 otherwise.

### 5.3.3. Empirical tests

To examine the relationship between SEC S-1 reviews and earnings management, this study employs a number of negative binomial regression models. In the main analyses, the dependent variables are each of the SEC review attributes including; *Duration*, *#Letters*, *#Themes*, *#Core-accounting-issues*, *#Non-core-accounting issues* which are all discrete and countable as defined by Greene (2012). Hence, negative binomial regressions are more appropriate in estimating cross-sectional regression on these variables as compared with other methods (e.g. OLS), as demonstrated by Rock et al. (2000).<sup>68</sup> Similarly, Colaco et al. (2017); Li & Liu (2017) and Schuldt & Vega (2018), who use dependent variables similar to those in this study (e.g. the number of days during the IPO waiting period, the number of SEC revenue recognition comments), employ negative binomial regressions.

Moreover, the distributions of SEC review attributes (*Duration*, *#Letters*, *#Themes*, *#Core-accounting issues*, *#Non-core-accounting issues*) display signs of overdispersion since these variables have variances that are greater than their mean values (Hinde & Demetrio, 1998).<sup>69</sup> Therefore, negative binomial regressions are more appropriate than Poisson regressions, an alternative method to model relationships among discrete and countable variables. The Poisson distribution assumes that the mean and variance values are the same (Hilbe, 2011). The alpha parameters from likelihood tests of overdispersion also demonstrate that negative binomial regressions are more appropriate than Poisson regressions in terms of overdispersion.<sup>70</sup>

---

<sup>68</sup> A variable is discrete if the set of its values is finite or countable and these values are obtained through the counts of occurrence Greene (2012).

<sup>69</sup> As for *Duration*, the variance ( $\sigma^2 = 14825.50$ ) is approximately 133 times greater than the mean ( $\mu = 111.24$ ). Regarding *#Letters*, the variance ( $\sigma^2 = 4.12$ ) is approximately 2 times greater than the mean ( $\mu = 2.67$ ). As for *#Themes*, the variance ( $\sigma^2 = 6.05$ ) is approximately 2 times greater than the mean ( $\mu = 3.43$ ). Regarding *#Core-accounting issues*, the variance ( $\sigma^2 = 23.43$ ) is approximately 6 times greater than the mean ( $\mu = 3.9$ ). Concerning *#Non-core-accounting issues*, the variance ( $\sigma^2 = 523.95$ ) is approximately 23 times greater than the mean ( $\mu = 22.22$ )

<sup>70</sup> This study conducts the likelihood test of overdispersion by running both Poisson regression and negative binomial regression for each pair of SEC review attribute and proxy of earnings management and then access the goodness-of-fit values and the overdispersion parameter alpha.

The specific regression model estimated is as follows:

$$\text{SEC review}_{i,t} = \alpha_0 + \alpha_1 \text{EM proxies}_{i,t-1} + \alpha_2 \text{Control}_{i,t-1} + \text{YearFE} + \text{IndFE} + \varepsilon_{i,t} \quad (5.10)$$

The dependent variable *SEC review<sub>it</sub>* reflects the extensiveness of SEC reviews, and is represented by each of the following five measures: *Duration*, *#Letters*, *#Themes*, *#Core-accounting issues* and *#Non-core-accounting issues*. The independent variable of interest in each case is *EM proxies<sub>it-1</sub>*, representing the degree of earnings management engaged in by the IPO firm, as measured by: *DACC*, *ACFO* and *ADISEXP*. In each case,  $\alpha_1$  is the coefficient of interest. *Control<sub>it-1</sub>* is a vector containing each of the control variables discussed in Section 5.3.2.3. *YearFE* is a vector of year fixed effects based on the S-1 filing year, while *IndFE* represents industry fixed effects according to the Fama-French 12 industry classification scheme.<sup>71</sup>

This study employs clustered standard errors following a within-cluster correlation test in which this study follows Colaco et al. (2017) by clustering at the 12 Fama-French industry level.<sup>72</sup> The results reveal that within each 12 Fama-French industry cluster for all SEC review attributes including; *Duration*, *#Letters*, *#Themes*, *#Core-accounting issues* or *#Non-core-accounting issues*, there are significant correlations across the observations. The test results favour clustering the standard errors at the industry level. Therefore, when estimating Equation 5.10, standard errors are clustered at the industry level in order to mitigate possible correlations across IPO firms within a given industry (Petersen, 2009; Rogers, 1994).<sup>73</sup> The standard errors are also robust to potential heteroskedasticity.

In order to examine the impact of the 2012 JOBS Act, Equation 5.10 is also estimated separately for the pre- and post-JOBS Act periods, including only IPOs where the issuer would qualify for EGC status, i.e. have revenues below \$1 billion. Wald chi-square tests for

---

<sup>71</sup> Chi-square test of joint null hypothesis reveals that the coefficients for all S-1 filings years and all 12 Fama-French industries are not jointly equal to zero, therefore, this study controls for the year fixed effects and the industry fixed effects in the empirical models. The tests is conducted by applying Stata procedure *testparm*. Regarding industry fixed effects, this study does not use 2-digit SIC code industry due the lack of variations in some industries.

<sup>72</sup> Within-cluster correlation test is undertaken by applying Stata procedure *loneway*.

<sup>73</sup> Although the within-correlation test also show that within each filing year of S-1, there are significant correlations across the observation, this study does not cluster at the year level since there in no appreciable difference in clustered standard errors as compared with default standard errors. Petersen (2009) suggests using cluster when the clustered standard error is 2-4 time higher than white standard error.

differences in the coefficients on the earnings management variables between the pre and post JOBS periods are then conducted.<sup>74</sup> As the model is estimated for the pre- and post-JOBS periods separately, the *JOBS Act* control variable is suppressed, as well as the year fixed effects.<sup>75</sup>

#### 5.4.Descriptive statistics

Table 5.1, Panel A presents the distribution of IPOs between 2005 and 2017, showing that the volume of IPOs dramatically increases in 2013 and reaches a peak in 2014 with values of 99 (12.39%) and 110 (13.77%). This is likely due to the impact of the JOBS Act enacted in 2012, which reduces disclosure burdens to incentivise emerging growth companies, who account for the majority of the IPO market in the U.S. A significant decline in IPO volume in 2008 is also identified, which may be due to the impact of the 2007-2008 financial crisis. Table 5.1, Panel B presents the distribution of IPO firms by the Fama-French 12 industry classification scheme. The majority of IPOs are conducted by firms in the Business Equipment - Computers, Software, and Electronic Equipment industry and Healthcare, Medical Equipment, and Drugs sectors, constituting about 25.16% and 38.55% of the sample, respectively. The proportion of IPOs in other industries varies from 0.5% to 10.64%.<sup>76</sup>

---

<sup>74</sup> Wald chi-square test is undertaken by using Stata *suest* and *test* command (<https://stats.idre.ucla.edu/stata/code/comparing-regression-coefficients-across-groups-using-suest/>). This study performs Wald test rather than Chow test since Model (5.10) is estimated with robust standard errors and hence, the comparison of coefficients across the samples will use the estimated variance-covariance matrix of the estimators under the Wald test ([https://www.stata.com/support/faqs/statistics/chow-and-wald-tests/?fbclid=IwAR0tReZVWJYUJID09RGeEECbWUrUQ2exdh2G66HdNhF\\_M82Bn\\_2hvyU5DIg](https://www.stata.com/support/faqs/statistics/chow-and-wald-tests/?fbclid=IwAR0tReZVWJYUJID09RGeEECbWUrUQ2exdh2G66HdNhF_M82Bn_2hvyU5DIg)).

<sup>75</sup> This study does not include year fixed effects in the model since this would lead to the inclusion of different year dummies in the pre- and post-JOBS Act models, hence the factor variable base category would be different, thus affecting the comparison between the coefficients of interest across the two subsamples.

<sup>76</sup> This does not include IPOs of financial firms, as they are excluded from the sample.

**Table 5.1. Distribution of IPOs by time and industry**

<b>Panel A. Time distribution</b>		
<i>Filing year</i>	<i>Frequency</i>	<i>%</i>
2005	47	5.88%
2006	90	11.26%
2007	80	10.01%
2008	17	2.13%
2009	39	4.88%
2010	55	6.88%
2011	56	7.01%
2012	36	4.51%
2013	99	12.39%
2014	110	13.77%
2015	71	8.89%
2016	53	6.63%
2017	46	5.76%
Total	799	100%

<b>Panel B. Industry distribution</b>			
<i>Industry</i>	<i>Fama-French 12 industry</i>	<i>Frequency</i>	<i>%</i>
Consumer Nondurables-Cars, TV's, Furniture, Household Appliances	1	17	2.13%
Consumer Durables-Machinery, Trucks, Planes, Off Furn, Paper, Com Printing	2	13	1.63%
Manufacturing - Machinery, Trucks, Planes, Off Furn, Paper, Com Printing	3	45	5.63%
Energy Oil, Gas, and Coal Extraction and Products	4	26	3.25%
Chemicals and Allied Products	5	19	2.38%
Business Equipment - Computers, Software, and Electronic Equipment	6	201	25.16%
Telephone and Television Transmission	7	13	1.63%
Utilities	8	4	0.5%
Wholesale, Retail, and Some Services (Laundries, Repair Shops)	9	68	8.51%
Healthcare, Medical Equipment, and Drugs	10	308	38.55%
Finance	11	0	0%
Other -- Mines, Constr, BldMt, Trans, Hotels, Bus Serv, Entertainment	12	85	10.64%
Total		799	100%

This table presents the sample distribution for the full sample of IPOs conducted between May 2005 and December 2017. This table reports the sample distribution by S-1 filing year in Panel A, and by Fama-French 12 industry classifications in Panel B.

Table 5.2 presents descriptive statistics for the whole sample as well as an analysis of the differences between IPOs receiving SEC comments about earnings-related issues and those not receiving SEC comments about earnings-related issues. Panel A presents the descriptive statistics for SEC review attributes. The mean (median) value of: *Duration* is 111.24 (88) days; *#Letters* is 2.67 (3) letters; *#Themes* is 3.43 (4) issue types; *#Core-accounting issues* is 3.91 (2) comments; and *#Non-core-accounting issues* is 22.22 (17) comments.

As compared with statistics reported for similar proxies in other studies on the topic (i.e. Ertimur & Nondorf, 2006; and Li & Liu, 2017), SEC review proxies appear to have low averages. This is likely to be because this study includes the period after the passing of JOBS Act which was enacted to reduce regulatory burdens on IPO firms. In addition, the statistics for *Duration* reveal substantial variation in the time taken between the SEC on their reviews of S-1 filings, ranging from 13 to 1659 days (not tabulated). Furthermore, the number of Non-core-accounting-related comments is considerable for some IPO firms, as highlighted by the 75<sup>th</sup> percentile number of comments equal to 40 comments.

Panel B of Table 5.2 provides descriptive statistics for earnings management proxies, abnormal accruals, abnormal cash flow from operations and abnormal discretionary expenses. The results reveal significantly negative mean and median values of abnormal accruals (-0.29 and -0.06, respectively) and abnormal cash flow from operations (-0.51 and -0.09, respectively) and significantly positive mean and median values of abnormal discretionary expenses (0.79 and 0.26, respectively). This indicates that on average, when preparing S-1 filings, IPO firms' managers are not likely to conduct income-increasing earnings management through accruals and discretionary expenses manipulation, but employ sales manipulation instead.

Since this study examines the period from 2005 to 2017, these findings are in line with previous studies (Cohen et al., 2008; Koh et al., 2008) which suggest that the level of accruals earnings management declined after the passing of Sarbanes Oxley Act in 2002, and most of that decline in AEM is due to the decrease in positive discretionary accruals. In addition, as suggested by Gounopoulos & Pham (2017), IPO firms are more likely to manipulate sales to overstate the earnings since (1) it is more difficult to uncover sales manipulation because high sales growth is one of the key characteristics of new public firms; (2) simultaneously conducting both sales manipulation and discretionary expenses reduction may be challenging and also increase political costs (e.g. political scrutiny, administrative actions). Gounopoulos & Pham (2017) and Gao et al. (2017) also observe that IPO firms tend to not engage in income-increasing

earnings management through reduction of discretionary expenses, as indicated by positive average values for abnormal discretionary expenses.<sup>77</sup> The finding is also in agreement with Gounopoulos & Pham (2018) who employ a comparable accruals earnings management proxy and find that IPO firms were unlikely to engage in accruals-based income-increasing earnings management over the period 2003-2011.<sup>78</sup>

Furthermore, the descriptive statistics in Table 5.2 (Panel B) suggest that IPOs receiving SEC comments that address core-accounting issues, which are relevant to earnings-related deficiencies, have significantly higher abnormal accruals, abnormal cash flow from operations and lower abnormal discretionary expenses compared to those not receiving any SEC comments on core-accounting issues (-0.04 versus -0.10, -0.07 versus -0.16 and 0.16 versus 0.49, respectively). This suggests that IPOs receiving SEC comments on core-accounting issues are more likely to be engaging in income-increasing earnings management through accruals manipulation and discretionary expenses manipulation when preparing S-1, somewhat implying that SEC reviews are effective in addressing these forms of earnings management. However, SEC comments on core-accounting issues appear less sensitive to income-increasing earnings management through sales manipulation, to some extent implying that SEC reviews are less effective in detecting sales-based income-increasing earnings management by IPO firms.

Table 5.2, Panel C presents descriptive statistics for the variables of IPO firm characteristics. On average, IPOs in the sample are large companies, as indicated by the mean company size of 4.33 (equivalent to total assets of \$75.94 million).<sup>79</sup> On average, they have been in operation for 2.6 years and have no more than 2 business segments in general, suggesting they typically are not diversified in their business areas. The mean Altman's Z-score is -13.68, indicating that, on average, IPO firms are likely to be in financial distress. Moreover, 82% of IPO firms are audited by Big 4 auditors, 9% of IPO firms conduct restructuring activities, 13% of IPO firms conduct M&A activities and 21% of IPO firms have a CEO who is also the chair of the

---

<sup>77</sup> Gounopoulos & Pham (2017) observe similar mean value and median value of these proxies as compared with the study. Specifically, the mean value of abnormal cash flow from operations and abnormal discretionary expense are -0.10 and 0.65 respectively, and their median value are -0.03 and 0.25, respectively.

<sup>78</sup> Gounopoulos & Pham (2018) identify similar mean value and median of the abnormal accruals to the study, which are -0.21 and -0.07, respectively.

<sup>79</sup> This study follows classification used by Internal Revenue Service (IRS), which is a U.S. government agency responsible for collecting taxes and administering tax laws to classify IPO firms as small (or large) when they have the total assets less (or greater) than \$10 million.



board of directors. On average, leverage ratios of IPO firms are not significantly different from zero.<sup>80</sup>

Furthermore, this study observes that, compared to IPO firms not receiving SEC comments about core-accounting issues, those receiving core-accounting-related comments tend to be larger, older, have more complexity in their business, in particular, tending to have more business segments and are more likely to be conducting restructuring activities. This to some extent suggests SEC reviews to be effective, since IPO firms with high complexity in their business may have lower reporting quality (Cassell et al., 2013; Heese et al., 2017).

Regarding the JOBS Act, on average, 51% of EGC IPO firms in the sample go public after the passing of the JOBS Act in 2012. The results also show that, EGC IPOs receiving SEC comments on core-accounting issues are less likely to go public in the post-JOBS Act era as compared with those not receiving core-accounting-related comments. This is possibly due to exemptions from some disclosure requirements under the Act.

A correlation matrix for the variables employed in this study is presented in Table 5.2, Panel E. The results reveal that SEC review attributes (*Duration*, *#Letters*, *#Themes*, *#Core-accounting issues* and *#Non-core-accounting issues*) are positively correlated with abnormal accruals (0.08, 0.10, 0.13, 0.10, 0.09 respectively), and negatively correlated with abnormal discretionary expenses (-0.09, -0.12, -0.14, -0.08, -0.15, respectively), suggesting that higher degrees of income-increasing earnings management through accruals manipulation and discretionary expenses manipulation attract more intensive SEC reviews. The findings could be considered as a signal of the effectiveness of SEC reviews of S-1 filings in addressing income-increasing accrual-based and discretionary-expense-based earnings management.

On the other hand, all SEC review attributes are positively correlated with abnormal cash flow from operations (0.08, 0.12, 0.16, 0.13, 0.18, respectively), suggesting that higher degrees of sales-based income-increasing earnings management may attract less intensive SEC reviews. This implies SEC reviews are ineffective in detecting income-increasing sales-based earnings management by IPO firms. Furthermore, relatively strong correlations are observed among the three proxies of earnings management, and therefore, in the empirical models, the effects of these three proxies on the extent of SEC reviews are examined in separate models in order to

---

<sup>80</sup> The zero leverage may be derived from negative total equity or accumulated deficit of U.S IPOs in the sample. The result is in line with Bessler et al. (2013) identifying that the zero-leverage phenomenon is more pronounced in samples of newly listed firms.

avoid multicollinearity problems. Relatively strongly negative correlations between all five SEC review attributes and *JOBS Act* are also identified, suggesting that the enactment of the JOBS Act in 2012 is associated with less extensive SEC reviews.

**Table 5.2. Descriptive statistics**

<b>Panel A. SEC review attributes</b>						
	All IPOs					
	<i>N</i>	<i>Mean</i>	<i>p25</i>	<i>p50</i>	<i>p75</i>	<i>sd</i>
Duration	799	111.24***	37	88***	124	121.76
#Letters	799	2.67***	1	3***	4	2.03
#Themes	799	3.43***	1	4***	6	2.46
#Core-accounting issues	799	3.91***	0	2***	7	4.84
#Non-core-accounting issues	799	22.22***	1	17***	40	22.89

<b>Panel B. Earnings management proxies</b>											
	All IPOs						IPOs receiving SEC comments about core-accounting issues		IPOs not receiving SEC comments about core-accounting issues		Difference
	<i>N</i>	<i>Mean</i>	<i>p25</i>	<i>p50</i>	<i>p75</i>	<i>sd</i>	<i>N</i>	<i>Median</i>	<i>N</i>	<i>Median</i>	
DACC	567	-0.29***	-0.38	-0.06***	0.18	1.69	327	-0.04	240	-0.10	0.06*
ACFO	579	-0.51***	-0.62	-0.09***	0.14	1.84	333	-0.07	246	-0.16	0.09**
ADISEXP	479	0.79***	-0.11	0.26***	1.07	2.55	284	0.16	195	0.49	-0.33**

**Panel C. Firm characteristics**

	All IPOs						IPOs receiving SEC comments about core- accounting issues	IPOs not receiving SEC comments about core- accounting issues		Difference	
	<i>N</i>	<i>Mean</i>	<i>p25</i>	<i>p50</i>	<i>p75</i>	<i>sd</i>	<i>N</i>	<i>Mean</i>	<i>N</i>		<i>Mean</i>
LnSize	799	4.33***	3.21	4.1***	5.46	1.92	494	4.51	305	4.02	0.49***
Leverage	799	-28.4	-0.87	-0.2***	0.81	769.32	494	-1.94	305	-71.25	69.31
Firm age	799	2.6***	1	1***	3	5.04	494	3.09	305	1.81	1.28***
Segments	799	1.4***	1	1***	1	1.03	494	1.51	305	1.21	0.3***
Zscore	799	-13.68***	-10.75	-0.2***	4.19	67.39	494	-13.37	305	-14.18	0.81
Big4	799	0.82***	1	1***	1	0.38	494	0.83	305	0.82	0.01
Restructuring	799	0.09***	0	0***	0	0.29	494	0.11	305	0.07	0.04**
M&A	799	0.13***	0	0***	0	0.34	494	0.14	305	0.11	0.03
CEOchairperson	799	0.21***	0	0***	0	0.41	494	0.23	305	0.19	0.04

**Panel D. Regulatory event**

	All EGC IPOs						EGC IPOs receiving SEC comments about core-accounting issues	EGC IPOs not receiving SEC comments about core-accounting issues		Difference	
	<i>N</i>	<i>Mean</i>	<i>p25</i>	<i>p50</i>	<i>p75</i>	<i>sd</i>	<i>N</i>	<i>Mean</i>	<i>N</i>		<i>Mean</i>
JOBS Act	722	0.51***	0	1***	1	0.50	428	0.28	294	0.85	-0.57***

Panel E. Correlation matrix

	Duration	#Letters	#Themes	#Core-accounting issues	#Non-core-accounting issues	DACC	ACFO	ADISEXP	LnSize	Leverage	Firm age	Segments	Zscore	Big 4	Restructuring	M&A	CEOchair person	JOBS Act
Duration	1																	
#Letters	<b>0.58***</b> (0.00)	1																
#Themes	<b>0.31***</b> (0.00)	<b>0.67***</b> (0.00)	1															
#Core-accounting issues	<b>0.26***</b> (0.00)	<b>0.49***</b> (0.00)	<b>0.65***</b> (0.00)	1														
#Non-core-accounting issues	<b>0.35***</b> (0.00)	<b>0.67***</b> (0.00)	<b>0.79***</b> (0.00)	<b>0.61***</b> (0.00)	1													
DACC	<b>0.08*</b> (0.06)	<b>0.10***</b> (0.01)	<b>0.13***</b> (0.00)	<b>0.10***</b> (0.01)	<b>0.09**</b> (0.04)	1												
ACFO	<b>0.08**</b> (0.05)	<b>0.12***</b> (0.00)	<b>0.16***</b> (0.00)	<b>0.13***</b> (0.00)	<b>0.18***</b> (0.00)	<b>0.45***</b> (0.00)	1											
ADISEXP	<b>-0.09**</b> (0.04)	<b>-0.12***</b> (0.01)	<b>-0.14***</b> (0.00)	<b>-0.08*</b> (0.08)	<b>-0.15***</b> (0.00)	<b>-0.77***</b> (0.00)	<b>-0.84***</b> (0.00)	1										
LnSize	<b>0.10***</b> (0.01)	<b>0.14***</b> (0.00)	<b>0.19***</b> (0.00)	<b>0.08**</b> (0.02)	<b>0.19***</b> (0.00)	<b>0.16***</b> (0.00)	<b>0.32***</b> (0.00)	<b>-0.28***</b> (0.00)	1									
Leverage	<b>-0.18***</b> (0.00)	0.05 (0.19)	0.05 (0.17)	0.03 (0.45)	0.03 (0.35)	0.03 (0.54)	0.03 (0.44)	-0.04 (0.38)	-0.06 (0.11)	1								
Firm age	<b>0.22***</b> (0.00)	<b>0.20***</b> (0.00)	<b>0.16***</b> (0.00)	<b>0.08**</b> (0.03)	<b>0.12***</b> (0.00)	0.05 (0.27)	<b>0.08*</b> (0.07)	<b>-0.08*</b> (0.09)	<b>0.30***</b> (0.00)	0.01 (0.74)	1							
Segments	<b>0.14***</b> (0.00)	<b>0.14***</b> (0.00)	<b>0.17***</b> (0.00)	<b>0.10***</b> (0.01)	<b>0.20***</b> (0.00)	<b>0.09**</b> (0.03)	<b>0.13***</b> (0.00)	<b>-0.15***</b> (0.00)	<b>0.35***</b> (0.00)	<b>-0.23***</b> (0.00)	<b>0.21***</b> (0.00)	1						
Zscore	0.03 (0.38)	0.03 (0.42)	0.02 (0.52)	<b>0.07*</b> (0.06)	0.06 (0.11)	<b>0.15***</b> (0.00)	<b>0.24***</b> (0.00)	<b>-0.20***</b> (0.00)	<b>0.45***</b> (0.00)	-0.01 (0.78)	<b>0.06*</b> (0.09)	<b>0.09***</b> (0.01)	1					
Big 4	0.02 (0.67)	-0.01 (0.68)	0.01 (0.77)	-0.03 (0.41)	-0.02 (0.51)	0.04 (0.39)	<b>0.07*</b> (0.07)	-0.04 (0.37)	<b>0.24***</b> (0.00)	-0.02 (0.65)	<b>0.08**</b> (0.03)	0.02 (0.63)	<b>0.15***</b> (0.00)	1				
Restructuring	0.02 (0.59)	<b>0.09***</b> (0.01)	<b>0.11***</b> (0.00)	0.03 (0.46)	<b>0.10***</b> (0.00)	<b>0.08*</b> (0.07)	<b>0.10**</b> (0.02)	<b>-0.11**</b> (0.02)	<b>0.36***</b> (0.00)	0.01 (0.75)	<b>0.12***</b> (0.00)	<b>0.19***</b> (0.00)	<b>0.07**</b> (0.04)	<b>0.08**</b> (0.02)	1			
M&A	-0.04 (0.22)	-0.02 (0.56)	0.04 (0.26)	-0.01 (0.84)	-0.04 (0.29)	0.01 (0.98)	0.04 (0.31)	-0.03 (0.58)	<b>0.33***</b> (0.00)	0.01 (0.68)	<b>0.12***</b> (0.00)	<b>0.12***</b> (0.00)	<b>0.09**</b> (0.02)	<b>0.08**</b> (0.03)	<b>0.31***</b> (0.00)	1		
CEOchairperson	-0.02 (0.54)	0.02 (0.55)	0.02 (0.53)	0.01 (0.88)	0.03 (0.45)	-0.04 (0.33)	0.01 (0.89)	0.06 (0.22)	<b>0.16***</b> (0.00)	0.02 (0.58)	-0.02 (0.64)	0.01 (0.71)	<b>0.07*</b> (0.06)	<b>0.08**</b> (0.02)	<b>0.08**</b> (0.02)	<b>0.05</b> (0.2)	1	
JOBS Act	<b>-0.37***</b> (0.00)	<b>-0.5***</b> (0.00)	<b>-0.58***</b> (0.00)	<b>-0.49***</b> (0.00)	<b>-0.67***</b> (0.00)	<b>-0.11***</b> (0.01)	<b>-0.20***</b> (0.00)	<b>0.16***</b> (0.00)	<b>-0.08**</b> (0.02)	0.04 (0.27)	<b>-0.06*</b> (0.08)	<b>-0.12***</b> (0.00)	<b>-0.12***</b> (0.00)	0.01 (0.96)	0.05 (0.14)	<b>0.17</b> (0.00)	0.01 (0.71)	1

This table reports descriptive statistics for the full sample of 799 IPOs between May 2005 and December 2017. Descriptive statistics for SEC review attributes, earnings management proxies, firm characteristics, regulatory events and a correlation matrix including all variables are reported in Panels A, B, C, D and E, respectively. All variable definitions are provided in Appendix 1.1. T-tests and Wilcoxon sign rank tests are employed to examine differences in means and medians from zero, respectively. Tests of difference in means and medians between two samples of IPO firms receiving and not receiving SEC comments about earnings-related issues are conducted by using t-tests and Wilcoxon rank sum tests. \*, \*\*, \*\*\* denote significance at the 10%, 5%, and 1% levels, respectively.

## 5.5. Empirical results

This study first tests H1; that SEC reviews on S-1 filings is more extensive for IPO firms engaging in higher levels of income-increasing earnings management. Specifically, the extensiveness of SEC reviews (*Duration*, *#Letters* and *#Themes*, *#Core-accounting issues*, *non-core-accounting issues*) is examined, given the degree of earnings management (*DACC*, *ACFO*, *ADISEXP*).

Table 5.3 reports the results from estimating Eq (5.10) using the full sample. Columns (1), (4), (7), (10) and (13) present the results for the impact of abnormal accruals (*DACC*) on SEC review attributes. The effect of *DACC* on *Duration*, *#Letters* and *#Themes* is observed to be positive and significant, indicating that the SEC are likely to spend more time, provide more letters and wider range of themes when reviewing IPO firms having higher degrees of abnormal accruals.<sup>81</sup> In addition, this study also finds a significantly positive effect of *DACC* on *#Core-accounting issues*, but no effect of *DACC* on *#Non-core-accounting issues*, indicating that, when detecting IPO firms with higher degrees of abnormal accruals, on average, the SEC provide more core-accounting-related comments but no more comments on other issues. In general, the findings suggest that SEC reviews are effective in addressing accruals-based income-increasing earning management within IPO firms' S-1 filings, consistent with the first hypothesis.

Regarding abnormal discretionary expenses, the results in Column (3) show that IPO firms with lower abnormal discretionary expenses are likely to experience longer SEC reviews, as indicated by the negative coefficients on *ADISEXP* for *Duration*. The findings suggest that SEC reviews, to some extent, effectively address income-increasing REM through discretionary expenses, also supporting the first hypothesis.

As for abnormal cash flow from operations, however, the results in Columns (2) and (14) reveal significantly positive coefficients on *ACFO* for SEC review attributes including *Duration* and *#Non-core-accounting issues*, which indicate that the SEC are likely to spend less time reviewing, and focus more on topics other than core-accounting-related comments (greater non-core-accounting-related comments) when IPO firms exhibit higher degrees of income-increasing earning management through abnormal cash flow from operations. This suggests

---

<sup>81</sup> Appendix 5.2. show the marginal effects of *DACC*, *ADISEXP*, *ACFO* on SEC review attributes in more details.

that the SEC may not effectively detect and address sales-based manipulation around IPOs, in contrast to the first hypothesis. This could be because, in the IPO context, sales-based manipulation is difficult to uncover because high sales growth is a typical feature of going-public firms (Gounopoulos & Pham, 2017; Alhadab & Clacher, 2018). Cohen et al. (2008) and Graham et al. (2005) also argue that earnings management through sales manipulation is infrequently detected by auditors, investors, and regulators.

Overall, the findings show that IPO firms exhibiting higher levels of abnormal accruals, or lower levels of abnormal discretionary expenses in the year prior to the S-1 filing year are likely to experience longer SEC reviews. In addition, the findings also suggest that the SEC provide more comment letters, comment on a wider range of themes and provide more core-accounting-related comments for IPO firms with higher levels of abnormal accruals. These findings are consistent with SEC reviews being effective in addressing AEM within IPO registration statements. However, only partial evidence is obtained that is consistent with the SEC being effective in detecting REM, as this study observes only weak evidence that the SEC effectively address discretionary-expenses-based manipulations, and no evidence that they effectively address sales-based manipulation. This is consistent with Graham et al. (2005)'s argument that REM attracts insufficient scrutiny from auditors and regulators and hence is likely to be left somewhat undetected.

The coefficients on the control variables are also generally as expected, with more extensive SEC reviews for bigger firms (*LnSize*), older firms (*Firm age*), firms having more business segments (*Segments*), firms engaging in restructuring activities (*Restructuring*) and M&A activities (*M&A*), all of which indicate firms with more complexity in their business (Cassell et al., 2013; Heese et al., 2017). Holding all else equal, firms with a higher probability of financial distress (*Zscore*) attract more intensive SEC reviews, consistent with the findings of Heese et al. (2017). This study observes a negative effect of having a Big 4 auditor (*Big 4*), supporting the conjecture that IPO firms audited by Big 4 auditors may have more standard reports which attract less SEC scrutiny (Johnston & Petacchi, 2017). Negative coefficients on *JOBS Act* for all SEC review attributes are also identified, in line with the findings in Chapter 4 that the SEC confirm with the relaxation of IPO regulation under the JOBS Act, and hence their reviews of IPO registration statements tend to be less extensive under the Act.

**Table 5.3. SEC reviews on S-1 filings and IPO firms' earnings management**

	Duration			#Letters			#Themes			#Core-accounting issues			#Non-core-accounting issues		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
DACC	0.025*** (5.45)			0.023** (1.96)			0.035* (1.80)			0.040*** (4.02)			0.051 (1.32)		
ACFO		0.007* (1.85)			0.007 (0.57)			0.020 (1.00)			0.015 (0.91)			0.078* (1.69)	
ADISEXP			-0.014*** (-5.34)			-0.005 (-0.81)			-0.012 (-0.61)			-0.013 (-1.20)			-0.053 (-1.52)
LnSize	-0.023 (-0.72)	-0.026 (-0.79)	-0.023 (-0.81)	-0.019 (-0.45)	-0.021 (-0.48)	-0.019 (-0.43)	0.015 (0.63)	0.009 (0.35)	0.005 (0.13)	0.065* (1.76)	0.058 (1.59)	0.027 (0.56)	0.082 (1.58)	0.067 (1.21)	0.055 (0.92)
Leverage	-0.001 (-0.01)	0.001 (0.06)	-0.002 (-0.95)	0.001 (1.14)	0.001 (1.07)	0.001 (0.79)	0.001 (0.17)	0.001 (0.43)	0.001 (0.17)	-0.002 (-0.39)	-0.001 (-0.16)	0.001 (0.24)	-0.001 (-0.35)	-0.001 (-0.21)	-0.001 (-0.26)
Firm age	0.026*** (3.46)	0.026*** (3.40)	0.026*** (3.19)	0.014** (2.25)	0.015** (2.43)	0.015** (2.39)	0.005 (1.54)	0.005 (1.45)	0.005 (1.37)	0.011 (1.39)	0.011 (1.50)	0.012 (1.64)	0.007 (1.25)	0.008 (1.38)	0.007 (1.19)
Segments	0.054** (2.06)	0.052** (2.03)	0.050* (1.87)	0.043 (1.60)	0.040 (1.44)	0.036 (1.24)	0.029 (1.24)	0.027 (1.19)	0.023 (0.93)	0.036 (0.57)	0.036 (0.59)	0.053 (0.82)	0.044 (0.94)	0.041 (0.85)	0.033 (0.62)
Zscore	-0.001 (-1.18)	-0.001 (-1.06)	-0.001* (-1.65)	-0.001 (-1.22)	-0.001 (-1.37)	-0.001 (-1.61)	-0.001*** (-4.28)	-0.001*** (-4.35)	-0.001*** (-3.40)	-0.001** (-2.45)	-0.001*** (-2.71)	-0.001* (-1.82)	-0.001** (-2.18)	-0.001*** (-2.86)	-0.001*** (-2.67)
Big4	-0.126*** (-2.94)	-0.129*** (-3.07)	-0.062 (-1.17)	-0.102 (-0.91)	-0.092 (-0.81)	-0.092 (-0.74)	-0.057 (-0.53)	-0.049 (-0.45)	-0.041 (-0.33)	-0.358*** (-2.96)	-0.367*** (-3.04)	-0.381*** (-2.62)	-0.418*** (-2.91)	-0.432*** (-2.84)	-0.450*** (-2.36)
Restructuring	0.221*** (3.65)	0.249*** (4.24)	0.242*** (3.14)	0.257*** (2.81)	0.277*** (3.11)	0.277** (2.41)	0.325*** (6.61)	0.363*** (7.01)	0.421*** (5.23)	0.660*** (3.44)	0.723*** (3.80)	0.835*** (3.36)	0.717*** (6.56)	0.759*** (6.98)	0.883*** (5.35)
M&A	0.093 (1.32)	0.095 (1.28)	0.062 (1.11)	0.079* (1.89)	0.077* (1.89)	0.062 (1.47)	0.191*** (3.44)	0.188*** (3.14)	0.153*** (3.35)	0.231 (1.16)	0.219 (1.04)	0.142 (0.64)	0.323** (1.97)	0.331* (1.89)	0.277* (1.67)
CEOchairperson	-0.012 (-0.23)	-0.018 (-0.34)	-0.013 (-0.24)	0.064 (0.92)	0.055 (0.81)	0.080 (1.09)	-0.038 (-0.74)	-0.046 (-0.88)	-0.048 (-0.87)	-0.077 (-0.71)	-0.077 (-0.71)	-0.047 (-0.45)	-0.025 (-0.21)	-0.043 (-0.35)	-0.071 (-0.51)
JOBS Act	-1.18*** (-18.66)	-1.171*** (-19.51)	-1.189*** (-14.32)	-1.168*** (-3.33)	-1.104*** (-3.11)	-1.009*** (-2.86)	-1.469*** (-4.18)	-1.486*** (-4.51)	-1.35*** (-4.15)	-2.39*** (-4.04)	-2.409*** (-4.13)	-2.379*** (-3.65)	-3.263*** (-8.18)	-3.231*** (-9.12)	-3.089*** (-7.46)
FE industry	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included
FE year	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included
N	567	579	479	567	579	479	567	579	479	567	579	479	567	579	479
Pseudo R2	0.0825	0.0822	0.0834	0.1364	0.1344	0.1355	0.1164	0.1034	0.1144	0.1040	0.1034	0.0944	0.0810	0.0816	0.0771

This table presents the results for tests of the sensitivity of SEC reviews to earnings management by IPO firms using the full sample of IPOs between May 2005 and December 2017. Negative binomial regressions are employed in this analysis. The dependent variables reflect the extensiveness of SEC reviews including: *Duration* (Model 1 - 3), *#Letters* (Models 4 - 6), *#Themes* (Model 7 - 9), *#Core-accounting issues* (Model 10 - 12) and *#Non-core-accounting issues* (Models 13 - 15). The independent variables of interest are proxies of earnings management including: *DACC* (Models 1, 4, 7, 10, 13), *ACFO* (Models 2, 5, 8, 11, 14) and *ADISEXP* (Models 3, 6, 9, 12, 15). All variables are defined in Appendix 1.1. The regressions include S-1 filings year fixed effects and industry fixed effects using Fama-French 12 industry. Z-statistics are presented in parentheses below coefficient estimates, and are based on standard errors which are robust and clustered at the industry level. \*, \*\*, and \*\*\* denote significance at the 10%, 5%, and 1% levels, respectively, based on a two-tailed test.



The results for tests of H2 are presented in Table 5.4. To analyse whether the enactment of the JOBS Act in 2012 led to a change in the effectiveness of SEC reviews in addressing earnings quality of IPO registration statements, this study partitions the sample of EGC IPOs into two subsamples of EGC IPOs filing S-1 in pre-JOBS Act era (2005-2011) and post-JOBS Act era (2012-2017).

The results in Table 5.4, Panel A, reveal that the coefficients on *DACC* are significantly different between two subsamples in *#Themes* and *#Non-Core-accounting issues* regressions. Specifically, for *#Themes*, the coefficient on *DACC* is positive and significant only in the subsample of EGC IPOs filing S-1 in the post-JOBS Act era. The finding indicates that only after the passing of the JOBS Act are the SEC likely to cover a wider range of themes in their comment letters in response to higher abnormal accruals, supporting the second hypothesis. For *#Non-core-accounting issues*, the coefficient on *DACC* is significantly negative for the subsample of EGC IPOs filing S-1 in the pre-JOBS Act era, and is insignificant for the post-JOBS Act subsample, suggesting that when detecting EGC IPO firms' degree of abnormal accruals, the SEC no longer increase their focus on non-core-accounting related topics in the post-JOBS Act period.

In Table 5.4, Panel B significant differences in the coefficients on *DISEXP* are observed between the two subsamples in the *#Themes*, *#Core-accounting issues* and *#Non-core-accounting issues* regressions. In particular, for *#Themes*, the magnitude of the coefficient on *ADISEXP* is significantly negative only in the subsample of EGC IPOs filing S-1 in the post-JOBS Act era. Similarly, for *#Core-accounting issues*, the magnitude of the coefficient on *ADISEXP* is significantly negative only in the subsample of EGC IPOs filing S-1 in the post-JOBS Act era, but significantly positive in pre-JOBS Act era. These findings indicate that after the enactment of the JOBS Act, the SEC tend to cover a wider range of themes and provide more core-accounting-related comments for EGC IPOs having lower degree of abnormal discretionary expenses, but they tend to provide less core-accounting-related comments for such firms in the pre-JOBS era. This, to an extent, suggests that only in the post-JOBS era are the SEC effective in addressing income-increasing discretionary-expenses-based earnings management, supporting the second hypothesis. No significant effect of *ADISEXP* on *#Non-core-accounting issues* is observed in either the pre- or post-JOBS Act periods, suggesting that non-core-accounting-related topics are not the focus of SEC reviews when addressing EGC IPO firms' degree of abnormal discretionary expenses.

In Table 5.4, Panel C, significant differences in the coefficients on *ACFO* are observed between the two subsamples for *#Letters* and *#Themes*. Specifically, for *#Letters*, the coefficient on *ACFO* is significantly positive in the post-JOBS Act period, but significantly negative in the pre-JOBS Act period. For *#Themes*, this study observes significantly positive coefficient on *ACFO* only in the post-JOBS Act period. This suggests that SEC reviews have become less effective or ineffective in addressing EGC IPOs' income-increasing sales-based earnings management since the passing of the JOBS Act, in contrast to the second hypothesis.

Overall, this study identifies that only after the passing of the JOBS Act in 2012 do the SEC tend to provide a wider range of themes for EGC IPOs having higher degrees of abnormal accruals, and also cover a wider range of themes and provide more core-accounting-related comments for EGC IPOs with lower abnormal discretionary expenses. These results, in general, indicate that the effectiveness of SEC reviews in detecting income-increasing earnings management through accruals and discretionary expenses manipulation is seen more clearly in the post-JOBS Act era. These findings suggest that the SEC tend to extensively focus on the contents of EGC IPOs' registration statements in order to address the informational deficiencies under the Act to protect investors probably due to their concern about information problems under the Act (Gupta & Israelsen, 2015; Agarwal et al., 2017; Chaplinsky et al., 2017; Barth et al., 2017).<sup>82</sup>

Nevertheless, the findings of this study suggest that SEC reviews are ineffective in addressing income-increasing earnings management through sales manipulation under that Act, as indicated by more SEC comment letters and wider range of themes provided for the EGC IPOs having higher degree of abnormal cash flow from operations. This supports Graham et al.(2005)'s argument that scrutiny from auditors and regulators may not be effective in detecting all forms of REM and hence are likely to leave some areas uncovered, and especially sales-based earnings management which is difficult to detect in IPO firms (Gounopoulos & Pham, 2017; Alhadab & Clacher, 2018).

Moreover, under the JOBS Act, to be eligible for EGC status, an IPO firm is required to have total annual gross revenues less than \$1 billion during the most recently completed fiscal year. Due to this criterion and other criteria of EGC classification (as outlined in the Financial

---

<sup>82</sup> Supporting the conjecture of reduction in information quality around IPOs in the post-JOBS Act era, this study identifies that the level of earnings management through accruals, sales and discretionary expenses manipulation all increase after the passing of the JOBS Act as indicated by the positive coefficients on JOBS Act for all three earnings management proxies as shown in Appendix 5.1.

Reporting Manual, 2019), the SEC’s Division of Corporation Finance, express their concerns that IPO firms may conduct “a transaction for the purpose of converting a non-EGC into an EGC” in order to take advantage of the de-burdening provisions extended to EGC issuers.<sup>83</sup> Thus it is plausible that IPO firms engage in income-decreasing sales-based earnings management in order to meet the gross revenues threshold, which may consequently lead the SEC to place emphasis on sales-decreasing (rather than increasing) manipulation, which could explain the results obtained.

---

<sup>83</sup> <https://www.sec.gov/corpfin/cf-manual/topic-10>

**Table 5.4. SEC reviews on S-1 filings and IPO firms' earnings management in pre- and post-JOBS Act period**

Panel A. Earnings management proxy: abnormal accruals															
	Duration			#Letters			#Themes			#Core-accounting issues			#Non-core-accounting issues		
	Pre-JOBS Act	Post-JOBS Act	Ho: $\beta_{pre-JOBS Act} = \beta_{post-JOBS Act}$ (p-value)	Pre-JOBS Act	Post-JOBS Act	Ho: $\beta_{pre-JOBS Act} = \beta_{post-JOBS Act}$ (p-value)	Pre-JOBS Act	Post-JOBS Act	Ho: $\beta_{pre-JOBS Act} = \beta_{post-JOBS Act}$ (p-value)	Pre-JOBS Act	Post-JOBS Act	Ho: $\beta_{pre-JOBS Act} = \beta_{post-JOBS Act}$ (p-value)	Pre-JOBS Act	Post-JOBS Act	Ho: $\beta_{pre-JOBS Act} = \beta_{post-JOBS Act}$ (p-value)
DACC	0.067** (2.03)	0.025*** (3.19)	0.25	-0.007 (-0.23)	0.043*** (2.56)	0.22	-0.014 (-1.09)	0.075* (1.92)	0.05**	0.069** (2.14)	0.101*** (5.29)	0.44	-0.083*** (-4.09)	0.106 (1.50)	0.02**
LnSize	-0.058 (-1.41)	-0.124*** (-3.95)		-0.045 (-0.78)	-0.086*** (-3.37)		-0.019 (-0.82)	-0.079*** (-4.63)		-0.063 (-1.53)	-0.169*** (-5.45)		-0.016 (-0.43)	-0.086 (-1.24)	
Leverage	-0.001 (-0.38)	0.010* (1.66)		0.001 (0.49)	-0.006 (-0.65)		-0.001 (-0.59)	-0.004 (-0.49)		0.001 (0.44)	-0.045** (-2.31)		-0.001 (-0.43)	-0.016** (-2.06)	
Firm age	-0.007 (-0.51)	0.067 (1.57)		-0.002 (-0.07)	0.108*** (3.73)		0.002 (0.14)	0.167*** (6.94)		-0.019 (-0.80)	0.214*** (4.95)		-0.009 (-0.48)	0.236*** (4.53)	
Segments	0.032 (1.27)	-0.019 (-0.44)		0.005 (0.11)	0.099 (1.18)		-0.009 (-0.29)	0.111 (1.01)		0.059 (1.23)	0.130 (0.88)		0.025 (0.33)	0.109 (0.57)	
Zscore	0.001* (1.73)	0.001 (0.76)		-0.001 (-0.02)	-0.001*** (-3.66)		-0.001*** (-3.21)	-0.001*** (-7.25)		0.001 (0.08)	-0.001 (-1.61)		-0.001*** (-3.96)	-0.001 (-0.32)	
Big4	0.022 (0.23)	-0.118* (-1.75)		-0.149 (-1.45)	-0.020 (-0.16)		0.012 (0.23)	-0.090 (-0.55)		-0.169** (-2.16)	0.304* (1.91)		-0.172* (-1.79)	-0.262 (-1.09)	
Restructuring	-0.053 (-0.51)	0.064 (0.65)		0.103 (0.83)	0.085 (0.45)		0.087 (0.70)	-0.047 (-0.26)		0.047 (0.15)	0.499* (1.73)		0.272 (1.26)	-0.274 (-0.9)	
M&A	0.178 (0.48)	0.289* (1.73)		0.041 (0.39)	0.314*** (4.31)		0.123 (1.28)	0.431*** (3.16)		-0.086 (-0.50)	0.501*** (3.01)		-0.020 (-0.29)	0.807** (2.28)	
CEOchairperson	-0.023 (-0.28)	0.049 (0.42)		0.115 (0.89)	0.222*** (4.16)		-0.045 (-0.61)	0.209*** (3.56)		-0.144 (-1.12)	0.395 (1.64)		0.012 (0.08)	0.453 (1.25)	
FE industry FE year	Included No	Included No		Included No	Included No		Included No	Included No		Included No	Included No		Included No	Included No	
N	222	293		222	293		222	293		222	293		222	293	
Pseudo R2	0.0093	0.0194		0.0183	0.0292		0.0181	0.0311		0.0208	0.0523		0.0045	0.0198	

Panel B. Earnings management proxy: abnormal discretionary expenses

	Duration			#Letters			#Themes			#Core-accounting issues			#Non-core-accounting issues		
	Pre-JOBS Act	Post-JOBS Act	Ho: $\beta_{pre-JOBS Act} = \beta_{post-JOBS Act}$ (p-value)	Pre-JOBS Act	Post-JOBS Act	Ho: $\beta_{pre-JOBS Act} = \beta_{post-JOBS Act}$ (p-value)	Pre-JOBS Act	Post-JOBS Act	Ho: $\beta_{pre-JOBS Act} = \beta_{post-JOBS Act}$ (p-value)	Pre-JOBS Act	Post-JOBS Act	Ho: $\beta_{pre-JOBS Act} = \beta_{post-JOBS Act}$ (p-value)	Pre-JOBS Act	Post-JOBS Act	Ho: $\beta_{pre-JOBS Act} = \beta_{post-JOBS Act}$ (p-value)
ADISEXP	-0.037 (-1.49)	-0.019*** (-4.92)	0.47	-0.015 (-1.03)	-0.002 (-0.21)	0.26	0.030 (1.45)	-0.030* (-1.74)	0.00***	0.054* (1.65)	-0.032*** (-3.75)	0.03**	0.004 (0.18)	-0.049 (-1.43)	0.08*
LnSize	-0.051 (-1.57)	-0.106*** (-3.64)		-0.046 (-0.84)	-0.102*** (-2.97)		-0.019 (-0.62)	-0.128*** (-4.65)		-0.063 (-1.38)	-0.378*** (-2.93)		-0.039 (-0.82)	-0.182*** (-2.78)	
Leverage	-0.002 (-0.49)	-0.001 (-0.10)		0.001 (0.43)	-0.006 (-0.64)		-0.001 (-0.49)	-0.008 (-0.65)		0.001 (0.60)	-0.012 (-0.88)		-0.001 (-0.20)	-0.021* (-1.79)	
Firm age	-0.002 (-0.09)	0.071* (1.77)		-0.001 (-0.03)	0.108** (2.24)		0.001 (0.10)	0.156** (2.09)		-0.020 (-0.74)	0.225 (1.44)		-0.013 (-0.66)	0.261** (2.53)	
Segments	0.017 (0.72)	-0.032 (-0.59)		0.003 (0.05)	0.099 (1.27)		-0.004 (-0.12)	0.079 (0.71)		0.066 (1.38)	0.104 (0.73)		0.025 (0.30)	0.057 (0.28)	
Zscore	0.001 (1.48)	-0.001 (-0.44)		-0.001 (-0.30)	-0.001*** (-2.68)		-0.001*** (-2.86)	-0.001*** (-3.28)		0.001 (0.31)	0.001 (0.14)		-0.001*** (-2.62)	0.001 (0.65)	
Big4	0.031 (0.34)	0.026 (0.72)		-0.143 (-1.5)	0.012 (0.06)		0.006 (0.11)	0.001 (0.00)		-0.165** (-2.04)	0.494** (2.12)		-0.181* (-1.88)	-0.046 (-0.15)	
Restructuring	-0.107 (-0.78)	-0.016 (-0.12)		0.100 (0.85)	-0.044 (-0.20)		0.086 (0.65)	0.160 (0.69)		0.016 (0.05)	1.155** (1.97)		0.295 (1.16)	0.270 (0.72)	
M&A	0.154 (0.40)	0.283* (1.76)		0.020 (0.19)	0.300*** (3.49)		0.135 (1.35)	0.435*** (2.88)		-0.047 (-0.28)	0.436** (2.55)		-0.012 (-0.21)	0.778* (1.83)	
CEOchairperson	-0.005 (-0.07)	0.121 (1.00)		0.148 (1.18)	0.256*** (3.01)		-0.057 (-0.67)	0.183** (2.53)		-0.172 (-1.36)	0.384* (1.68)		0.011 (0.06)	0.288 (0.53)	
FE industry	Included	Included		Included	Included		Included	Included		Included	Included		Included	Included	
FE year	No	No		No	No		No	No		No	No		No	No	
N	196	234		196	234		196	234		196	234		196	234	
Pseudo R2	0.0105	0.0189		0.0230	0.0385		0.0219	0.0313		0.0226	0.0631		0.0046	0.0201	

**Panel C. Earnings management proxy: abnormal cash flow from operation**

	<i>Duration</i>			<i>#Letters</i>			<i>#Themes</i>			<i>#Core-accounting issues</i>			<i>#Non-core-accounting issues</i>		
	Pre-JOBS Act	Post-JOBS Act	Ho: $\beta_{pre-JOBS Act} = \beta_{post-JOBS Act}$ (p-value)	Pre-JOBS Act	Post-JOBS Act	Ho: $\beta_{pre-JOBS Act} = \beta_{post-JOBS Act}$ (p-value)	Pre-JOBS Act	Post-JOBS Act	Ho: $\beta_{pre-JOBS Act} = \beta_{post-JOBS Act}$ (p-value)	Pre-JOBS Act	Post-JOBS Act	Ho: $\beta_{pre-JOBS Act} = \beta_{post-JOBS Act}$ (p-value)	Pre-JOBS Act	Post-JOBS Act	Ho: $\beta_{pre-JOBS Act} = \beta_{post-JOBS Act}$ (p-value)
<i>ACFO</i>	0.043 (0.85)	0.010 (1.23)	0.55	-0.074* (-1.70)	0.020** (2.01)	0.04**	-0.031 (-1.20)	0.033*** (7.75)	0.01***	-0.035 (-1.35)	-0.002 (-0.07)	0.38	0.052 (1.43)	0.041** (2.01)	0.85
<i>LnSize</i>	-0.055 (-1.34)	-0.129*** (-4.51)		-0.039 (-0.69)	-0.107*** (-4.38)		-0.017 (-0.70)	-0.122*** (-5.26)		-0.051 (-1.20)	-0.244*** (-5.32)		-0.035 (-0.86)	-0.170*** (-3.32)	
<i>Leverage</i>	-0.001 (-0.42)	0.009 (1.51)		0.001 (0.43)	-0.004 (-0.52)		-0.001 (-0.59)	-0.001 (-0.12)		0.001 (0.60)	-0.035* (-1.79)		-0.001 (-0.33)	-0.012 (-1.2)	
<i>Firm age</i>	-0.007 (-0.42)	0.073** (2.02)		-0.003 (-0.12)	0.099*** (3.03)		0.001 (0.06)	0.143*** (3.15)		-0.019 (-0.82)	0.200** (2.10)		-0.006 (-0.34)	0.249*** (3.84)	
<i>Segments</i>	0.028 (1.17)	-0.022 (-0.49)		0.006 (0.11)	0.080 (1.02)		-0.006 (-0.17)	0.081 (0.77)		0.058 (1.25)	0.090 (0.55)		0.027 (0.36)	0.095 (0.55)	
<i>Zscore</i>	0.001 (0.94)	0.001 (1.06)		0.001 (1.11)	-0.001** (-2.06)		-0.001** (-2.05)	-0.001** (-2.26)		0.001 (0.23)	0.001 (0.51)		-0.001*** (-4.45)	0.001 (1.52)	
<i>Big4</i>	0.030 (0.31)	-0.142** (-1.97)		-0.153 (-1.63)	-0.034 (-0.27)		0.008 (0.15)	-0.056 (-0.37)		-0.197*** (-2.62)	0.332* (1.69)		-0.145 (-1.30)	-0.251 (-1.19)	
<i>Restructuring</i>	-0.058 (-0.50)	0.076 (0.64)		0.114 (1.06)	0.147 (0.8)		0.092 (0.75)	0.088 (0.43)		0.051 (0.16)	0.752** (2.02)		0.278 (1.20)	-0.057 (-0.18)	
<i>M&amp;A</i>	0.181 (0.48)	0.275* (1.83)		0.041 (0.39)	0.306*** (3.98)		0.120 (1.25)	0.442*** (3.21)		-0.083 (-0.49)	0.485*** (2.60)		-0.030 (-0.46)	0.840** (1.99)	
<i>CEOchairperson</i>	-0.017 (-0.23)	0.052 (0.42)		0.109 (0.82)	0.193*** (3.37)		-0.049 (-0.63)	0.143** (2.16)		-0.133 (-1.11)	0.278 (1.23)		0.010 (0.06)	0.288 (0.77)	
<i>FE industry</i>	Included	Included		Included	Included		Included	Included		Included	Included		Included	Included	
<i>FE year</i>	No	No		No	No		No	No		No	No		No	No	
<i>N</i>	225	302		225	302		225	302		225	302		225	302	
<i>Pseudo R2</i>	0.0085	0.0192		0.0229	0.0299		0.0179	0.0276		0.0203	0.0501		0.0037	0.0189	

This table presents the results of tests of the sensitivity of SEC reviews to earnings management separately for IPOs in the pre-JOBS Act period (2005-2011) and the post-JOBS Act period (2012-2017). Panels A, B, and C present analyses in which proxy of earnings management is abnormal accruals, abnormal cash flow from operations, and abnormal discretionary expenses, respectively. The dependent variables reflect the extensiveness of SEC reviews including: *Duration*, *#Letters*, *#Themes*, *#Core-accounting issues* and *#Non-core-accounting issues*. All variables are defined in Appendix 1.1. Negative binomial regressions are employed which include industry fixed effects using the Fama-French 12 industry classification. Z-statistics are presented in parentheses below coefficient estimates, and are based on standard errors which are robust and clustered at the industry level. P-values from hypothesis tests of equality between coefficients on earnings management proxies across the pre and post-JOBS subsamples of pre- and post-JOBS Act period are reported alongside the regression results. \*, \*\*, and \*\*\* denote significance at the 10%, 5%, and 1% levels, respectively, based on a two-tailed tests.

## 5.6. Conclusion

SEC reviews of IPO registration statements play an important role in promoting investor protection, however, only limited evidence exists on whether the SEC achieve their proposed targets of monitoring and enhancing the quality of information available to investors. This chapter aims to fill this gap by examining the effectiveness of SEC reviews in addressing deficiencies in earnings quality within IPO registration statements. Specifically, this study examines the relationship between the extensiveness of SEC reviews and the degree of earnings management by IPO firms in the year prior to the filing year.

This study finds that the SEC is likely to spend more time, issue more letters, cover a wider range of themes and provide more core-accounting-related comments in their comment letters when IPO firms have higher degrees of AEM. This study also identifies that IPO firms with lower levels of discretionary expenses or higher level of discretionary-expenses-based REM are likely to experience a longer SEC review duration. On the other hand, the SEC are likely to spend more time and focus on topics other rather than core-accounting topics when IPO firms have lower levels of sales-based earning management.

In general, the above findings suggest that SEC reviews do not sufficiently detect all forms of earnings management. Specifically, SEC reviews are effective in addressing income-increasing earning management by IPO firms through accruals-based and discretionary-expenses-based manipulations, but ineffective in detecting sales-based manipulations. While these findings can only result in partial acceptance of the main hypotheses, the findings are in agreement with the argument that sale-based earnings management is not likely to be uncovered by auditors, investors and regulators (Cohen et al., 2008; Graham et al., 2005). Many IPO firms are characterised by high sales growth which may exacerbate the difficulties in detecting earnings management through sales-based manipulation (Gounopoulos & Pham, 2017; Alhadab & Clacher, 2018).

To gain additional insight into the impact of the JOBS Act on SEC reviews, the sensitivities of SEC reviews to earnings management for IPOs are compared between the pre- and post-JOBS Act eras. It is observed that after the JOBS Act, the SEC is likely to increase the range of themes for EGC IPOs having higher degree of abnormal accruals. For EGC IPOs having higher degree of discretionary-expense-based earnings management, the SEC tends to cover a wider range of themes and provide more core-accounting-related comments under the Act. These findings indicate that the effectiveness of SEC reviews under the JOBS Act are equally if not

more effective in addressing income-increasing earnings management through accruals and discretionary expenses manipulation, perhaps since the JOBS Act's de-burdening provisions raises more concerns regarding information quality (Gupta & Israelsen, 2015; Agarwal et al., 2017; Chaplinsky et al., 2017; Barth et al., 2017). Consequently, the SEC focus their attention on specific issues within IPO disclosures (including earnings management) to address material deficiencies in disclosure quality, in order to protect investors. Furthermore, the negative relationship between review extensiveness and the degree of sales-based manipulation is found to be manifest only in the post-JOBS period, suggesting the ineffectiveness of SEC reviews in detecting sale-based REM. This maybe because the SEC tend to focus on sale-decreasing manipulation as they are concerned that IPO firms may to opportunistically decrease their sales meet the gross revenues threshold of EGC status.

The findings in this chapter offer policy implication for regulatory bodies and suggest that monitoring mechanisms should be developed further in order to more effectively constrain IPO firms' incentives to manage earnings within their registration statements. Specifically, the empirical findings imply that the SEC do not effectively uncover REM through sales-based manipulations, though this form of earnings management commonly occurs in the IPO context (Alhadab & Clacher, 2018; Alhadab et al., 2015; Gounopoulos & Pham, 2017 and Wongsunwai, 2013). It could be because, in the IPO context, sales-based manipulation is difficult to uncover as high sales growth is a typical feature of going-public firms (Gounopoulos & Pham, 2017; Alhadab & Clacher, 2018). Cohen et al. (2008) and Graham et al. (2005) also argue that earnings management through sales manipulation is infrequently detected by auditors, investors, and regulators. In addition, the SEC may prioritise sales-decreasing (rather than sales-increasing) manipulation as they may be concerned that IPO firms are likely to manage earnings downward in order to achieve the gross revenue threshold of less than \$1 billion in the most recent fiscal year to be qualified for EGC status under the JOBS Act. For that reason, the SEC should expand their review scope by concentrating on a broader range of earnings management techniques to strengthen investor protection.

Furthermore, the findings should also be of interest to regulators in other countries currently using, or considering the adoption of, a filing review process. For example, South Korea conducts national accounting inspections that may be analogous to filing reviews conducted by the SEC (Kim, 2019). The findings would be also instructive for other legislations beginning to develop the capital market where the monitoring mechanisms of the market are in their



infancy, e.g. Vietnam (World Bank, 2019). The countries having weaker established financial reporting and auditing standards, e.g. Germany or Italy (Enriques, 2005), weaker investor protection, e.g., Greece, Thailand, Indonesia (Leuz et al., 2003), than the U.S or even lacking these monitoring mechanisms should also take the findings in this study into their consideration. Specifically, as the SEC is identified to be effective in monitoring the informational environment in the U.S stock markets, other countries can learn from the SEC's monitoring mechanism to develop or improve their disclosure and reporting regulatory reviews more effectively.

In addition, the empirical findings indicate that while registration requirements of financial reports are relaxed under the JOBS Act, SEC reviews continue to protect investors from accrual-based and discretionary-expense-based earnings management. Therefore, to some extent, SEC comment letters can be still considered as a valuable source of information about the quality of S-1 filings under the JOBS Act in some important respects.

It is also worth noting that this study has some limitations. This study focuses a sample of only U.S. IPOs, hence the generalizability of the findings may be a concern. Examining the regulatory oversight of IPO registration statements in other countries (e.g. UK, Canada, Japan, South Korea) could be an important avenue for future research. For instance, South Korea executes national accounting investigations which are similar to SEC filing reviews in the U.S. (Kim, 2019). Furthermore, as this study only focuses on the effectiveness of SEC reviews in addressing (i.e. highlighting) earning management by IPO firms, future research is needed to examine whether they lead to improvements in information quality within the registration statements. This would be useful to investors, regulators, and other stakeholders as they offer a more complete picture of the effectiveness of the SEC reviews. Moreover, the difficulty in detecting sales-based earnings management by IPO firms may also pose a limitation to the study. Specifically, it might be that it is the proxy used in this study that does not effectively detect sales-based REM, rather than a failing on the part of the SEC. Srivastava (2019) argues that measures of sales-based REM can be misspecified, as the assumption that all firms in an industry have the same cost and cash flow patterns in the absence of earnings management is usually violated. Therefore, future research is required to thoroughly examine whether detection of sales-based earnings management is a challenge for the SEC, and if so, what approaches or techniques could help to improve their effectiveness at addressing this form of manipulation.

## 6. Summary and Conclusion

### 6.1. Introduction

This thesis investigates the determinants and effectiveness of SEC reviews on the quality of IPO registration statements in the United States between May 12<sup>th</sup>, 2005 and December 31<sup>st</sup>, 2017. Three main research questions are examined in this thesis: (i) how the extensiveness of SEC reviews on S-1 filings relates to IPO firms' characteristics; (ii) how the "de-burdening" provisions under the JOBS Act affect the IPO approval process; and (iii) whether SEC reviews effectively address earnings quality of IPO registration statements.

SEC reviews perform a more prominent role in addressing disclosure quality of IPO firms (e.g. they review all IPO registration statements, instead of a subset as they do with annual reports) as the IPO environment is characterised by particularly high uncertainty. Nevertheless, recent studies have primarily examined SEC reviews of filings other than IPO registration statements (e.g. annual reports, 8-K filings). Thus far, there has been limited prior work investigating SEC reviews of IPO registration statements (Agarwal et al., 2017; Colaco et al., 2018; Ertimur & Nondorf, 2006, Lowry et al., 2020), and they focus on a narrow range of factors affecting the SEC review (e.g. managerial expertise, corporate governance, industry characteristics).

Understanding SEC reviews of IPO registration statements, in particular the key drivers of the review (e.g. the characteristics of IPO firms), is vital because investors normally rely on details revealed in the statements when forming their investments decisions. In addition, evidence about how IPO characteristics affect SEC reviews can deepen issuers' understanding of which contents in their registration statements attract SEC scrutiny, which may improve the quality of their future disclosures. In general, this thesis documents that SEC reviews of IPO registration statements are more extensive for bigger and older firms, firms with more business segments, lower growth rates, engaging in M&A transactions, having more external funds, reporting profits, experiencing greater probabilities of bankruptcy and for firms not audited by high-quality auditors.

"De-burdening" provisions under the JOBS Act aimed to relax IPO approval process (i.e. SEC review) in order to revitalize IPO activity. Although the volume of IPOs rose over the first two years of the post-JOBS period, they have significantly declined again since then (Zeidel, 2016), raising doubts about the success of the Act. Until now, there is a lack of research in the literature that systematically investigates how SEC review extensiveness has changed under the JOBS

Act. Prior research concentrates primarily on adjustments in language (Agarwal et al., 2017) and focused areas (Agarwal et al., 2017; Lowry et al., 2020) of SEC comment letters under the JOBS Act. It is useful to examine the extent to which the JOBS Act decreased SEC review extensiveness to further understand the impact of the Act in de-burdening IPO approval process. This is critical to many stakeholders (e.g. investors) who have been using SEC comment letters as a measure of IPO registration statements' information quality. Overall, this thesis documents substantial decreases in SEC review extensiveness under the JOBS Act.

Moreover, the SEC has long paid attention to erosion in financial information quality due to aggressive earnings management (Levitt, 1998). Evaluating the effectiveness of SEC reviews in detecting earnings management by IPO firms, in particular, is important as hardly any information about IPO companies is available outside of the registration statements – thus, they have a significant influence on investors assessing the registration quality. Investors often typically focus on SEC's comment letters to assess IPO firms' earnings quality and the reliability of their financial statements (Johnston & Petacchi, 2017).

Among the studies evaluating the efficacy of SEC examination, only Schuldt & Vega (2018) specifically examine the effectiveness of SEC reviews in assessing the earnings quality of IPO registration statements, employing discretionary revenue as a metric for earnings management and concentrating on the period from 2004 to 2009. The gap in literature, accordingly, accentuates the need to examine whether and to what extent the effectiveness of SEC monitoring of IPOs has been affected by recent legislative reforms, such as the Dodd-Frank Act in 2010 and the JOBS Act in 2012. On the whole, this study finds that SEC reviews are effective in detecting income-increasing AEM and income-increasing discretionary-expense-based REM. However, it is observed that the SEC do not overcome the challenges in uncovering sales-based REM (Cohen et al., 2008 and Graham et al., 2005)

This chapter summarises three empirical studies contained in this thesis, contrasts the results with those observed in previous related research, and sets them within the broader context, drawing general conclusions. The three empirical studies provide important empirical findings on: the sensitivities of SEC reviews of IPO registration statements to IPO firm characteristics; the impact of “de-burdening” provisions of the JOBS Act on SEC reviews; and the effectiveness of SEC reviews in addressing earnings quality within IPO registration statements. Furthermore, this chapter also discusses implications for policymakers and other market

participants. Limitations and possible avenues for further research are also outlined in this chapter.

## **6.2. Summary of the main findings**

How SEC reviews of IPO registration statements are influenced by IPO firm characteristics is analysed in Chapter three. It is observed that larger firms typically experience a longer SEC review period and receive more comment letters, more comments and comments on a broader range of themes compared with smaller IPO firms. The range of themes addressed in SEC comment letters is also found to be greater for IPO firms with more business segments or carrying out M&A transactions, which are both indicators of more complicated operations. Firms performing M&A transactions also receive more comments within SEC comment letters. While firms with lower sales growth rates are likely to have less complicated operation, this study finds that they typically experience more extensive SEC reviews, perhaps as a consequence of the SEC's concerns about the firms' sales-decreasing distortions by firms in order to qualify for EGC status under the JOBS Act.

IPO firms in a vulnerable financial condition, as indicated by greater likelihood of bankruptcy, lower utilisation of external funding or report profits, are found to encounter longer SEC reviews, consistent with incentives to distort reported financial condition. IPO firms having greater likelihood of bankruptcy are also observed to receive more comment letters, more comments and comments on a broader range of themes within SEC comment letters. High quality auditors, i.e. Big 4 auditors, appear to help reduce the extensiveness of SEC reviews, as indicated by shorter SEC reviews and a narrower range of themes cited. Generally speaking, this thesis sheds light on increases in SEC S-1 review extensiveness experienced by bigger and older firms, firms undertaking more business segments, attaining reduced growth rates, doing M&A transactions, having more external funds, reporting positive earnings, suffering from greater likelihoods of bankruptcy and not audited by top-quality auditors.

The findings above are in line with prior research providing evidence that SEC reviews are more extensive for bigger firms (Cassell et al., 2013; Ertimur & Nondorf, 2006; Li & Liu, 2017; Lowry et al., 2020), older firms (Baugh et al., 2017; Cassell et al., 2013; Colaco et al., 2018; Johnston & Petacchi, 2017), firms carrying out more complex business (Cassell et al., 2013; Duro et al., 2017; Heese et al., 2017), having the less healthy financial condition (Baugh et al., 2017; Cassell et al., 2013; Duro et al., 2017; Wang, 2016) and low auditor quality (Cassell

et al., 2013; Colaco et al., 2018). Additionally, IPO firms are identified to bear higher remediation costs when they receive comments on core accounting issues, non-core accounting issues, business issues and disclosure issues. In particular, the remediation costs for comments on core accounting issues are observed to be highest. The increase in SEC review extensiveness for bigger IPO firms, IPO firms having greater external financing and IPO firms having greater likelihood of bankruptcy is found to have been more pronounced during the global financial crisis period of 2008-2009.

Chapter four investigates how the “de-burdening” provisions of the JOBS Act affect the extensiveness of SEC reviews of IPO registrations statements. The main findings show the decline in the number of comment letters, comments and issues mentioned in each SEC comment letter for EGC IPOs' S-1 filings following the enactment of the JOBS Act in 2012. A considerable reduction in the time frame that SEC spend examining EGC IPOs' S-1 filing following the Act is also observed, although non-EGC IPOs also experience such reduction. These findings, generally, imply significant de-burdening of SEC scrutiny of EGC IPOs' approval process under the JOBS Act, in agreement with the strand in the JOBS Act literature documenting the benefits of the Act to small going-public firms (Dambra et al., 2015, 2018).

Heterogeneous impacts of the JOBS Act on the SEC approval process are also observed. In particular, when market concentration is high, the SEC is less likely to reduce the number of SEC comment letters, the number of comments and the number of issue types for EGC IPOs after the JOBS Act. This suggests that the SEC are careful to maintain their pronounced goals of safeguarding investors against in industries where information uncertainty and the proprietary costs of disclosure are elevated (Chen & Johnston, 2010; Colaco et al., 2018; Ertimur & Nondorf, 2006). In addition, it is found that, in the aftermath of the JOBS Act, the SEC focus proportionally more on non-core accounting issues and offering issues, yet concentrate less on business and disclosure issues.

Chapter five investigates the effectiveness of SEC reviews in monitoring the earnings quality of IPO registration statements. This study employs the following three earnings management proxies as independent variables: abnormal accruals to capture accrual-based earnings management, as well as abnormal cash flow from operation and abnormal discretionary expenses to capture REM. Pertaining to abnormal accruals, this study employs the cross-sectional modified Jones (1991) model designed by Dechow et al. (1995) to estimate the abnormal accruals. Abnormal cash flow from operation and abnormal discretionary expense

are estimated by employing the specification of Dechow et al. (1998)'s model constructed by Roychowdhury (2006). These earnings management metrics are also adjusted for abnormal accruals of a performance-matched non-IPO firm by utilizing a technique designed by Kothari et al. (2005) to conquer the problems of model misspecification.<sup>84</sup>

Supporting the effectiveness of SEC reviews in addressing disclosure quality, the findings show that the SEC typically spend more time reviewing IPO firms with higher estimated levels of income-increasing discretionary-expense-based REM and greater income-increasing AEM. Higher accruals earnings management is also found to be associated with more comment letters, and more comment themes, especially more core-accounting-related themes. On the other hand, the effectiveness of SEC reviews in detecting IPO firms' earnings management appears limited, since SEC is observed to take a longer time (rather than a shorter time), and provide more non-core-accounting-related rather than core-accounting-related comments, when IPO firms have lower income-increasing sales-based earning management. This is in line with arguments that uncovering the sale-based manipulations is challenging (Cohen et al., 2008 and Graham et al., 2005) since upwards sales distortions are obfuscated by high-growth rates, which is a common characteristic of IPO firms (Gounopoulos & Pham, 2017; Alhadab & Clacher, 2018).

It is also found in Chapter five that, after the passing of the JOBS Act, a wider range of themes are likely to be received by EGC IPOs with greater income-increasing earnings management through accruals or discretionary-expense-based manipulations. Discretionary-expense-based earnings management is also observed to be associated with more core-accounting-related comments under the JOBS Act. These findings suggest that SEC reviews of S-1 filings' continue to be effective in addressing earning quality under the JOBS Act. This may be because the SEC remains vigilant to more pervasive informational issues (e.g. earnings management) under the JOBS Act (Gupta & Israelsen, 2015; Agarwal et al., 2017; Chaplinsky et al., 2017; Barth et al., 2017), despite the regulatory burden being relaxed on the whole. On the other hand, the ineffectiveness of SEC reviews in addressing income-increasing sales-based earnings management is observed even after the enactment of the JOBS Act. This may be due to

---

<sup>84</sup> Abnormal production costs is not employed as an indicator of real earnings management due to data limitations, the low probability of production costs manipulations in the IPO context (Wongsunwai, 2013) and the scarcity of manufacturing firms in the sample, who are claimed to frequently use production cost manipulation to manage the earnings number (Alhadab & Clacher, 2018).

concerns that issuers opportunistically lower their sales so as to fulfill the requirements for the EGC status under the Act.

**Table 6.1. Summary of empirical findings**

Research questions	Hypotheses	Findings	Key articles
How do the characteristics of IPO firms affect the extensiveness of SEC reviews?	<b>H1<sub>alternative</sub></b> : SEC reviews of IPO registration statements are likely to be more intense for bigger issuers.	The SEC spend more time reviewing S-1 filings, issue more comment letters, more comments and a wider range of themes for initial S-1 filings prepared by bigger IPO firms → supporting <b>H1<sub>alternative</sub></b>	Cassell et al. (2013), Ertimur and Nondorf (2006)
	<b>H2<sub>alternative</sub></b> : SEC reviews of IPO registration statements are likely to be more intense for older issuers.	Older IPO firms experience longer SEC review duration and receive more comment letters → supporting <b>H2<sub>alternative</sub></b>	
	<b>H3<sub>alternative</sub></b> : SEC reviews of IPO registration statements are likely to be more intense for issuers with greater complexity in their business.	<ul style="list-style-type: none"> <li>IPO firms having more business segments are identified to receive a wider range of themes in SEC comment letters. More comments and a wider range of themes in SEC comment letters are also received by IPO firms conducting M&amp;A activities → supporting <b>H3<sub>alternative</sub></b></li> <li>IPO firms with lower sales growth, who might have less business complexity, are observed to experience longer SEC review duration → not supporting <b>H3<sub>alternative</sub></b></li> </ul>	
	<b>H4<sub>alternative</sub></b> : SEC reviews of IPO registration statements are likely to be more intense for issuers having more fragile financial health.	IPO firms having a higher probability of bankruptcy are identified to have longer SEC reviews, receive more comment letters, more comments and more themes in the comment letters. More profitable IPO firms are also observed to experience longer SEC reviews. The results also reveal that shorter review times are experienced by IPO firms using more external financing → supporting <b>H4<sub>alternative</sub></b>	
	<b>H5<sub>alternative</sub></b> : SEC reviews of IPO registration statements are likely to be less intense for issuers that are audited by a Big 4 auditor.	Shorter reviewing time and fewer comments are experienced by IPO firms audited by Big4 auditors → supporting <b>H5<sub>alternative</sub></b>	
	<b>H6<sub>alternative</sub></b> : SEC reviews of IPO registration statements are likely to be more intense for issuers with the duality between the CEO and Chair positions.	No impact of the duality between the CEO and Chair positions is identified → not supporting <b>H6<sub>alternative</sub></b>	
How does the extensiveness of	<b>H1<sub>alternative</sub></b> : SEC reviews of IPO registration statements are likely	The SEC issue fewer comment letters. The initial comment letter	Barth et al. (2017),

<p>SEC reviews change under “de-burdening” provisions of the JOBS Act?</p>	<p>to be less intense under the JOBS Act.</p>	<p>includes fewer comments and covers a narrower range of themes, in the post-JOBS era → supporting <b>H1<sub>alternative</sub></b></p>	<p>Chaplinsky et al. (2017),</p>
	<p><b>H2<sub>alternative</sub></b>: The reductions in the extensiveness of SEC reviews following the JOBS Act to be less pronounced for IPOs in more highly concentrated industries.</p>	<p>The extent of de-burdening is less pronounced for IPOs in more concentrated industries → <b>support H2<sub>alternative</sub></b></p>	
<p>Do SEC reviews effectively address the quality of earnings reported in IPO registration statements?</p>	<p><b>H1<sub>alternative</sub></b>: IPO firms engaging in greater income-increasing earnings management when preparing S-1 filings are likely to experience more extensive SEC reviews.</p>	<ul style="list-style-type: none"> <li>• The SEC is likely to spend more time, issue more letters, cover a wider range of themes and provide more core-accounting-related comments in their comment letters when IPO firms have higher degrees of AEM. IPO firms with lower levels of discretionary expenses or higher levels of discretionary-expenses-based REM are likely to experience a longer SEC review duration. → supporting <b>H1<sub>alternative</sub></b></li> <li>• The SEC are likely to spend more time and focus on topics other rather than core-accounting topics when IPO firms have lower levels of sales-based earning management → not supporting <b>H1<sub>alternative</sub></b></li> </ul>	<p>Colaco et al. (2018), Ertimur &amp; Nondorf, (2006), Li &amp; Liu (2017) Schuldt &amp; Vega (2018), Lowry (2020)</p>
	<p><b>H2<sub>alternative</sub></b>: The increase in SEC review extensiveness for EGC IPOs having higher level of income-increasing earnings management is more pronounced under the JOBS Act.</p>	<ul style="list-style-type: none"> <li>• After the JOBS Act, the SEC is likely to increase the range of themes for EGC IPOs having a higher degree of abnormal accruals. For EGC IPOs having a higher degree of discretionary-expense-based earnings management, the SEC tends to cover a wider range of themes and provide more core-accounting-related comments under the Act → supporting <b>H2<sub>alternative</sub></b></li> <li>• The negative relationship between review extensiveness and the degree of sales-based manipulation is found to be manifest only in the post-JOBS period → not supporting <b>H2<sub>alternative</sub></b></li> </ul>	



### **6.3.Implications**

This thesis offers several policy recommendations for regulatory bodies and other market participants (e.g. investors and IPO issuers).

Regarding the implication for investors, the empirical findings in this study suggest that the investors can use information obtained from the SEC comment letters to evaluate the earnings quality of IPO registration statements, as the SEC is demonstrated to effectively detect the IPO firms' earnings management through accruals-based and discretionary-expense-based manipulations. In addition, the empirical findings of less burdensome SEC reviews under the JOBS Act suggests investor are less protected after the passage of the Act. Despite SEC reviews being effective in detecting earnings management under the JOBS Act, they become more limited in scope, on the whole, particularly when proprietary cost concerns are low. Chaplinsky et al. (2017) argues that while the JOBS Act potentially offers considerable benefits to issuers, none of them seem significantly adequate to counterbalance the general increase in the cost of capital under the Act. When obtaining the materials from IPO registration statements as well as the SEC comment letters for the investment decisions, investors should bear in mind the potential informational issues resulting from relaxed reporting requirements under the Act.

In terms of the policy implication for regulatory bodies, the empirical findings imply that, to further lower IPO firms' incentives to conduct earnings management when preparing their IPO disclosures, more effective monitoring mechanisms need to be developed. Specifically, this study suggests that the SEC should pay more attention to forms of earnings management other than accruals-based and discretionary-based manipulations. Empirical findings in this study highlight the SEC's seeming ineffectiveness in detecting REM through sales-based manipulations, despite this type of earnings management being commonly employed by going-public firms (Alhadab & Clacher, 2018; Alhadab et al., 2015; Gounopoulos & Pham, 2017 and Wongsunwai, 2013). There are various other forms of earning management that often occur in the IPO context such as small loss avoidance (Burgstahler & Dichev, 1997), and timely loss recognition (Basu, 1997). Therefore, the SEC should expand their review scope by focusing on a broader range of earnings management forms in order to constrain IPO firms' discretionary behaviours and enhance investor protection.

This study also provides contributions to non-US stakeholders (e.g. regulators) regarding the IPO approval process. As there are many similarities in securities regulation between the U.S

and other countries (e.g. the EU, UK), the findings about the focus of the SEC on firms' characteristics may be applied beyond the U.S. capital markets. In addition, the findings of the focus of the SEC on firms' characteristics and the effectiveness of the SEC review in addressing informational deficiencies in IPO registration statements would be useful to regulators in other countries who are replicating the filing review process in the US markets as well as developing or improving their monitoring mechanisms to be more effective. Concerning the implications for IPO issuers, the empirical results in this thesis indicate that the involvement of high-quality auditors (e.g. Big 4) in the preparation of IPO registration could decrease the extensiveness of SEC reviews, and hence speed up the IPO approval process. According to Alhadab & Clacher (2018), the existence of a Big 4 auditor from a regulatory viewpoint might be seen to restrict manipulating behaviours, because a Big 4 auditor possesses better technology and has greater experience in uncovering material informational deficiencies, as compared with smaller audit firms. Furthermore, due to the higher litigation risk experienced by a Big 4 auditor, they are more careful when examining audit documents. Consequently, being audited by a Big 4 auditor can enhance confidence in the IPO firm's disclosures, resulting in less regulatory scrutiny. This implication should be viewed with caution as an audit fee premium is usually charged by Big 4 auditors which may exceed any benefits.

The findings on the remediation costs associated with the S1 filings' issue types would also be of interest to issuers. According to Deloitte (2013) and Johnson (2010), remediation costs consist of deviations in duration and expended resources, compared with standard procedures, which might influence firms' capability to enter the capital markets via an IPO. As core accounting issues are identified to have the highest cost of remediation, this implies that issuers should be aware of which potential issues in their financial statements are likely to attract SEC scrutiny, in order to mitigate such issues and enhance the quality of their disclosures. By doing so, issuers could reduce their remediation efforts when deficiencies are uncovered and hence speed up their IPO process.

Although previous research demonstrates that the JOBS Act enactment resulted in informational issues (Barth et al., 2017), with no substantial decline in the issuers' direct costs (Chaplinsky et al., 2017), this thesis documents the JOBS Act did have a significant impact in term of de-burdening of the IPO approval process. From a corporate point of view, the empirical findings in this thesis are useful to going-public firms who are considering the potential benefits of the JOBS Act to decide whether they should adopt the EGC status when

undertaking their IPOs. However, as the IPO approval process is de-burdened and hence sped up under the JOBS Act, the number of firms going public, and the number of successful IPOs might increase, resulting in more extensive competition in the capital markets. Dambra et al. (2015) demonstrate that a significant expansion occurred in the U.S. IPO markets since the enactment of the JOBS Act, with an increase of 21 IPOs per year. Therefore, going-public firms should pay closer attention to their competitive strength as well as the competitive environment when deciding to undertake IPOs under the JOBS Act.

Furthermore, as the understanding of the SEC review process is more difficult for foreign IPOs who have less knowledge about the U.S capital market than domestic issuers, the results on which corporate factors may attract the SEC's scrutiny will undoubtedly be more beneficial to international issuers. In addition, the foreign issuers will be interested in the findings on the reporting de-burdening of the U.S. IPO approval process under the JOBS Act in this study, as it would help them to worry less about the pressure of the U.S. regulatory system when considering whether to list their stocks in the U.S or other countries.

**Table 6.2. Summary of policy implications**

Investors	Investors could base on the information obtained from the SEC comment letters to evaluate the earnings quality of IPO registration statement
	Investors should bear in mind the potential informational problems derived from the limited scope of the SEC monitoring mechanisms under the JOBS Act
SEC	The SEC should pay more attention to other forms of earnings management rather than accruals-based and discretionary-based manipulations
Non-US regulators	Regulators in other countries, who have similar capital regulations as compared with the U.S., may also focus on firms' characteristics when reviewing corporate disclosure. Similarly, regulators in other countries, who are replicating the filing review process in the US markets or improving their monitoring mechanisms to be more effective, can learn from the SEC who, the findings in this study suggest, effectively addressing informational deficiencies in IPO registration statements.
IPO issuers	IPO issuers should involve a Big-4 auditor in their preparation of IPO registration statements so as to enhance the confidence of the reporting information which could help attracts less the regulatory scrutiny and speed up their IPO process
	IPO issuers should be aware of which potential issues in their financial statements would attract the SEC scrutiny in order to prevent the occurrence of these issues, which could reduce their remediation efforts and hence faster their IPO process

---

IPO issuers should consider adopting the EGC status when undertaking their IPOs in order to receive the potential benefits of the JOBS Act in terms of the de-burdening of IPO approval process

---

IPO issuers should pay closer attention to their competitive strength as well as the competitive environment when undertaking IPOs under the JOBS Act

---

Foreign IPOs, who usually have difficulties in accessing information about the U.S capital stock market, should gain more understanding about the SEC review process.

---

Due to the de-burdening approval process under the JOBS Act, Foreign IPOs should worry less about the pressure of the U.S. regulatory system when considering whether to list their stocks in the U.S or other countries.

---

#### **6.4. Limitations and suggestions for future research**

The inferences drawn in this thesis are subject to some limitations which should be under consideration or addressed in future research. First, a notice needs to be placed on *IPO Duration*, which is used as an attribute of SEC review extensiveness in this study. The length of the IPO process may also be driven by factors other than SEC reviews extensiveness, such as the length of the marketing or execution phases. In particular, the delay between the closing date of SEC reviews and the publishing date of the SEC comment letters are also included in this attribute. For that reason, the empirical findings associated with *Duration* need to be interpreted carefully.

Second, whilst this thesis sheds light on considerable variations in SEC review extensiveness under the JOBS Act, the empirical results do not, on their own, examine how the informational quality of IPO registration statements directly are affected under the Act. In general, a more thorough revision requested by the SEC might enhance the IPO disclosure quality to some degree. Nevertheless, if the JOBS Act is seen to reduce the reporting burden on IPO firms, and facilitate the IPO process, the advantages with respect to supporting capital creation could still surpass the costs of increased informational problems. Conversely, firms going public under the JOBS Act tend to voluntarily disclose more information to reduce information asymmetry and increase information transparency (Barth et al., 2017). Consequently, the net impact of the Act on the quality of IPO registration statements is unclear. Hence, there is an interesting opportunity for future research to examine the effect of the JOBS Act "de-burdening" provisions on the quality of IPO registration statements directly.

Third, as the JOBS Act provides EGC IPOs with the option to take reporting exemptions including providing only two years rather than three years of financial statements and reduced

disclosure of compensation discussion and analysis (CD&A), this may mechanically result in S-1 filings containing less information. Chaplinsky et al. (2017) identify that 50% and 95% of EGC IPOs adopt the exemptions for reduced financial statements and CD&A disclosure, respectively. It is plausible that the reduction in SEC review extensiveness is driven by the reduction in the amount of information contained in S-1 filings rather than a reduction in regulatory scrutiny. Therefore, future research could distinguish between reduced disclosure or reduced scrutiny as explanations for less extensive SEC critiques.

Fourth, this thesis solely focuses on the U.S. IPO market, thus the empirical findings might not be generalisable to other jurisdictions. Investigating equivalent monitoring mechanisms in the other nations' IPO markets (e.g. UK, Canada, Japan, South Korea) could be an interesting approach for future analysis.

Fifth, while this thesis explores whether the SEC effectively detect earnings management activity manifest in the initial S-1 filing, the effectiveness of the SEC regulatory oversight in preventing attempts to manage earnings, and reducing the overall level of earnings management (indicated by enhancements in information quality between successive drafts of the IPO registration statements) would be fruitful area for further examination. This would be useful to investors, regulators and other stakeholders as it would offer a more complete picture of the effectiveness of SEC reviews.

Sixth, the challenges in uncovering sales-based earnings management in the IPO context may also pose a limitation to this thesis. In particular, rather than SEC reviews being ineffective in addressing income-increasing sales-based REM, it may be that the metric employed in Chapter five might not accurately capture sales-based manipulation by S-1 filers. Accordingly, future research would be worthwhile to comprehensively investigate whether SEC reviews are indeed ineffective in uncovering sales-based manipulation, and if that is the case, what strategies or methods the SEC could adopt to respond to such challenges.

Seventh, this study focuses only on IPO firm characteristics and their influence on the extensiveness of SEC review. Factors other than firm characteristics may also affect SEC reviews, such as SEC workload (Köchling et al., 2021). Exploring the impact of broader factors on SEC reviews may be a fruitful avenue for future research.

Eighth, it is not uncommon to omit financial firms in corporate finance research because they have many differences in their business models and financial reporting compared with other

firms. For example, high leverage is likely to have a different connotation for these firms than it does for non-financial enterprises, where high leverage more typically implies financial distress (Fama & French, 1992). However, excluding financial firms may present an incomplete picture of the effectiveness of SEC reviews. During the global financial crisis of 2008-2009, the SEC was criticised for its ineffective control of capital markets, potentially enabling bad behavior in financial firms (Moyer, 2008). Accordingly, Chair Mary Jo White (2017) claims that one of the SEC's key efforts in the future is to improve the quality of the public disclosure of financial institutions to enhance investor protection.<sup>85</sup> Pettinicchio (2020) identifies that banks overestimating loan loss provisions are more likely to receive SEC comment letters. After receiving SEC comment letters, financial institutions are also observed to reduce the level of discretion in their calculation of loan loss provisions. However, Pettinicchio (2020) focuses on the SEC review on periodic financial statements rather than IPO prospectuses. Therefore, a fruitful area for future research would be to address the effectiveness of the SEC review of financial firms' disclosures in the IPO context.

Finally, although both proxies of remediation cost, that is, the length of time from the date when IPO firms receive the initial S-1 filing to the IPO effective date and the number of rounds, could reflect the amount of internal and external resources used in the IPO firm's correspondence with the SEC (Cassell et al., 2013), the empirical findings associated these proxies should be considered with caution as they are not direct indicators of remediation cost.

---

<sup>85</sup> [https://www.sec.gov/news/speech/the-sec-after-the-financial-crisis.html?fbclid=IwAR2zP3Y2cAf1F-62TzGdZ0llu6C\\_Vt60rcki3dfp0Q4IZvshgUO5B2P74VU](https://www.sec.gov/news/speech/the-sec-after-the-financial-crisis.html?fbclid=IwAR2zP3Y2cAf1F-62TzGdZ0llu6C_Vt60rcki3dfp0Q4IZvshgUO5B2P74VU)

## References

- Aboody, D., & Kaznik, R. (2000). CEO stock option awards and the timing of corporate voluntary disclosures. *Journal of Accounting and Economics*, 29(1), 73–100.
- Adams, G. (1981). *The Iron Triangle: The Politics of Defense Contracting*. New York: Council on Economic Priorities.
- Aerts, W., Cheng, P., & Tarca, A. (2013). Management's earnings justification and earnings management under different institutional regimes. *Corporate Governance: An International Review*, 21(1), 93–115.
- Agarwal, S., Gupta, S., & Israelsen, R. D. (2017). Public and private information: Firm disclosure, SEC letters, and the JOBS Act. *Kelley School of Business Research Paper No. 17-4*.
- Aguilar, L. A. (2010). An Insider's View of the SEC: Principles to Guide Reform. *University of California*. Retrieved from [https://www.law.berkeley.edu/files/bclbe/Speech by SEC Commissioner 10.15.10\(1\).pdf](https://www.law.berkeley.edu/files/bclbe/Speech%20by%20SEC%20Commissioner%2010.15.10(1).pdf)
- Aharony, J., Lin, C. and Loeb, M. (1993). Initial Public Offerings, Accounting Choices and Earnings Management. *Contemporary Accounting Research*, 10(1), 61–81.
- Ahmad-Zaluki, N. A., Campbell, K., & Goodacre, A. (2011). Earnings management in Malaysian IPOs: The East Asian crisis, ownership control, and post-IPO performance. *International Journal of Accounting*, 46(2), 111–137.
- Ahmed, A. S., Takeda, C., & S., T. (1999). Banking loan loss provisions: A re-examination of capital management, earnings management and signalling effects. *Journal of Accounting and Economics*, 28, 1–25.
- Alhadab, M., & Clacher, I. (2018). The impact of audit quality on real and accrual earnings management around IPOs. *British Accounting Review*, 50(4), 442–461.
- Alhadab, M., Clacher, I., & Keasey, K. (2015). Real and accrual earnings management and IPO failure risk. *Accounting and Business Research*, 45(1), 55–92.
- Alhadab, M., Clacher, I., & Keasey, K. (2016). A Comparative Analysis of Real and Accrual

- Earnings Management around Initial Public Offerings under Different Regulatory Environments. *Journal of Business Finance and Accounting*, 43(7–8), 849–871.
- Ali, A., & Zhang, W. (2015). CEO tenure and earnings management. *Journal of Accounting and Economics*, 59(1), 60–79.
- Ali, A., Klasa, S., & Yeung, E. (2014). Industry concentration and corporate disclosure policy. *Journal of Accounting and Economics*, 58(2–3), 240–264.
- Altamuro, J., Beatty, A., & Weber, J. (2005). Motives for early revenue recognition: Evidence from SEC staff accounting bulletin (SAB 101). *The Accounting Review*, 80(2), 373–402.
- Altman, E. I. (2013). Predicting financial distress of companies: revisiting the Z-Score and ZETA models. *Handbook of Research Methods and Applications in Empirical Finance*. Cheltenham, UK: Edward Elgar Publishing.
- Arrow, K. J. (1970). The Organization of Economic Activity: Issues Pertinent to the Choice of Market versus Nonmarket Allocation. In *Public Expenditure and Policy Analysis*. Chicago: Rand MacNally College Publishing.
- Arrow, K. J. (1985). The Potentials and Limits of the Market in Resource Allocation. In *Issues in Contemporary Microeconomics and Welfare*. London: The Macmillan Press.
- Asch, P. (1988). *Consumer Safety Regulation*. Oxford: Oxford University Press.
- Balasubramnian, B., & Cyree, K. B. (2014). Has market discipline on banks improved after the Dodd-Frank Act? *Journal of Banking and Finance*, 41(1), 155–166.
- Balatbat, M. C. A. (2006). Discussion of explaining the short and long-term IPO anomalies in the US by R&D. *Journal of Business Finance and Accounting*, 33 (3-4), 580–586.
- Ball, R., & Shivakumar, L. (2008). Earnings quality at initial public offerings. *Journal of Accounting and Economics*, 45(2–3), 324–349.
- Ballesteros, R., & Schmidt, J. J. (2019). Does auditor involvement expedite SEC comment letter resolution? *Working Paper*.
- Barth, M. E., Landsman, W. R., & Taylor, D. J. (2017). The JOBS Act and information uncertainty in IPO firms. *The Accounting Review*, 92(6), 25–47.



- Barzel, Y., Habib, M. A. and Johnsen, D. B. (2006). Prevention is better than cure: The role of IPO syndicates in precluding information acquisition. *The Journal of Business*, 79 (6), 2911–2923.
- Basu, S. (1997). The conservatism principle and the asymmetric timeliness of earnings. *Journal of Accounting and Economics*, 24(1997), 3–37.
- Bator, F. M. (1958). The Anatomy of Market Failure. *The Quarterly Journal of Economics*, 72, 351–379.
- Baugh, M., & Schmardebeck, R. (2020). Auditor Style and Common Disclosure Deficiencies: Evidence from SEC comment letters. *Working Paper*.
- Baugh, M., Kim, K., & Lee, K. J. (2017). The effect of SEC reviewers on comment letters and financial reporting quality. *Working Paper, KAIST College of Business*.
- Bayless, R. A. (2000). How the Division of Corporation Finance Influences Accounting Practices and Financial Reporting Standards. Retrieved from <https://www.sec.gov/news/speech/spch394.htm>
- Beatty, R.P. & Ritter, J.R. (1986). Investment banking, reputation, and the underpricing of initial public offerings. *Journal of Financial Economics*, 15(1), 213-232.
- Begley, J., Ming, J., & Watts, S. (1996). Bankruptcy Classification Errors in the 1980s : An Empirical Analysis of Altman ' s and Ohlson ' s Models. *Review of Accounting Studies*, 1, 267–284.
- Bellman, R. E. (1961). Adaptive Control Processes. *Princeton, NJ: Princeton University Press*.
- Bens, D. A., Cheng, M., & Neamtiu, M. (2015). The Impact of SEC Disclosure Monitoring on the Uncertainty of Fair Value Estimates. *The Accounting Review*, 91(2), 349–375.
- Bills, K. L., Cating, R., Lin, C. & Seidel, T. A. (2020). The spillover effect of SEC comment letters through audit firms. *Working Paper*.
- Blackburne, T. (2014). Regulatory oversight and reporting incentives: Evidence from SEC budget allocations. *Working Paper. University of Pennsylvania*.
- Boone, J. P., Linthicum, C. L., & Poe, A. (2013). Characteristics of accounting standards and

- SEC review comments. *Accounting Horizons*, 27(4), 711–736.
- Boskovic, T., Cerruti, C., & Noel, M. (2010). Comparing European and U.S Securities Regulations. World Bank Working Paper No.1984.
- Botsari, A., & Meeks, G. (2008). Do acquirers manage earnings prior to a share for share bid? *Journal of Business Finance and Accounting*, 35(5–6), 633–670.
- Bozanic, Z., Choudhary, P., & Merkley, K. J. (2018). Securities Law Expertise and Corporate Disclosure. *The Accounting Review*, 94(4), 141–172.
- Bozanic, Z., Dietrich, J. R., & Johnson, B. A. (2017). SEC comment letters and firm disclosure. *Journal of Accounting and Public Policy*, 36(5), 337–357.
- Brazel, J. F., Jones, K. L., & Zimbelman, M. F. (2009). Using nonfinancial measures to assess fraud risk. *Journal of Accounting Research*, 47(5), 1135–1166.
- Brown, P., & Tarca, A. (2011). A commentary on issues relating to the enforcement of International Financial Reporting Standards in the EU. *European Accounting Review*, 14(1), 181–212.
- Brown, S. V, Tian, X., & Tucker. (2018). The spillover effect of SEC comment letters on qualitative corporate disclosure: Evidence from the risk factor disclosure. *Contemporary Accounting Research*, 35(2), 622–656.
- Burgstahler, D., & Dichev, I. (1997). Earnings management to avoid earnings decreases and losses. *Journal of Accounting and Economics*, 24, 99–126.
- Burton, D. (2019). Reforming the Securities and Exchange Commission. *The Heritage Foundation*. Retrieved from <https://www.heritage.org/government-regulation/report/reforming-the-securities-and-exchange-commission>
- Bushman, R. M., & Piotroski, J. D. (2006). Financial reporting incentives for conservative accounting: The influence of legal and political institutions. *Journal of Accounting and Economics*, 42(1–2), 107–148.
- Bushman, R. M., Piotroski, J. D., & Smith, A. J. (2005). What Determines Corporate Transparency? *Journal of Accounting Research*, 42(2).

- Butler, D. A. (1995). Does “independent” mean 'free from influence?' escape clause decision-making at the U.S. International Trade Commission. *New York and London: Garland Press*.
- Cassell, C. A. and Cunningham, L.M. and Lisic, L. L. (2019). The readability of company responses to SEC comment letters and SEC 10-K filing review outcomes. *Review of Accounting Studies*, 24 (4), 1252-1276,
- Cassell, C. A., Dreher, L. M., & Myers, L. A. (2013). Reviewing the SEC’s review process: 10-K comment letters and the cost of remediation. *The Accounting Review*, 88(6), 1875–1908.
- Cecchini, M., Jackson, S. B., & Liu, X. (2012). Do initial public offering firms manage accruals? Evidence from individual accounts. *Review of Accounting Studies*, 17(1), 22–40.
- Chahine, S., Arthurs, J. D., Filatotchev, I., & Hoskisson, R. E. (2012). The effects of venture capital syndicate diversity on earnings management and performance of IPOs in the US and UK: An institutional perspective. *Journal of Corporate Finance*, 18(1), 179–192.
- Charfeddine, L. and Rabeab, R. and Abdelwahed, O. (2013). The Determinants of Earnings Management in Developing Countries: A Study in the Tunisian Context. *The IUP Journal of Corporate Governance*, 12(1), 35-49.
- Chang, X., Dasgupta, S., & Hilary, G. (2008). The Effect of Auditor Quality on Financing Decisions. *The Accounting Review*, 84(4), 1085–1117.
- Chaplinsky, S., Hanley, K. W., & Moon, S. K. (2017). The JOBS Act and the costs of going public. *Journal of Accounting Research*, 55(4), 795–836.
- Chen, R., & Johnston, R. (2008). Securities and Exchange Commission Comment Letters: Enforcing Accounting Quality and Disclosure. *AAA 2009 Financial Accounting and Reporting Section (FARS) Paper*.
- Chen, R., & Johnston, R. (2010). The effect of regulator oversight on firms’ information environment: Securities and exchange commission comment letters. *Working Paper. MIT Sloan School of Management*.

- Cheng, P., Man, P., & Yi, C. H., 2013. The impact of product market competition on earnings quality. *Accounting and Finance*, 53(1), 137–162.26.
- Cheung, S. C. and Krinsky, I. (1994). Information asymmetry and the underpricing of initial public offerings: Further empirical evidence. *Journal of Business Finance and Accounting*, 21 (5), 739–747.
- Claessens, S., & Kodres, L. (2014). The regulatory responses to the global financial crisis: Some uncomfortable questions. *IMF Working Paper*, 435–482.
- Cohen, D. A., Dey, A., & Lys, T. Z. (2008). Real and accrual-based earnings management in the pre- and post-sarbanes-oxley periods. *Accounting Review*, 83(3), 757–787.
- Colaco, H. M. J., De Cesari, A., & Hegde, S. P. (2018). The waiting period of initial public offerings. *European Journal of Finance*, 24, 1–34.
- Core, J. E. (2001). A review of the empirical disclosure literature discussion. *Journal of Accounting and Economics*, 31, 441–456.
- Correia, M. M. (2014). Political connections and SEC enforcement. *Journal of Accounting and Economics*, 57(2–3), 241–262.
- Cox, C. (2018). Testimony Concerning the Role of Federal Regulators: Lessons from the Credit Crisis for the Future of Regulation. Retrieved from <https://www.sec.gov/news/testimony/2008/ts102308cc.htm>
- Cunningham, L. M., & Leidner, J. J. (2019). The SEC Filing Review Process : Insights from Accounting Research The SEC Filing Review Process: Insights from Accounting Research. Retrieved from [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3494830](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3494830)
- Cunningham, L. M., Johnson, B. A., Johnson, E. S., & Lisic, L. L. (2019). The Switch-Up: An Examination of Changes in Earnings Management after Receiving SEC Comment Letters. *Contemporary Accounting Research*, 37 (2), 917-944.
- Dahlman, C. J. (1979). The Problem of Externality. *The Journal of Law & Economics*, 22(1), 141–162.
- Dambra, M., Casares, L., Gustafson, M. T., & Pisciotta, K. (2018). The consequences to analyst

- involvement in the IPO process: Evidence surrounding the JOBS Act. *Journal of Accounting and Economics*, 65(2-3), 302–330.
- Dambra, Michael, Field, L. C., & Gustafson, M. T. (2015). The JOBS Act and IPO volume: Evidence that disclosure costs affect the IPO decision. *Journal of Financial Economics*, 116(1), 121–143.
- Darrough, M., & Rangan, S. (2005). Do insiders manipulate earnings when they sell their shares in an initial public offering? *Journal of Accounting Research*, 43(1), 1–33.
- David, W. (2020). United States government & politics. *Iowa: Perfection Learning*.
- De Vault, J. M. (2002). Congressional Dominance and the International Trade Commission. *Public Choice*, 110(1), 1–22.
- DealBook. (2010). Top Securities Lawyers Call for Self-Funded S.E.C. *The New York Times*. Retrieved from <https://dealbook.nytimes.com/2010/06/11/top-securities-lawyers-call-for-self-funded-s-e-c/>
- Dechow, P. M., Kothari, S. P., & Watts, R. L. (1998). The relation between earnings and cash flows. *Journal of Accounting and Economics*, 25, 133–168.
- Dechow, P. M., Sloan, G. R., & Sweeney, A. P. (1996). Causes and consequences of earnings manipulation: An analysis of firms subject to enforcement actions by the SEC. *Contemporary Accounting Research*, 13(1), 1–36.
- Dechow, Patricia M., Sloan, R. G., & Sweeney, A. P. (1995). Detecting Earnings Management. *The Accounting Review*, 70(2), 193–225.
- DeFond, M. L., Raghunandan, K., & Subramanyam, K. R. (2002). Do Non-audit Service Fees Impair Auditor Independence? Evidence from Going-concern Audit Opinions. *Journal of Accounting Research*, 40(4), 1247–1274.
- DeFond, M L., & Subramanyam, K. R. (1998). Auditor changes and discretionary accruals. *Journal of Accounting and Economics*, 25(1), 35–67.
- DeFond, M. L., & Jiambalvo, J. (1994). Debt covenant violation and manipulation of accruals. *Journal of Accounting and Economics*, 17(1–2), 145–176.

- DeGeorge, F., Patel, J., Zeckhauser, R., & Zeckhauser, R. (1999). Earnings Management to Exceed Thresholds Earnings Management to Exceed Thresholds. *The Journal of Business*, 72(1), 1–33.
- Deloitte. (2013). *SEC Comment Letters - Including Industry Insights: Constructing Clear Disclosures*. Retrieved from <https://deloitte.wsj.com/riskandcompliance/files/2013/12/SEC-Comment-Letters-2014-Including-Industry-Insights-2014-Constructing-Clear-Disclosures.pdf>
- Deloitte. (2017). *SEC comment letters - Including Industry Insights*. Retrieved from <https://www2.deloitte.com/content/dam/Deloitte/us/Documents/audit/ASC/us-aers-sec-comment-letters-including-industry-insights-2017.pdf>
- Deloitte. (2020). *Strategies for going public*. Retrieved from <https://www2.deloitte.com/content/dam/Deloitte/us/Documents/risk/strategies-for-going-public-5th-edition-update.pdf>
- Demsetz, H. (1969). Information and Efficiency : Another Viewpoint. *The Journal of Law & Economics*, 12(1), 1–22.
- Desai, H., Hogan, C. E., Wilkins, M. S. (2006). The Reputational Penalty for Aggressive Accounting : Earnings Restatements and Management Turnover. *The Accounting Review*, 81(1), 83–112.
- Do, T. T., & Zhang, H. (2018). Styles of regulators : Evidence from the SEC ’ s comment letters. *Working Paper*.
- Dodd, L. C., & Schott, R. L. (1979). *Congress and the Administrative State*. New York: Wiley.
- Doidge, C., Karolyi, G. A., & Stulz, R. M. (2001). Why are foreign firms listed in the U.S worth more? *NBER Working Paper No. 8538*.
- Domingos, P., & Pazzani, M. (1997). On the Optimality of the Simple Bayesian Classifier under Zero-One Loss. *Machine Learning*, 29(2–3), 103–130.
- Donelson, D. C., Kartapanis, A., & Koutney, C. Q. (2020). SEC Non-GAAP Comment Letters and Firm Disclosures. *Working Paper*.

- Doyle, J., Ge, W., & McVay, S. (2007). Determinants of weaknesses in internal control over financial reporting. *Journal of Accounting and Economics*, 44(1–2), 193–223.
- Ducharme, L. L., Malatesta, P. H., & Sefcik, S. E. (2001). Earnings Management: IPO Valuation and Subsequent Performance. *Journal of Accounting, Auditing & Finance*, 16(4), 369–396.
- DuCharme, L. L., Malatesta, P. H., & Sefcik, S. E. (2004). Earnings management, stock issues, and shareholder lawsuits. *Journal of Financial Economics*, 71(1), 27–49.
- Duff, V. (2017). 6 Characteristics of the Stock Market. Retrieved from <https://www.sapling.com/5791461/characteristics-stock-market>
- Duke, J. C., Franz, D. P., & Hunt, H. I. (1995). An examination of debt-equity proxies vs. actual debt covenant restriction in accounting choice studies. *Journal of Business Finance and Accounting*, 22, 615–635.
- Duro, M., Heese, J., & Ormazabal, G. (2017). Does the public disclosure of the SEC’s oversight actions matter ? *CEPR Discussion Paper No. DP12145*.
- Dye, R. A. (1988). Earnings Management in an Overlapping Generations Model. *Journal of Accounting Research*, 26(2), 195–235.
- Edmans, A. (2014). Blockholders and Corporate Governance. *Annual Review of Financial Economics*, 6(1), 23–50.
- Ege, M., Glenn, J. L., & Robinson, J. R. (2020). Unexpected SEC Resource Constraints and Comment Letter Quality. *Contemporary Accounting Research*, 37(1), 33–67.
- Eiler, L., & Kutcher, L. (2016). SEC comment letters related to permanently reinvested earnings. *Advances in Accounting*, 34(2016), 110–116.
- Enriques, L. (2005). The Law on Corporate Directors’ Self-Dealing: A Comparative Analysis. *International and Comparative Corporate Law Journal*, 2(3), 297–334.
- Ertimur, Y., & Nondorf, M. E. (2006). IPO Firms and the SEC Comment Letter Process. *Working paper. Duke University*.

- Eskin, E., & Bogosian, M., 1998. Classifying Text Documents using Modular Categories and Linguistically Motivated Indicators . *AAAI Technical Report WS-98-05*.
- Ettredge, M., Johnstone, K., Stone, M., & Wang, Q. (2011). The effects of firm size, corporate governance quality, and bad news on disclosure compliance. *Review of Accounting Studies, 16(4)*, 866–889.
- Fama, F. E., & French, K. R. (1992). Required Return on Investments in Construction. *The Journal of Finance, Vol. 115*, pp. 109–125.
- Fan, Q. (2007). Earnings Management and Ownership Retention for Initial Public Offering Firms : Theory and Evidence. *The Accounting Review, 82(1)*, 27-64.
- Fields, T. D., Lys, T. Z., & Vincent, L. (2001). Empirical research on accounting choice. *Journal of Accounting and Economics, 31(1–3)*, 255–307.
- Filatotchev, I., Jona, J., & Livne, G. (2019). Earnings Management in Domestic and Foreign IPOs in the United States: Do Home Country Institutions Matter? *European Accounting Review, 29 (2)*, 307-335
- Finkle, V. (2017). How House Bill Would Dismantle an Array of Dodd-Frank Reforms. Retrieved from <https://web.archive.org/web/20171129200619/https://www.nytimes.com/2017/06/08/business/dealbook/how-house-bill-would-dismantle-an-array-of-dodd-frank-reforms.html>
- Forbes, 2013. Why The JOBS Act Is A Lifesaver For Life Sciences Companies. Retrieved from <https://www.forbes.com/sites/matthewherper/2013/07/19/why-the-jobs-act-is-a-lifesaver-for-life-sciences-companies/#3fea6e467340>
- Francis, B. B., Hasan, I., & Zhou, M. (2012). Strategic Conservative Earnings Management of Technology Firms : Evidence from the IPO Market. *Financial Markets, Institutions & Instruments, 21(5)*, 261–293.
- Friedlan, J. M. (1994). Accounting choices of issuers of initial public offerings. *Contemporary Accounting Research, 11(1)*, 1–31.
- Gao, S., Meng, Q., Chan, K. C., & Wu, W. (2017). Earnings management before IPOs: Are institutional investors misled? *Journal of Empirical Finance, 42(2017)*, 90–108.



- Gao, X., Ritter, J. R., & Zhu, Z. (2013). Where have all the IPOs gone? *Journal of Financial and Quantitative Analysis*, 48(6), 1663–1692.
- Ghosh, C., & He, F. (2016). Is Cross-listing on U.S. Markets still Beneficial to Foreign Firms? Retrieved at <https://clsbluesky.law.columbia.edu/2016/05/16/is-cross-listing-on-u-s-markets-still-beneficial-to-foreign-firms/>
- Gibbins, M., Richardson, A., Waterhouse, J. (1990). The management of corporate financial disclosures: opportunism, ritualism, policies, and processes. *Journal of Accounting Research*, 28(1), 121–143.
- Gietzmann, M., & Isidro, H. (2013). Institutional Investors ' Reaction to SEC Concerns about IFRS and US GAAP Reporting. *Journal of Business Finance & Accounting*, 40(7 & 8), 796–841.
- Godfrey, J., Hodgson, A., Tarca, A., Jane, H., & Holmes, S. (2010). *Accounting Theory. Australia: John Wiley & Sons.*
- Gounopoulos, D., & Pham, H. (2017). Credit Ratings and Earnings Management around IPOs. *Journal of Business Finance and Accounting*, 44(1–2), 154–195.
- Gounopoulos, D., & Pham, H. (2018). Financial Expert CEOs and Earnings Management Around Initial Public Offerings. *International Journal of Accounting*, 53(2), 102 - 117.
- Graham, J. R., Harvey, C. R., & Rajgopal, S. (2005). The economic implications of corporate financial reporting. *Journal of Accounting and Economics*, 40(1–3), 3–73.
- Greene, W. H. (2012). *Econometric Analysis. Essex, UK: Pearson Education Limited.*
- Guay, W. R., Kothari, S. P., & Watts, R. L. (1996). A Market-Based Evaluation of Discretionary Accrual Models. *Journal of Accounting Research*, 34(1996), 83–105.
- Gunny, K. A. (2010). The relation between earnings management using real activities manipulation and future performance: Evidence from meeting earnings benchmarks. *Contemporary Accounting Research*, 27(3), 855–888.
- Gunny, K. A., & Hermis, J. M. (2020). How Busyness Influences SEC Compliance Activities : Evidence from the Filing Review Process and Comment Letters. *Contemporary*

*Accounting Research*, 37(1), 7–32.

Gupta, S., & Israelsen, R. D. (2015). Hard and Soft Information : Firm Disclosure , SEC Letters , and the JOBS Act. *Working Paper*.

Hamilton, B. (2018). How soon will the SEC review a Form S-1 registration statement? Accessed on April 25, 2019 from <https://www.securitieslawyer101.com/2015/sec-review-form-s-1-registration-statement/>

Hanlon, M., Rajgopal, S., & Shevlin, T. (2003). Are executive stock options associated with future earnings? *Journal of Accounting and Economics*, 36(2003), 3–43.

Hansen, W. L. (1990). The International Trade Commission and the Politics of Protectionism. *The American Political Science Review*, 84(1), 21–46.

Hansen, W. L., & Prusa, T. J. (1996). Cumulation and ITC decision-making: The sum of the parts is greater than the whole. *Economic Inquiry*, 34(4), 746-769.

Hansen, W. L., & Prusa, T. J. (1997). The Economics and Politics of Trade Policy: An Empirical Analysis of ITC Decision Making. *Review of International Economics*, 5(2), 230–245.

Healy, P. M., & Palepu, K. G. (2001). Information asymmetry, corporate disclosure, and the capital markets: A review of the empirical disclosure literature. *Journal of Accounting and Economics*, 31(1–3), 405–440.

Healy, P. M., & Wahlen, J. M. (1999). A Review of the Earnings Management Literature and its Implications for Standard Setting. Retrieved from [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=156445](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=156445)

Heese, J., Khan, M., & Ramanna, K. (2017). Is the SEC captured? Evidence from comment-letter reviews. *Journal of Accounting and Economics*, 64(1), 98–122.

Hegde, S., Lin, H., & Varshney, S. (2010). Competitive stock markets: Evidence from companies' dual listings on the NYSE and NASDAQ. *Financial Analysts Journal*, 66(1), 77–87.

Hennes, K. M., & Schenck, K. M. (2014). The Development of Reporting Norms without

- Explicit Guidance: An Example from Accounting for Gift Cards. *Accounting Horizons*, 28(3), 561–578.
- Herbohn, K., Tutticci, I., & Khor, P. S. (2010). Changes in unrecognised deferred tax accruals from carry-forward losses: Earnings management or signalling? *Journal of Business Finance and Accounting*, 37(7–8), 763–791.
- Hertog, J. (2010). Review of accounting theories. *Working Paper. Utrecht School of Economics*.
- Hilbe, J. M. (2011). Negative binomial regression. *Cambridge: Cambridge University Press*.
- Hinde, J., & Demetrio, C. G. B. (1998). Overdispersion: Models and Estimation. *Computational Statistics and Data Analysis*, 527(2), 151–170.
- Hribar, P., & Collins, D. W. (2002). Errors in Estimating Accruals: Implications for Empirical Research. *Journal of Accounting Research*, 40(1), 105–134.
- Hsu, J., Young, W., & Wang, H. Y. (2012). Pre-IPO Acquirers' Issuance Cost and Long-Run Performance: Do Their M&A Disclosures Matter? *Journal of Business Finance and Accounting*, 39(1–2), 141–164.
- Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behaviour, agency costs and ownership structure. *Journal of Financial Economics*, 3(4), 305–360.
- Jensen, M. R. H., Marshall, B. B., & Jahera, J. S. (2015). JOBS Act: Has it brought back the IPO? *Journal of Corporate Accounting & Finance*, 26(2), 9–17.
- Jiang, G., Lee, C. M. C., & Zhang, Y. (2005). Information uncertainty and expected returns. *Review of Accounting Studies*, 10(2–3), 185–221.
- Johnson, B. A., Lisic, L. L., Moon, J. ., & Wang, M. (2020). SEC Comment Letters on Form S-4 and M & A Accounting Quality. *Working Paper*.
- Johnson, S. (2010). The SEC Has a Few Questions for You. Retrieved from <https://www.cfo.com/risk-compliance/2010/05/the-sec-has-a-few-questions-for-you/>
- Johnston, R., & Petacchi, R. (2017). The effect of regulator oversight on firms' information environment: Securities and exchange commission comment letters. *Contemporary Accounting Research*, 34(2), 1128–1155.

- Jones, J. J. (1991). Earnings Management During Import Relief Investigations. *Journal of Accounting Research*, 29(2), 193-228..
- Kallunki, J. P., & Martikainen, M. (2003). Earnings management as a predictor of future profitability of Finnish firms. *European Accounting Review*, 12(2), 311–325.
- Keating, T. (2012). The JOBS Act: Shifting into gear and accelerating up the IPO on-ramp. Retrieved from <http://www.otcmarkets.com/content/doc/jobsact/keatingWhitepaper.pdf>
- Khurana, I. K., & Raman, K. K. (2004). Litigation risk and the financial reporting credibility of big 4 versus non-big 4 audits: Evidence from Anglo-American countries. *The Accounting Review*, 79(2), 473–495.
- Kim, M. (2019). Principles-Based Accounting Standards and Regulatory Enforcement. Retrieved at [https://www.anderson.ucla.edu/documents/areas/fac/accounting/working-papers/workshop papers/MarkPaulKim JMP 20190106.pdf](https://www.anderson.ucla.edu/documents/areas/fac/accounting/working-papers/workshop%20papers/MarkPaulKim_JMP_20190106.pdf)
- Klein, A. (2002). Audit committee, board of director characteristics, and earnings management. *Journal of Accounting and Economics*, 33(3), 375–400.
- Klein, B., & Leffler, K. B. (1981). The Role of Market Forces in Assuring Contractual. *Journal of Political Economy*, 89(4), 615–641.
- Köchling, G., Schmidtke, P., & Posch, P. N. (2021). SEC Workload, IPO Filing Reviews, and IPO Pricing. Working Paper.
- Koh, K., Matsumoto, D. A., & Rajgopal, S. (2008). Meeting or beating analyst expectations in the post-scandals world: Changes in stock market rewards and managerial actions. *Contemporary Accounting Research*, 25(4), 1067–1098.
- Kothari, S. P., Leone, A. J., & Wasley, C. E. (2005). Performance matched discretionary accrual measures. *Journal of Accounting and Economics*, 39(1), 163–197.
- Kouwenberg, R., & Thontirawong, P. (2016). Group affiliation and earnings management of Asian IPO issuers. *Review of Quantitative Finance and Accounting*, 47(4), 897–917.
- Kubic, M. (2020). Examining the examiners: SEC error detection rates and human capital allocation. *Working Paper*.

- Kubick, T. R., Lynch, D. P., Mayberry, M. A., & Omer, T. C. (2016). The Effects of Regulatory Scrutiny on Tax Avoidance: An Examination of SEC Comment Letters. *The Accounting Review*, 91(6), 1751–1780.
- Lakhal, F., Lakhal, N. and Cheurfi, S. (2014). Does Pay for Performance Reduce Earnings Management in France? *European Journal of Business and Management*, 6 (13), 49-57.
- Lang, M., & Lundholm, R. (1993). Cross-sectional determinants of analyst ratings of corporate disclosures. *Journal of Accounting Research*, 31(2), 246–271.
- Lee, G., & Masulis, R. W. (2009). Seasoned equity offerings: Quality of accounting information and expected flotation costs. *Journal of Financial Economics*, 92(3), 443–469.
- Lee, G., & Masulis, R. W. (2011). Do more reputable financial institutions reduce earnings management by IPO issuers? *Journal of Corporate Finance*, 17(4), 982–1000.
- Leland, H. E. (1979). Quacks, Lemons, and Licensing: A Theory of Minimum Quality Standards. *Journal of Political Eco*, 87(6), 1328–1346.
- Leuz, C., & Wysocki, P. (2008). Economic consequences of financial reporting and disclosure regulation: A review and suggestions for future research. *Journal of Accounting Research*, 54 (2), 525-622.
- Leuz, C., Nanda, D., & Wysocki, P. D. (2003). Earnings management and investor protection: An international comparison. *Journal of Financial Economics*, 69(3), 505–527.
- Leuz, Christian, & Wysocki, P. D. (2016). The economics of disclosure and financial reporting regulation: Evidence and suggestions for future research. *Journal of Accounting Research*, 54(2), 525–622.
- Levitt, A. (1998). The numbers game. Retrieved from <http://www.sec.gov/news/speech/speecharchive/1998/spch220.txt>.
- Lewis, C. (2012). Risk modeling at the SEC: The accounting quality model. Retrieved from <https://www.sec.gov/news/speech/2012-spch121312cmlhtm>
- Li, B., & Liu, Z. (2017). The oversight role of regulators: evidence from SEC comment letters

- in the IPO process. *Review of Accounting Studies*, 22(3), 1229–1260.
- 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.
- Liberti, J. M., & Petersen, M. A. (2019). Information : Hard and Soft. *The Review of Corporate Finance Studies*, 8(1), 1-41.
- Linthicum, C. L., McLelland, A. J., & Schuldt, M. A. (2017). An analysis of SEC comment letters and IFRS. *Journal of Financial Reporting and Accounting*, 15(2), 226–244.
- Lo, H. C., Wu, R. S., & Kweh, Q. L. (2017). Do institutional investors reinforce or reduce agency problems? Earnings management and the post-IPO performance. *International Review of Financial Analysis*, 52, 62–76.
- Lo, K. (2008). Earnings management and earnings quality. *Journal of Accounting and Economics*, 45(2–3), 350–357.
- Lo, K., Ramos, F., & Rogo, R. (2017). Earnings management and annual report readability. *Journal of Accounting and Economics*, 63(1), 1–25.
- Long, N., Gianola, D., Rosa, G. J. M., Weigel, K. A., & Avendaño, S. (2009). Comparison of classification methods for detecting associations between SNPs and chick mortality. *Genetics Selection Evolution*, 41(18), 1–14.
- 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.
- Louis, H., & Robinson, D. (2005). Do managers credibly use accruals to signal private information? Evidence from the pricing of discretionary accruals around stock splits. *Journal of Accounting and Economics*, 39(2), 361–380.
- Lowry, M., Michaely, R., & Volkova, E. (2020). Information Revealed through the Regulatory Process : Interactions between the SEC and Companies ahead of Their IPO. *The Review of Financial Studies* (forthcoming).
- Manning, C. D., & Schütze, H. (1999). *Foundations of Statistical Natural Language Processing*.

London: The MIT Press.

Marquardt, C. A., & Wiedman, C. I. (2005). How are Earnings Managed? An Examination of Specific Accruals. *Contemporary Accounting Research*, 21(2), 461–491.

McKeon, J. (2016). *Common Topics in IPO Comment Letters*. Retrieved from <https://blog.auditanalytics.com/common-topics-in-ipo-comment-letters/>

Mironiuc, M., Carp, M., Chersan, I. (2015). The Relevance of Financial Reporting on the Performance of Quoted Romanian Companies in the Context of Adopting the IFRS. *Procedia Economics and Finance*, 20 (2015), 404-413.

Mitchell, T. M. (2006). The Discipline of Machine Learning. *Working Paper, Carnegie Mellon University*.

Modigliani, F., Miller, M. (1958). The cost of capital, corporation finance and the theory of investment. *American Economic Review* 48, 261–297.

Morphy, J. (2012). Congress Passes the “Jumpstart Our Business Startups Act.” Harvard Law School Forum on Corporate Governance. Retrieved from <https://corpgov.law.harvard.edu/2012/03/29/congress-passes-the-jumpstart-our-business-startups-act/>

Morsfield, S. G., & Tan, C. E. L. (2006). Do venture capitalists influence the decision to manage earnings in initial public offerings? *Accounting Review*, 81(5), 1119–1150.

Moyer, L. (2008). Credit Crisis: Where Was The SEC? Retrieved at <https://www.forbes.com/sites/mitsubishiheavyindustries/2021/08/11/investment-lessons-from-an-energy-tech-scout/?sh=15985415455b>

Mujalovic, I., Halbhuber, H., & Aur, A. (2020). Going public in the USA: An overview of the regulatory framework and capital markets process for IPOs. Retrieved from <https://www.globallegalinsights.com/practice-areas/initial-public-offerings-laws-and-regulations/going-public-in-the-usa-an-overview-of-the-regulatory-framework-and-capital-markets-process-for-ipos>

Murphy, R. S., Wilson, D., & Cutler, S. J. (2020). Keep It Between Us: Canadian Securities Regulators Adopt Confidential Prospectus Review Process. Retrieved at

<https://www.dwpv.com/en/Insights/Publications/2020/Confidential-Prospectus-Review-Process>

- Myers, S. C., & Majluf, N. S. (1984). Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics*, 74, 643–654.
- NASDAQ (2020). Continued Listing Guide. Retrieved from <https://listingcenter.nasdaq.com/assets/continuedguide.pdf>
- Naughton, J. P., Rogo, R., Sunder, J., & Zhang, R. (2018). SEC monitoring of foreign firms' disclosures in the presence of foreign regulators. *Review of Accounting Studies*, 23(2018), 1355–1388.
- Nezha, B. (2019). Earnings Management, the Influence of Size, Indebtedness and Performance: The Case of Moroccan Listed Companies. *International Journal of Trend in Scientific Research and Development* 3 (2), 712-719.
- Ng, Y. K. (1990). Welfare Economics. *London: Macmillan*.
- Noll, R. G. (1989). Economic Perspectives on the Politics of Regulation. In Handbook of Industrial Organization II. *Amsterdam: North Holland*.
- NYSE (2013). IPO Guide. Potential Unlocked on the Biggest Stage in Business (second). *Chicago, United States: Caxton Business & Legal, Inc*. Retrieved from [https://www.nyse.com/publicdocs/nyse/listing/nyse\\_ipo\\_guide.pdf](https://www.nyse.com/publicdocs/nyse/listing/nyse_ipo_guide.pdf)
- NYSE (2020). Overview of NYSE Quantitative Initial Listing Standards. Retrieved from [https://www.nyse.com/publicdocs/nyse/listing/NYSE\\_Initial\\_Listing\\_Standards\\_Summary.pdf](https://www.nyse.com/publicdocs/nyse/listing/NYSE_Initial_Listing_Standards_Summary.pdf)
- Olson, M. (1965). The logic of collective action. Public Goods and the Theory of Groups, *Cambridge: Harvard University Press*.
- Palepu, K. G., & Healy, P. M. (1993). The Effect of Firms' Financial Disclosure Strategies on Stock Prices. *Accounting Horizons*, 7, 1–11.
- Peltzman, S., Levine, E. M., & Noll, R. G. (1989). The Economic Theory of Regulation after



- a Decade of Deregulation. *Microeconomics*, 1989, 1–59.
- Peltzman. (1976). Toward a More General Theory of Regulation. *The Journal of Law & Economics*, 19(2), 211–240.
- Petersen, M. A. (2009). Estimating standard errors in finance panel data sets: Comparing approaches. *Review of Financial Studies*, 22(1), 435–480.
- Pettinicchio, A. (2020). SEC Supervisory Activity in the Financial Industry. *Journal of Accounting, Auditing and Finance*, 35(3), 607–636.
- Philips, S. M., & Zecher, J. R. (1981). The SEC and the public interest. *Cambridge: MIT Press*.
- Pigou, A. C. (1932). The Economics of Welfare. *London: Macmillan and Co*.
- Posner, R. A. (1974). Theories of economic regulation. *Bell Journal of Economics and Management Science*, 5, 335–358.
- PwC (2017). Roadmap for an IPO. A guide to going public. Retrieved from <https://www.pwc.com/us/en/deals/publications/assets/pwc-roadmap-for-an-ipo.pdf>
- Rao, G. R. (1993). The relation between stock returns and earnings: a study of newly-public firms. *Working Paper*.
- Reuter, J. (2006). Are IPO allocations for sale? Evidence from mutual funds. *Journal of Finance*, 61(5), 2289–2324.
- Robinson, J. R., Xue, Y., & Yu, Y. (2011). Determinants of disclosure noncompliance and the effect of the SEC review: Evidence from the 2006 mandated compensation disclosure regulations. *The Accounting Review*, 86(4), 1415–1444.
- Rock, S., Sedo, S., & Willenborg, M. (2000). Analyst following and count-data econometrics. *Journal of Accounting and Economics*, 30(3), 351–373.
- Rogers, W. H. (1994). Regression standard errors in clustered samples. *Stata Technical Bulletin*, 3(13).
- Ronen, J., & Yaari, V. (2008). Earnings Management Emerging Insights in Theory, Practice, and Research. *New York: Springer*.

- Roosenboom, P., van der Goot, T., & Mertens, G. (2003). Earnings management and initial public offerings: Evidence from the Netherlands. *International Journal of Accounting*, 38(3), 243–266.
- Rosati, P., Gogolin, F., & Lynn, T. (2017). Cyber-security Incidents , External Monitoring and Probability of Restatements. *Working Paper*.
- Ross, S. A. (1977). The Determination of Financial Structure: The Incentive-Signalling Approach. *The Bell Journal of Economics*, 8(1), 23–40.
- Rowley, C. K., & Thorbecke, W. (1995). Congressional influence over decision-making at the ITC. In *Current issues in public choice*. Dordrecht: Kluwer Academic Publishers.
- Roychowdhury, S. (2006). Earnings management through real activities manipulation. *Journal of Accounting and Economics*, 42(3), 335–370.
- Ryans, J., (2019). Textual Classification of SEC Comment Letters. *Review of Accounting Studies*, 26, 37-80.
- Schelling, T. C. (1960). The strategy of conflict. Cambridge, MA: Harvard University Press.
- Schipper, K. (2011). The introduction of International Accounting Standards in Europe : Implications for international convergence. *European Accounting Review*, 14(1), 101–126.
- Schuldt, M., & Vega, J. (2018). An examination of SEC revenue recognition comments and IPO earnings management. *Accounting Research Journal*, 31(1), 90–101.
- Schwartz, K., & Soo, B. (1995). An analysis of form 8-K disclosures of auditor changes by firms approaching bankruptcy. *Auditing: A Journal of Practice & Theory*, 14(1), 125–136.
- Securities and Exchange Commission (SEC) (1936). First Annual Report of The Securities and Exchange Commission. Fiscal Year Ended June 30, 1935. Retrieved from [https://www.sec.gov/about/annual\\_report/1935.pdf](https://www.sec.gov/about/annual_report/1935.pdf)
- Securities and Exchange Commission (SEC) (2001). Comment Letter Follow-Up (Audit 326). Retrieved from [www.sec.gov/about/oig/audit/326fin.pdf](http://www.sec.gov/about/oig/audit/326fin.pdf)

- Securities and Exchange Commission (SEC) (2006). Preliminary Review of Filings (Audit 401). Retrieved from <https://www.sec.gov/files/401fin.pdf>
- Securities and Exchange Commission (SEC) (2013). The investor's advocate: How the SEC protects investors, maintains market integrity, and facilitates capital formation. Retrieved from <http://www.sec.gov/about/whatwedo.shtml>
- Securities and Exchange Commission (SEC) (2013). The investor's advocate: How the SEC protects investors, maintains market integrity, and facilitates capital formation. Retrieved from <http://www.sec.gov/about/whatwedo.shtml>
- Securities and Exchange Commission (SEC). (2012). Fiscal year 2012 agency financial report. Retrieved from <https://www.sec.gov/about/secpar/secafr2012.pdf>
- Securities and Exchange Commission (SEC). (2019a). Fiscal year 2020 Congressional Budget Justification Annual Performance Plan. Fiscal year 2018 Annual Performance Report. Retrieved from [https://www.sec.gov/files/secfy20congbudgjust\\_0.pdf](https://www.sec.gov/files/secfy20congbudgjust_0.pdf)
- Securities and Exchange Commission (SEC). (2019b). Implementing the Dodd-Frank Wall Street Reform and Consumer Protection Act. Retrieved from <https://www.sec.gov/spotlight/dodd-frank.shtml>
- Securities and Exchange Commission (SEC). (2020a). EDGAR-How do I. Retrieved from <https://www.sec.gov/edgar/filer-information/how-do-i>
- Securities and Exchange Commission (SEC). (2020b). What we do. Retrieved from <https://www.sec.gov/about/what-we-do>
- Shleifer, A. (2005). Understanding Regulation. *European Financial Management*, 11(4), 439–451.
- Shubik, M. (1970). On different methods for allocating resources. *Kyklos*, 23(2), 332–337
- Silvia, J. (2006). Efficiency and Effectiveness in Securities Regulation: Comparative Analysis of the United States's Competitive Regulatory Structure and the United Kingdom's Single-Regulator Model. *DePaul Business & Commercial Law Journal*, 247(6), 247–263.
- Skinner, D. (1994). Why firms voluntarily disclose bad business. *Journal of Accounting*

*Research*, 32(1), 38–60.

Sletten, E., Ertimur, Y., Sunder, J., & Weber, J. (2018). When and why do IPO firms manage earnings? *Review of Accounting Studies*, 23(2018), 872-906.

Spence, M. (1973). Job market signalling. *Quarterly Journal of Economics*, 87(3), 355–374.

Stigler, G. J. (1971). The theory of economic regulation. *The Bell Journal of Economics and Management Science*, 2(1), 3–21.

Subramanyam, K. R. (1996). The pricing of discretionary accruals. *Journal of Accounting and Economics*, 22, 249–281.

Sun, Y., Wang, W., Wang, X. F., & Zhang, W. (2013). Shareholder activism and earnings management incentives: an empirical examination of shareholder proposals in the united states. *Journal of International Management & Accounting*, 24(3).

Teoh, S. H., Welch, I., & Wong, T. J. (1998a). Earnings management and the long-run market performance of Initial Public Offerings. *The Journal of Finance*, 53(6), 1935–1974.

Teoh, S.H., Wong, T. J., & Rao, G. R. (1998b). Are accruals during initial public offerings opportunistic? *Review of Accounting Studies*, 3(198), 175–208.

The New York Times (2012). They Have Very Short Memories. *The New York Times*. Retrieved from <https://www.nytimes.com/2012/03/11/opinion/sunday/washington-has-a-very-short-memory.html>

Toumanoff, P. G. (1984). A Positive Analysis of the Theory of Market Failure. *Kyklos*, 37, 529–541.

Trueman, B., & Titman, S. (1988). An Explanation for Accounting Income Smoothing. *Journal of Accounting Research*, 26, 127–139.

Tullock, G., Seldon, A., & Brady, G. L. (2002). Government Failure. *Washington: Cato Institute*.

United States Government Accountability Office (GAO) (2016). *Management Has Enhanced Supervisory Controls and Could Further Improve Efficiency*. Retrieved from <https://www.gao.gov/assets/690/680352.pdf>

- Venkataraman, R., Weber, J. P., & Willenborg, M. (2008). Litigation risk, audit quality, and audit fees: Evidence from initial public offerings. *Accounting Review*, 83(5), 1315–1345.
- Vidal, O. (2010). Earnings Management to Avoid Losses: Are the Manipulated Amounts Significant?. *Accounting Auditing Control*, 3(3), 11-39.
- Walker, M. (2013). How far can we trust earnings numbers? What research tells us about earnings management. *Accounting and Business Research*, 43(4), 445–481.
- Wang, Q. (2016). Determinants of segment disclosure deficiencies and the effect of the SEC comment letter process. *Journal of Accounting and Public Policy*, 35(2), 109–133.
- Watts, R. L., & Zimmerman, J. L. (1978). Towards a positive theory of the determination of accounting standards. *The Accounting Review*, 53(1), 112–134.
- Watts, R., & Zimmerman, J. (1986). Positive Accounting Theory. *Englewood Cliffs, NJ: Prentice-Hall*.
- Weber, R. P. (1985). Basic Content Analysis. *Beverly Hills: Sage Publication*.
- Weingast, B. R. (1984). The congressional-bureaucratic system : a principal agent perspective (with applications to the SEC). *Public Choice*, 191, 147–191.
- Weingast, B. R., & Moran, M. J. (1983). Bureaucratic Discretion or Congressional Control ? Regulatory Policymaking by the Federal Trade Commission. *Journal of Political Economy*, 91(5), 765–800.
- Whynes, D. L., & Bowles, R. A. (1981). The Economic Theory of the State. *Oxford: Martin Robertson*.
- WilmerHale. (2011). 2011 IPO Report. *Wilmer Cutler Pickering Hale And Dorr LLP*.
- WilmerHale. (2015). 2015 IPO Report. *Wilmer Cutler Pickering Hale And Dorr LLP*.
- WilmerHale. (2018). IPO Report 2018. *Wilmer Cutler Pickering Hale And Dorr LLP*.
- Wilson, J. Q. (1980). The Politics of Regulation. *New York: Basic*.
- Wolf, C. J. (1978). A Theory of Non-Market Failure: Framework for Implementation Analysis.

*Journal of Law and Economics*, 22, 107–139.

Wolf, C. J. (1993). *Markets or Governments, Choosing between Imperfect Alternatives*. Cambridge, MA: MIT Press.

Wongsunwai, W. (2013). The effect of external monitoring on accrual-based and real earnings management: Evidence from venture-backed initial public offerings. *Contemporary Accounting Research*, 30(1), 296–324.

World Bank (2019). Finance in Transition: Unlocking capital markets for Vietnam's future development. Retrieved at <https://documents1.worldbank.org/curated/en/971881576078190397/pdf/Finance-in-Transition-Unlocking-Capital-Markets-for-Vietnam-s-Future-Development.pdf>

Xue, Y. (2004). Information content of earnings management: Evidence from managing earnings to exceed thresholds. *Working Paper*.

Zang, A. Y. (2012). Evidence on the trade-off between real activities manipulation and accrual-based earnings management. *Accounting Review*, 87(2), 675–703.

Zeidel, M. J., 2016. The JOBS Act: Did It Accomplish Its Goals? Retrieved from [https://corpgov.law.harvard.edu/2016/07/18/the-jobs-act-did-it-accomplish-its-goals/?fbclid=IwAR0qRU\\_REbGM-J9vx8W9O6XqLZECP1imyEzSEeFRuN7k6lz-2cFPiq3d-xI](https://corpgov.law.harvard.edu/2016/07/18/the-jobs-act-did-it-accomplish-its-goals/?fbclid=IwAR0qRU_REbGM-J9vx8W9O6XqLZECP1imyEzSEeFRuN7k6lz-2cFPiq3d-xI)

## Appendices

### Appendix 1. Variable definition

#### Appendix 1.1. Definition of variables

Variable	Definition
<i>Panel A. SEC review attributes</i>	
Duration	The number of days from filing date of initial S-1 to effective date of IPOs (Ertimur & Nondorf, 2006) (Source: Thomson Reuters Eikon)
#Letters	The number of comment letters that SEC issues for firm <i>i</i> during the SEC's review process (Li & Liu, 2017) (Source: EDGAR and manual data)
#Comments	The number of comments in initial comment letters that SEC issues for firm <i>i</i> during the SEC's review process (Duro et al., 2017). If IPO issuers do not receive initial SEC comment letter, <i>#Comments</i> equal to 0. (Source: EDGAR and manual data)
#Themes	The number of issue types in initial comment letters that SEC issues for firm <i>i</i> during SEC review process. If IPO issuers do not receive initial SEC comment letter, <i>#Themes</i> equal to 0 (Ertimur & Nondorf, 2006) (Source: manual coding)
#Core-accounting issues	The number of comments mentioned in initial SEC comment letters about core-accounting issues in initial S-1 filings prepared by firm <i>i</i> . If IPO issuers do not receive initial SEC comment letter, <i>#Core-accounting issues</i> equal to 0. (Source: self-conducted coding)
#Non-core accounting issues	The number of comments mentioned in initial SEC comment letters about non-core-accounting issues in initial S-1 filings prepared by firm <i>i</i> . If IPO issuers do not receive initial SEC comment letter, <i>Accounting issues</i> equal to 0. (Source: self-conducted coding)
#Offering issues	The number of comments mentioned in initial SEC comment letters about offering issues in initial S-1 filings prepared by firm <i>i</i> . If IPO

	issuers do not receive initial SEC comment letter, <i>Offering issues</i> equal to 0. (Source: coding)
#Business issues	The number of comments mentioned in initial SEC comment letters about business issues in initial S-1 filings prepared by firm i. If IPO issuers do not receive initial SEC comment letter, <i>Business issues</i> equal to 0 (Source: self-conducted coding)
#Corporate governance issues	The number of comments mentioned in initial SEC comment letters about corporate governance issues in initial S-1 filings prepared by firm i. If IPO issuers do not receive initial SEC comment letter, <i>Corporate governance</i> equal to 0 (Cassell et al., 2013) (Source: self-conducted coding)
#Disclosure issues	The number of comments mentioned in initial SEC comment letters about disclosure issues in initial S-1 filings prepared by firm i. If IPO issuers do not receive initial SEC comment letter, <i>Disclosure issues</i> equal to 0 (Source: self-constructed coding)
%Core Accounting issues	The percentage of comments mentioned in initial SEC comment letters about core accounting issues in initial S-1 filings prepared by firm i. (Source: self-conducted coding)
%Non-core accounting issues	The percentage of comments mentioned in initial SEC comment letters about non-core accounting issues in initial S-1 filings prepared by firm i. (Source: self-conducted coding)
%Offering issues	The percentage of comments mentioned in initial SEC comment letters about offering issues in initial S-1 filings prepared by firm i. (Source: coding)
%Business issues	The percentage of comments mentioned in initial SEC comment letters about business issues in initial S-1 filings prepared by firm i. (Source: self-conducted coding)
%Corporate governance issues	The percentage of comments mentioned in initial SEC comment letters about corporate governance issues in initial S-1 filings prepared by firm i. (Source: self-conducted coding)



%Disclosure issues      The percentage of comments mentioned in initial SEC comment letters about disclosure issues in initial S-1 filings prepared by firm i. (Source: self-constructed coding)

---

*Panel B. IPO firms' characteristics*

*Company size*

Size      Company size is total assets of firm i in year t -1 (Brazel et al., 2009) (Source: Compustat)

LnSize      The natural logarithm of total assets reported in the latest fiscal year prior to the year that the initial S-1 is filed (year t-1) (Brown et al., 2018) (Source: Compustat)

*Company age*

Age      The number of years since year when firm i first appears in Compustat to year t-1 (Hesse et al., 2017). (Source: Compustat).

*Business complexity*

Sales growth      Percentage change in annual sales of firm i from year t-2 to year t -1 (Hesse et al., 2017). (Source: Compustat)

Segments      The number of non-empty and unique segment industry codes of firm i in year t (Duro et al., 2017). (Source: Compustat).

Restructuring      An indicator variable equals to 1 if firm i has non-zero restructuring cost on a pre-tax basis in year t, and 0 otherwise (Cassell et al., 2013; Hesse et al., 2017). (Source: Compustat)

M&A      An indicator variable equals to 1 if firm i has non-zero acquisitions or mergers on a pre-tax basis in year t (Cassell et al., 2013; Hesse et al., 2017). (Source: Compustat)

*Financial health*

Leverage      Ratio of total liabilities to total equity of firm i in year t -1 (Duro et al., 2017). (Source: Compustat)

Zscore	Zscore of firm <i>i</i> is equal to $3.25 + 6.56 * [\text{net working capital}/\text{total assets}] + 3.26 * [\text{retained earnings}/\text{total assets}] + 6.72 * [\text{earnings before interest and taxes}/\text{total assets}] + 1.05 * [\text{book value of equity}/\text{book value of liabilities}]$ in year <i>t</i> (Altman, 2013) (Source: Compustat)
Positive-earnings	An indicator variable equals to 1 if firm <i>i</i> has earnings before interest and tax in year <i>t</i> equal or higher than zero (Hesse et al., 2017). (Source: Compustat)
External financing	Sum of equity financing and debt financing scaled by total assets of firm <i>i</i> in year <i>t</i> . Equity financing equals sales of common and preferred stock minus purchases of common and preferred stock minus dividends. Debt financing equals long-term debt issued minus long-term debt reduction minus change in current debt (Duro et al., 2017). (Source: Compustat).
<i>Auditor quality</i>	
Big 4	An indicator variable equals to 1 if firm <i>i</i> is audited by Big 4 Auditors including Ernst & Young, Deloitte & Touche, KPMG, PricewaterhouseCoopers (Johnston & Petacchi, 2017), and 0 otherwise. (Source: Compustat)
<i>Corporate governance quality</i>	
CEOchairperson	An indicator variable equals to 1 if firm <i>i</i> has CEO also working as a chairperson of board member of in year <i>t</i> (Hesse et al., 2017). (Source: Thomson Reuters Eikon).

---

*Panel C. Financial crisis*

Financial crisis	An indicator variable equals to 1 if filing year of firm <i>i</i> 's S-1 is in 2008 or 2009, when financial crisis occurred, and 0 if the filing year is from 2005 to 2007 or from 2010 to 2011 (Colaco et al., 2018)
------------------	---

---

---

*Panel D. Enactment of JOBS Act*

JOBS Act                      An indicator variable equals to 1 if filing year of firm i's S-1 is from 2012, when the JOBS Act was enacted, to 2017, and 0 otherwise (Source: Thomson Reuters Eikon)

EGC                              An indicator variable equals to 1 if IPO firm has total annual gross revenues that are less than \$1 billion in the most recent fiscal year, and 0 otherwise (Source: Compustat)

---

*Panel E. Market concentration*

Herfindahl index               $Herfindahl\ Index = \sum_{i=1}^n \left( \frac{sales_{t-1, ij}}{sales_{t-1, j}} \right)^2$  where  $sales_{t-1, ij}$  is firm i's sales in year t-1 in industry j, as defined by two-digit SIC codes,  $sales_{t-1, j}$  is the sum of sales in year t-1 for all firms in industry j (Wang, 2016)

---

*Panel F. Earnings management proxies*

DACC                              The level of abnormal accruals of firm i in year t-1, measured using the modified Jones (1991) model and adjusted for the abnormal accruals of a performance- matched non-IPO firm, following Kothari et al. (2005)

ACFO                              The level of abnormal cash flow from operations of firm i in year t-1, which is measured by using the model developed by Dechow et al. (1998) and applied by Roychowdhury (2006)

ADISEXP                         The level of abnormal discretionary expenses of firm i in year t-1, which is measured by using the model developed by Dechow et al. (1998) and applied by Roychowdhury (2006)

---

## Appendix 2. Supplemental tables for Chapter 2

### Appendix 2.1. Comparison of public filing and confidential submission

Subject	Public filing	Confidential submission
<b>Origin of Process:</b>	Securities Act, since May 27, 1933	JOBS Act, since April 5, 2012
<b>Eligibility:</b>		
Companies	All companies	EGCs only
Registrations	All type	IPOs on Form S-1 (US issuers) or Form F-1 (foreign private issuers) only
<b>Contents of Filing/Submission:</b>		
Completeness of filing/submission	Complete	Substantially complete (except for disclosures EGCs are permitted to omit)
Specification of proposed maximum offering size on cover	Required	Not required until public filing
Financial statements	Required (subject to permitted omissions)	Required (subject to permitted omissions)
Accounting standards election (EGCs only)	Required	Not required until public filing
Signatures	Required	Not required until public filing
Signed audit reports	Required	Required
Consents	Required	Not required until public filing
Exhibits	Required	Required
SEC registration fee	Required	Not required until public filing
FINRA filing fee	Required	Required
<b>SEC and FINRA Review:</b>		
Timing and nature of SEC review	Unchanged	Unchanged
Public release of SEC review correspondence	20 business days following effective date	20 business days following effective date
Timing and nature of FINRA review	Unchanged	Unchanged

<b>Public Filing Requirements:</b>		
IPO	Initial filing	15 days before road show (or 15 days before effectiveness, if no road show)
Exchange Act registration	Initial filing	Not applicable
Follow-on offering	Initial filing	Not applicable
<b>Confidentiality</b>		
<b>Considerations:</b>		
Confidential treatment requests	Permitted	Permitted, but not necessary prior to public filing
Confidentiality of filing/submission	None, subject to confidential treatment requests	Exempt from disclosure in response to FOIA requests, until public filing
Public announcement of filing/submission	Permitted	Permitted
<b>Submission Mechanics:</b>		
Submission via EDGAR	Required	Required
Form type	Form S-1 (initial filing) and Form S-1/A (amendments)	DRS (initial submission) and DRS/A (amendments)

Source: WilmerHale (2018)

**Appendix 2.2. Example of an SEC comment letter on Netlist, Inc.'s IPO registration statement**

September 12, 2006

Mail Stop 6010

Chun K. Hong

President and Chief Executive Officer

Netlist, Inc.

475 Goddard

Irvine, CA 92618

**Re: Netlist, Inc.**

**Registration Statement on Form S-1 Filed**

**August 18, 2006**

**File No. 333-136735**

Dear Mr. Hong:

I have reviewed your filing and have the following comments. Where indicated, I think you should revise your document in response to these comments. If you disagree, I will consider your explanation as to why my comment is inapplicable or a revision is unnecessary. Please be as detailed as necessary in your explanation. In some of my comments, I may ask you to provide us with information so I may better understand your disclosure. After reviewing this information, I may raise additional comments.

Please understand that the purpose of my review process is to assist you in your compliance with the applicable disclosure requirements and to enhance the overall disclosure in your filing. We look forward to working with you in these respects. We welcome any questions you may have about my comments or on any other aspect of my review. Feel free to call us at the telephone numbers listed at the end of this letter.

General

1. Please confirm that any preliminary prospectus you circulate will include all non-Rule 430A information. This includes the price range and related information based on a *bona fide* estimate of the public offering price within that range, and other information that was left blank throughout the document. Also, note that I may have additional comments after you file this information

#### Fee Table

2. If you are calculating the fee based on rule 457(a), the fee table should include the amount of shares to be registered and the proposed maximum offering price.

#### Prospectus

3. Please provide us a copy of the graphics you intend to use in your document.
4. Please tell us how the graphics do not lead investors to believe that you manufacture integrated circuits or printed circuit boards. Also tell us how the manner that you depict the products in the graphics accurately represents their proportionate contribution to your business.

#### Table of Contents, page i

5. You may not disclaim responsibility for your disclosure. Please revise the last paragraph on page i accordingly.

#### Prospectus Summary, page 1

6. Refer to the first paragraph of your disclosure here and on page 7. Please tell us where you have incorporated documents by reference into this prospectus and what authority permits you to incorporate such disclosure into a prospectus included in registration statement on Form S-1 for an initial public offering.
7. Please tell us the criteria you used to determine which customers to name in your summary and on page 52. Also tell us whether you named all customers who satisfy those criteria.
8. Please clarify the phrases “form factor” and “planar design.”
9. Please highlight in the summary your reliance on the server market.

Netlist, Inc., page 1

10. I note your objective on page 2 to develop non-volatile memory. If your current products consist only of volatile memory, please say so in clear, direct language that explains what volatile memory is in a prominent section of your summary.

Special Note Regarding Forward Looking Statements, page 23

11. Please remove the reference to statutory provisions that do not apply to initial public offerings.

Use of Proceeds, page 24

12. Please disclose the approximate amount of proceeds intended to be used for each identified purpose.

Overview, page 30

13. Please clarify the nature of the issues you mention in the last sentence on page 30.

Capital Resources, page 41

14. Please discuss the reasons for the refinancing of the convertible debt of \$950,000 and the trends in cost of capital from the refinancing.
15. Please discuss the loan covenants you had violated and the reasons for the violations.
16. With a view toward disclosure, please tell us whether your obligation to issue \$4 million in equity by March 31, 2007 expires upon your initial public offering.

Industry Background, page 45

17. Please provide us with copies of the industry reports you cite on pages 45 and 46. Clearly mark the relevant sections that support the data you have included in your prospectus and the page number of your prospects where such data has been used. Also, tell us whether the sources of the cited data have consented to your use of



their names and data and whether any of the reports were commissioned by you or prepared specifically for your use.

18. Please provide us with independent support for your claim on page 49 that you believe that you “have established a reputation as a technology leader in the design, development, and manufacture of high performance memory subsystems.”

Manufacturing, page 53

19. Please describe how your manufacturing processes invoke the environmental laws mentioned on page 18 and clarify whether you are in compliance with those laws.

Intellectual Property, page 55

20. Please discuss the duration of your material patents.

Facilities, page 56

21. With a view toward disclosure, please tell us the status of your China facility. Do you know the size or location? Will you own or lease?

Management, page 57

22. It appears that your CFO also is a partner at another firm. If so, please add a risk factor to describe the effect of a part-time CFO. Also indicate the amount of time he devotes to your company.

Director Compensation, page 60

23. Please disclose how you will determine the exercise price of the option grants.

Employment Agreements, page 64

24. Please describe the connection of your employment agreement with your CFO to your agreement with Tatum. Also disclose the option grant provision of the employment agreement.

Related-Party Transactions, page 67

25. Please disclose the date of the loan to Mr. P. K. Hong.

26. Please tell us why Mr. P. K. Hong is not identified as an executive officer on page 57.
27. Please file the agreements mentioned in this section.
28. Please include disclosure in this section for each of the past three years. For example, we note the full-year disclosure about Mr. P. K. Hong is limited to 2005. We also note the transactions mentioned in Note 7 on page F-23. See instruction 2 to Regulation S-K Item 404

Other Transactions, page 68

29. Given your cash balance, please tell us how you will pay the bonuses to your affiliates without the proceeds of this offering. If you will use the proceeds for this purpose, please revise the “Use of Proceeds” disclosure on page 24 accordingly.
30. In the selling stockholders table, please clarify how you have reflected the options mentioned in this section.

Principal and Selling Stockholders, page 69

31. Please disclose the natural person who has voting or investment power for the shares held by Serim Paper Manufacturing.
32. Please tell us whether the selling stockholders are broker-dealers or affiliates of a broker-dealer.
33. With a view toward disclosure, please tell us when each of the selling shareholders acquired the shares to be sold in this offering. Also please tell us the amount of consideration paid.
34. Please include a row in the table for Mr. Skaggs.
35. Refer to footnote 2. Please clarify how you will allocate a partial exercise of the option.

Voting Rights, page 71

36. With a view toward disclosure, please confirm whether your disclosed majority voting rights on “all actions” includes director elections.

Federal Estate Tax, page 78

37. You may not disclaim responsibility for your disclosure. Please revise the first and second sentences of the second paragraph accordingly.

Penalty Bids, page 81

38. Please clarify what you mean by *presales*

Financial Statements

General

39. Please update the financial statements when required by Rule 3-12 of Regulation S-X.

Balance Sheets, page F-4

40. Revise to include a pro forma balance sheet (excluding effects of offering proceeds) presented along side of the historical balance sheet giving effect to the conversion of the convertible preferred stock and convertible notes payable and add a related footnote which describes the pro forma presentation. Also, to the extent the conversion of the preferred stock and notes will result in a material reduction of earnings applicable to common shareholders (excluding effects of offering), pro forma EPS for the latest year and interim period, if applicable, should be presented giving effect to the conversion (but not the offering).

Note 2 - Summary of Significant Accounting Policies, page F-10

Fiscal Year, page F-10

41. Please revise the financial statements and all related tables and disclosures to identify the actual dates on which your fiscal periods end. Similarly, present audit reports that opine on financial statements as of and for the periods ended on the actual dates on which your fiscal periods end.

Revenue Recognition, page F-12

42. Please expand to further clarify why your revenue recognition practices for product sales of high performance memory subsystems and sales of excess inventories are appropriate under SAB Topic 13A. For instance, describe what you consider to be pervasive evidence of an arrangement, clarify how you obtain customer acceptance and describe any post-shipment obligations. Please also clarify the nature and extent of any significant differences in sales terms between sales of memory sub-systems and sales of excess inventory; and, explain how those differences, if any, are considered in your revenue practices.
43. Please tell us about the terms and conditions of sales of products, including excess inventories, to distributors. Show us that your revenue practices for transactions with these entities are appropriate.
44. Please expand to describe how you are notified that inventory has been “pulled” from a hub for use by a customer. Explain how you manage that inventory to ensure that sales are recognised in the appropriate periods.

Stock-based Compensation, page F-13

45. I see that accounting for stock-based compensation was significant to your results of operations prior to the adoption of SFAS 123(R). Please tell us about and expand to describe how you determined the fair value of your common shares for intrinsic value purposes. Please address the valuations at the dates of any significant transactions, such as the stock compensation charge in 2003. Explain why you believe your estimates are appropriate.
46. Please tell us how you measured expected stock-price volatility in periods prior to the adoption of SFAS 123(R). Explain the reasons for the significant decrease in expected volatility between 2003 and 2005. Also, clarify the nature of and reasons for any changes in your methods and assumptions upon adoption of SFAS 123(R).
47. I see the significant difference between fair and the intrinsic value charges for stock-based compensation in 2003 where the intrinsic value charge significantly exceeds the fair value charge. Please further explain to us how the underlying

amounts were measured and describe the reasons for the unusual relationship.

48. Please tell us why the pro forma stock-based compensation amount for 2005 is a reduction of the reported net loss totaling \$354,000.

Note 7 – Convertible Notes Payable, page F-23

49. Please tell us and disclose how you estimated the fair value of the preferred shares underlying the convertible notes at issuance and at each modification.
50. Please tell us why the accounting for the conversion options of the various notes is appropriate under SFAS 133.

Item 16, Exhibits and Financial Statement Schedules

51. Please include updated accountants' consents with any amendment to the filing.
52. Please file complete exhibits with all attachments completed. For example, we note the blanks in the attachment to exhibit 10.10.

Item 17. Undertakings

53. Please note that due, in part, to the language of Securities Act Rule 430C(d), the undertakings included in Regulation S-K Item 512(a)(5)(ii) and 512(a)(6) should be included in filings for initial public offerings. Please revise your filing to include those undertakings.

As appropriate, please amend your registration statement in response to these comments. You may wish to provide us with marked copies of the amendment to expedite my review. Please furnish a cover letter with your amendment that keys your responses to my comments and provides any requested information. Detailed cover letters greatly facilitate my review. Please understand that I may have additional comments after reviewing your amendment and responses to my comments.

I urge all persons who are responsible for the accuracy and adequacy of the disclosure in the filing to be certain that the filing includes all information required under the Securities Act of 1933 and that they have provided all information investors require for an informed investment decision. Since the company and its management are in possession

of all facts relating to a company's disclosure, they are responsible for the accuracy and adequacy of the disclosures they have made.

Notwithstanding my comments, in the event the company requests acceleration of the effective date of the pending registration statement, it should furnish a letter, at the time of such request, acknowledging that:

- should the Commission or the staff, acting pursuant to delegated authority, declare the filing effective, it does not foreclose the Commission from taking any action with respect to the filing;
- the action of the Commission or the staff, acting pursuant to delegated authority, in declaring the filing effective, does not relieve the company from its full responsibility for the adequacy and accuracy of the disclosure in the filing; and
- the company may not assert staff comments and the declaration of effectiveness as a defense in any proceeding initiated by the Commission or any person under the federal securities laws of the United States.

In addition, please be advised that the Division of Enforcement has access to all information you provide to the staff of the Division of Corporation Finance in connection with my review of your filing or in response to my comments on your filing.

I will consider a written request for acceleration of the effective date of the registration statement as a confirmation of the fact that those requesting acceleration are aware of their respective responsibilities under the Securities Act of 1933 and the Securities Exchange Act of 1934 as they relate to the proposed public offering of the securities specified in the above registration statement. We will act on the request and, pursuant to delegated authority, grant acceleration of the effective date.

I direct your attention to Rules 460 and 461 regarding requesting acceleration of a registration statement. Please allow adequate time after the filing of any amendment for further review before submitting a request for acceleration. Please provide this request at least two business days in advance of the requested effective date.

You may contact Praveen Kartholy at (202) 551-3778 or Gary Todd at (202) 551-3605 if you have questions regarding comments on the financial statements and related matters. Please contact Tom Jones at (202) 551-3602 or me at (202) 551-3617 with any other questions.

Sincerely,

Russell Mancuso  
Branch Chief

cc (via fax): James W. Loss

### Appendix 3. Supplemental tables for Chapter 3

#### Appendix 3.1. Coding scheme of the SEC comment letters

Code	Issue types	Descriptions
I. CORE-ACCOUNTING ISSUES		<p>These items represent the SEC' comments earnings item and other financial items which are components of earnings measurement; including the comments mentioning issues on choice of accounting method, application of accounting method and issues on accounting-transactions/actions regarding the financial items. All comments on section "Note to Financial Statements" about a specific transaction/event should be categorised into this item or the item of "Non-earnings-related issues".</p>
A1	Assets	<p>Questions, critiques and requests regarding choice of accounting methods (accounting principles, accounting literature) as well as application of accounting methods (estimates, assumptions, timing, classification, calculation, recording) of total assets, current assets (e.g. receivables, inventories, cash or cash equivalents, marketable securities, trading securities), non-current assets (e.g. property, plants and equipment, valuation allowance, deferred tax assets, plan assets, long-term securities), including choice and application of accounting methods of contra account (e.g. depreciation and amortization)</p>
A2	Liabilities	<p>Questions, critiques and requests regarding choice of accounting methods (accounting standards, accounting principles, accounting literature) as well as application of accounting methods (estimates, assumptions, timing, classification, calculation, recording) of total liabilities, current liabilities (e.g. payables, tax payables, current portion of long-term debt, accrued warranty) and non-current liabilities (e.g. long-term debt, deferred tax liabilities), including choice and application of accounting methods of contra accounts</p>
A3	Equity	<p>Questions, critiques and requests regarding choice of accounting methods (accounting principles, accounting literature) as well as application of accounting methods (estimates, assumptions, timing, classification, calculation, recording) of</p>



		(historical) equity (not including the valuation of stock in the offering), e.g. common stock, preferred stock, stock warranty (including contra account, e.g. treasury stock)
A4	Income	Questions, critiques and requests regarding choice of accounting methods (accounting principles, accounting literature) as well as application of accounting methods (estimates, assumptions, timing, classification, calculation, recording) of revenue recognition and other income (e.g. interest income, deemed dividend, reimbursement)
A5	Expense	Questions, critiques and requests regarding choice of accounting methods (accounting principle, accounting literature) as well as application of accounting methods (estimates, assumptions, timing, classification, calculation, recording) of cost of good solds, R&D expense, advertising expense, compensation expense (e.g. valuation of stock option grant) and other expenses (e.g. Selling, general and administration expense, Benefit expense, contribution margin, customer acquisition cost, income tax, provision for income tax), including choice and application of accounting methods of contra-account (e.g. tax benefit)
A6	Earnings	Questions, critiques and requests regarding choice of accounting methods (accounting principles, accounting literature) as well as application of accounting methods (estimates, assumptions, timing, classification, calculation, recording) of earning numbers (e.g. net income, other comprehensive income, EBIT, EBITDA) earning-related ratio (e.g. ROA, EPS), including choice and application of accounting methods of Extraordinary items and discontinued operation
A7	Other financial items	Questions, critiques and requests regarding choice of accounting methods (accounting principles, accounting literature) as well as application of accounting methods (estimates, assumptions, timing, classification, calculation, recording) of aggregated financial items (e.g. working capital, capitalization, securities, cash flows, free cash flows, off-balance sheets items), or more than one financial items coded from A1-A6 (e.g. whole financial statements), or other components of financial statement (e.g. segment reporting, reporting currency, fiscal year end), including new accounting announcements and auditors report about firms' financial statements.
A8	Accounting-related transactions/events	Questions, critiques and requests regarding asset acquisitions and dispositions (e.g., when and how specific R&D activities or maintenance activities or sales of PPE or shipment of merchandise are conducted as well as when and how specific compensation expenses are paid) and firm's other accounting-related transactions/actions which are often presented in section of "Note to Financial Statements" in S-1 filings (e.g. related-party (board members, other insiders) transaction,

		M&A activities, investment activities, acquisitions, leasing activities, off-balance sheet arrangement) , including accounting treatments for subsequent events.
<b>II. NON-CORE-ACCOUNTING ISSUES</b>		<b>These items represent the SEC' comments not relating earnings item and other financial items which are components of earnings measurement. All comments on section "Note to Financial Statements" about a specific transaction/event should be categorised into this item or the item of "Earnings-related issue".</b>
B1	Pro forma financial information	Questions, critiques and requests regarding pro forma financial information derived from effects of changes in the firm's capital structure based on the offering or effects of a merger transaction. Pro forma financial item presents historical balance sheet and income statement information adjusted as if a transaction had occurred in the latest fiscal year or subsequent interim period
B2	Non-GAAP measure	Questions, critiques and requests regarding non-GAAP financial information. Non-GAAP financial measure is a numerical measure of a registrant's historical or future financial performance, financial position, or cash flow that excludes (or includes) amounts, or is subject to adjustments that have the effect of excluding amounts, that are included (or excluded) in the most directly comparable GAAP measure.
B3	Internal controls	Questions about the firm's internal control systems and the testing, if any, of controls as well as reportable conditions or other irregularity that was identified by management related to the firm's internal controls
B4	Claims, Commitments and Contingencies	Issues or comments raised about the firm's accounting for and disclosure of it obligations and long-term commitments, including legal matters
<b>III. OFFERING ISSUES</b>		<b>These items represent the SEC' comments relating to the issuers' initial public offering including offering attributes, offering procedures, offering effect, regulations, offering documents and S-1 filing's sections</b>

C1	Characteristics of offering	Requests for information about stock characteristics (e.g. type of stocks, number of stocks, stock price and stock value relating to issuers' initial public offering), symbol used to list on stock exchange, timing of offering (e.g. a point of time or duration of the issuer's initial public offering or other offering-related transactions), dividends to pay in the future, actions affecting stocks' value (e.g. conversion of stocks, split of stocks, redemption of stocks, offering fee (e.g. registration fee), offering-related transactions/actions ( e.g. listing, sale, transfer, or other disposition of stocks by the original firm's member to a third party or Exit event), offering-related regulation (e.g. JOBS Act), reasons why the firm is undergoing an initial public offering as well as why they are filing S-1.
C2	Proceed	Requests for information about amount of proceed from their initial public offering, how issuer raised the proceeds as well as how they will use this proceed.
C3	Parties of offering	Questions and requests regarding principal and selling stockholders ( including their identifications, their control indicated by the number/percentage of stocks held, their consents, tax status, rights as and communication with the issuer), underwriters (including their identification, obligation, compensation, underwriting procedures and underwriters' agreements) and other parties, e.g. sponsor, consultant, NASDAQ representative (including their identification, obligation and transactions)
C4	Effect of offering	Critiques and requests regarding effects of the issuer's initial public offering (e.g. dilution effect, costs of being a public company)
C5	Risk factors (offering)	Questions and requests regarding characteristics and impact of risk factors on the issuers' initial public offering as well as their risk management
C6	Offering-related document	Questions, critiques and requests regarding the use, style and content of exhibits, undertakings, consent letters and other offering-related document (e.g. written communication with potential investors, research reports)
<b>IV. BUSINESS ISSUES</b>		<b>These items represent SEC's comments relating to issuer's manufacturing, operating, R&amp;D, marketing &amp; selling activities</b>
D1	Products/Services	Questions and requests regarding definition, volume, pricing of firms' products/services, including firms' operating segments (including identification, aggregation or disaggregation of operating segments)

D2	External stakeholders	Request for information about identifications, behaviours, related activities of customers (including current customers, potential customers, website members and market, suppliers (including current and potential suppliers), holding company and other external stockholders (e.g. regulators, supporters, partners, vendors), including business-related (e.g. environmental law, tax rate, legal proceedings), and characteristics or trends of industry (e.g. Key Performance Indicators of industry)
D3	Business activities	Question , critiques and requests regarding the issuers' operating activities (including manufacturing, R&D, distributing, marketing, selling a product or service (e.g. terms of sale, backlog, reimbursement, warranty)), financing activities (including activities of historical/current stockholders, historical/current dividends, credit facility, partnership distribution, market capitalization, indebtedness), investment activities (e.g. investment in stocks and bonds, purchase/sale of fixed assets, capital expenditure), M&A activities, restructuring activities, business plan, and firm's ability and capacity to continue as a going concern
D4	Competition	Questions, critiques and requests regarding firm's competitive strength
D5	Material Agreements	Question, critiques and requests regarding material contracts/agreements (e.g. lease agreements, debt/credit agreement, debt covenants, contractual obligation) and their terms
D6	Properties and Facilities	Question , critiques and requests regarding firm's operating location, technology infrastructure, intellectual property (including terms of and claims against intellectual property)
D7	Risk factors (business)	Questions and requests regarding characteristics and impact of risk factors on the issuers' business as well as risk management, e.g. self-insurance program
D8	Results of operation	Questions, critiques and requests regarding issuer's results from operations (e.g. liquidity, probability, capital resource, gross margin, key business metrics, segment reporting) which are often presented by the disclosure of amount of accounting item, determinants/trends of the results as well as the firm's plans to achieve the results, including critiques regarding the issuer's business strength
D9	External reports	Question, critiques and requests regarding information from reports prepared by external parties, data cited from these reports as well as the identification of the parties who prepared these reports

D10	Status	Questions, critiques and requests regarding firm's status e.g. limited liability company, Delaware corporation, emerging growth company
<b>V. CORPORATE GOVERNANCE ISSUES</b>		<b>These items represent the SEC's comments relating to the issuers' corporate governance mechanism</b>
E1	Managers	Requests about information about identifications of the issuer's managers, their agreement, the time and resources they have been devoting to the firm as well as their right & obligation (e.g., issues on the firms' status as controlled company), including key performance measure applied to the managers, leadership structure and managers' signatures
E2	Related parties' transactions	Questions and requests regarding transactions of related parties, including anti- takeover provisions that are included in firm's by-laws
E3	Organizational structure	Questions and requests regarding the issuers' organizational structure and ownership structure (including identifications, control and interest of the owners)
E4	Compensation	Questions, critiques and requests regarding amount of non- or stock-based compensation which was paid as well as the compensation plans for the firm's executives and employees, metrics that the firm (typically through its board of directors) uses to assess management performance, in order to determine annual bonuses
E5	Employee	Questions, critiques and requests regarding employee-related matters, including salary, labor issues, employment contracts, pension and other employee benefit
<b>VI. DISCLOSURE ISSUES</b>		<b>These items represent the SEC's comments relating to language used in the S-1 filings as well as the qualitative characteristics of the information disclosed in the S-1 filings. These items also represent the SEC's request for additional documents. In addition, these items represent the SEC's comments on the issuer's undertaking relating to the filing and disclosure of S-1, amended S-1 and other related documents</b>
F1	Technical information	Questions, critiques and requests regarding meaning and use of industry-specific terms, jargons, defined terms in S-1 filing
F2	Abstract word	Questions, critiques and requests regarding use of abstract words
F3	Tone	Critiques and requests regarding word tone in S-1 filings, e.g. over-positive tone (including hype or overstating information), uncertain tone

F4	Selective disclosure	Critiques and requests selective disclosure S-1 filing, for example, the disclosure focus on upside or 'good' information with lack of discussion of the risks and downside of their business and operating environment
F5	Completeness	Critiques and requests regarding lack of necessary or important information required by specific rules (e.g. Regulation S-K), request of including information which is disclosed in other sections in S-1 filings or other document, requests for including additional statement.
F6	General information	Questions, critiques and requests regarding general, unclear or unintelligible, unnoticeable information in S-1 filing which are often required to clarify by a specific rule, requests for highlight unnoticeable information or including more clear statement.
F7	Inaccurate/inappropriate disclosure	Questions, critiques and requests regarding (could-be) inaccurate or (could-be) inappropriate disclosures of information (e.g. disclaimer, incorrect grammar) as well as (could-be) inappropriate position of the information in S-1 filing, including images, graphics or artworks used in the S-1 filing
F8	Disclosure too outdated, generic, or too detailed	Critiques regarding the degree to which the information disclosed in S-1 filing are outdated, or not unique/specific to issuer, or too much detail and lengthy
F9	Relevance	Questions regarding information in S-1 filings that conflict with other, unnecessarily repeated information and methods of matching information
F10	References	Questions, critiques and requests regarding use, style of references as well as requests for adding references in S-1 filings
F11	Format	Questions, critiques and requests regarding pictures, graphic and artworks used in S-1 filing as well as format (design or layout) of financial statements and other disclosure in S-1 filings which is inappropriate or difficult to follow
G1	<b>VII. OTHER ISSUES</b>	<b>The SEC did not mention any issues of S-1 filings in their comment or they mention the issues that does not currently occur in S-1 filing</b>

## **Appendix 3.2. Coding data preparation**

- *Extraction of comments in SEC comment letters*

Using the EDGAR database and IPO firms' CIK numbers, this study collects the first SEC comment letter of an IPO firm's S-1 filing as the earliest letter in the same conservation relating to the S-1 filing. The first SEC comment letter is recognised as the document having filing type as "UPLOAD", filing date in period from date of initial S-1 filing to effective date of final prospectus, and subject as follows

"Re: [Company Name]

Registration Statement on Form S-1 ...."

In total, this study obtains 710 initial SEC comment letters including 633 letters with .pdf extensions and 77 letters with .txt extensions. As for the 633 letters with .pdf extensions, this study convert the letters from pdf format into txt format by using the "pdftools" package in the R software package. An issue that arises from the conversion is that sentences, which form comments in the converted letters, contain line breaks in the middle of them. To resolve this issue, the "gsub" command in R was used to replace all line breaks in the middle of sentences or white-space characters with an ASCII non-breaking space character. Following that, this study extracts comments and their section names from each SEC comment letter. Each comment in a specific SEC comment letter is recognised as a sentence or a paragraph starting with a number followed by a period and ending with a sequential number following by another period. The section name of each comment is recognised as a word or word phrase presented in a distinct line and followed by a specific comment or a specific group of comments.

- *Process for cleaning the training data and the remaining data*

The text of comments in the training dataset and remaining dataset are cleaned before applying the Naïve Bayes algorithm with support of WEKA machine learning software. Details of the cleaning process are as follows.

- a. All numeric characters are deleted without replacing with a space.
- b. All apostrophes are deleted without replacing with a space.
- c. All quotation marks are deleted without replacing with a space.

- d. All ampersands are replaced with the word “and”.
- e. If a parenthesis is immediately preceded and followed by single non-breaking spaces, the parenthesis is deleted without replacing with a space. If not, the parenthesis is replaced with a single non-breaking space.
- f. If a square bracket is immediately preceded and followed by a single non-breaking space, the parenthesis is deleted without replacing with a space. If not, the square bracket is replaced with a single non-breaking space.
- g. All remaining non-alphanumeric characters (e.g. period, ellipses, hyphens, asterisk, percent sign, number sign) are replaced with a single non-breaking space.
- h. All single alphabetic characters are deleted without replacing with a space.
- i. All multiple successive non-breaking spaces are replaced with a single non-breaking space.

The remaining text of comments in the training dataset and remaining dataset consist only of alphabetic characters and a single non-breaking space.

### **Appendix 3.3. Computation**

A Naïve Bayesian algorithm with the support of the WEKA machine learning software is employed to perform the computation of Bayes theorem. Both the training dataset and the remaining dataset are first converted from excel format into arff format and then the data is structured following the Weka-readable structure.<sup>86</sup> Secondly, a function in Weka called “StringtoWordVector” is used to convert all comments in the dataset from text (string) attributes into a set of numeric attributes indicating word occurrence in each comment. The function “StringtoWordVector” also automatically implements the stemming and stop-wording processes, which remove inflected words to their base or root form (stemming process) and remove words which do not add meaning to a specific sentence, e.g. articles, case particles, conjunctions (stop-wording process). Thirdly, the converted training dataset, formed from manual coding of 4,807 comments in 261 first SEC comment letters, are imported into the

---

<sup>86</sup> Readable format of arff file: <https://www.cs.waikato.ac.nz/ml/weka/arff.html>



Naïve Bayes Algorithm and the training process is run by applying the “Naïve Bayes Multinomial” classifier in Weka.

After developing the training model, the “FilteredClassifier” function in Weka is used to apply the Naïve Bayes learning algorithm to predict the issue types of the 19,367 comments from 449 initial SEC comment letters in the remaining dataset.

### Appendix 3.4. Descriptive statistics of SEC review attributes by reviewers

Reviewer	N	Duration		#Letters		#Comments		#Themes	
		mean	median	mean	median	mean	median	mean	median
Jennifer Hardy	8	178.00	105.00	3.63	4.00	47.50	42.00	5.13	5.00
Justin Dobbie	9	111.56	91.00	4.00	4.00	35.89	35.00	4.78	5.00
Maryse Mills-Ape	12	102.25	39.50	2.42	1.50	16.42	9.50	3.92	3.50
Susan Block	7	360.71	186.00	5.43	4.00	42.00	55.00	4.57	5.00
Loan Lauren P. N	12	127.17	97.50	3.75	3.00	37.00	27.00	4.33	5.00
Jay E. Ingram	14	176.50	149.50	4.00	4.00	31.79	34.00	5.07	6.00
Russell Mancuso	36	146.42	104.00	4.39	4.00	46.39	46.50	5.08	5.00
Mark P. Shuman	36	154.89	110.00	3.31	3.00	33.19	34.50	4.92	6.00
Peggy A. Fisher	24	119.83	91.00	3.42	3.00	38.63	37.50	5.17	5.00
Karen J. Garnett	7	132.00	109.00	3.86	4.00	51.86	59.00	5.29	5.00
Anne Nguyen Park	13	93.08	100.00	3.15	3.00	29.08	29.00	4.31	5.00
H. Christopher O	31	181.00	98.00	3.90	4.00	46.97	48.00	5.32	5.00
Max A. Webb	14	122.36	108.50	3.71	4.00	46.07	47.50	4.64	5.00
Pamela A. Long	50	137.76	103.00	3.86	4.00	50.00	52.00	4.92	5.00
Amanda Ravitz	29	92.17	75.00	2.31	2.00	18.93	11.00	3.72	3.00
Larry Spigel	44	141.91	104.00	3.27	3.00	36.57	39.50	4.82	5.00
H. Roger Schwall	37	125.57	104.00	3.43	3.00	34.92	35.00	4.81	5.00
Barbara C. Jacob	58	109.28	101.50	3.10	3.00	32.74	37.50	4.48	5.00
Jeffrey P. Riedl	141	125.31	84.00	2.89	3.00	25.39	19.00	3.89	4.00
Mara L. Ransom	18	125.56	95.50	3.28	3.00	28.67	33.00	4.83	5.50
John Reynolds	34	100.71	83.50	3.91	4.00	29.38	22.50	4.47	4.00
Suzanne Hayes	15	69.33	46.00	1.47	1.00	3.00	3.00	1.93	2.00
Rolaine S. Bancr	1	657.00	657.00	6.00	6.00	61.00	61	4.00	4.00
John Stickel	1	111.00	111.00	2.00	2.00	51.00	51	7.00	7.00
Julie F. Rizzo	1	699.00	699.00	10.00	10.00	67.00	67	6.00	6.00
Duc Dang	1	84.00	84.00	3.00	3.00	29.00	29	6.00	6.00
Mary Beth Bresli	1	137.00	137.00	5.00	5.00	34.00	34	5.00	5.00
Kevin Woody	1	82.00	82.00	2.00	2.00	29.00	29	4.00	4.00
Cicely LaMothe	1	90.00	90.00	3.00	3.00	4.00	4	2.00	2.00

Joshua Ravit	1	93.00	93.00	3.00	3.00	62.00	62	5.00	5.00
William Friar	1	140.00	140.00	1.00	1.00	51.00	51	5.00	5.00
Mark S. Webb	1	97.00	97.00	5.00	5.00	47.00	47	6.00	6.00
Tim Buchmiller	1	226.00	226.00	6.00	6.00	39.00	39	5.00	5.00
Jeffrey Jaramill	1	226.00	226.00	6.00	6.00	41.00	41	6.00	6.00
Kyle Moffatt	1	394.00	394.00	5.00	5.00	81.00	81	7.00	7.00
Jennifer Gowetsk	1	57.00	57.00	2.00	2.00	4.00	4	1.00	1.00
David L. Orlic	1	243.00	243.00	3.00	3.00	48.00	48	5.00	5.00
Celeste Murphy	1	113.00	113.00	5.00	5.00	39.00	39	5.00	5.00
Stephen Krikoria	1	44.00	44.00	1.00	1.00	6.00	6	4.00	4.00
Jan Woo	1	27.00	27.00	1.00	1.00	1.00	1	1.00	1.00
Martin James	1	68.00	68.00	3.00	3.00	37.00	37	6.00	6.00
Dietrich A. King	1	62.00	62.00	1.00	1.00	1.00	1	1.00	1.00
Michael McTierna	2	140.50	140.50	3.00	3.00	39.00	39	4.00	4.00
Thomas A. Jones	2	137.50	137.50	3.00	3.00	54.50	54.5	5.00	5.00
Tangela Richter	2	137.00	137.00	3.00	3.00	27.00	27	5.00	5.00
Daniel Morris	2	234.00	234.00	8.00	8.00	75.00	75	5.00	5.00
Elaine Wolff	2	85.50	85.50	3.50	3.50	54.50	54.5	6.00	6.00
Tom Kluck	2	62.50	62.50	1.50	1.50	7.00	7	3.50	3.50
Sara D. Kalin	3	85.33	95.00	3.67	4.00	47.33	57	3.67	4.00
John Dana Brown	3	46.67	31.00	2.33	2.00	13.67	3	2.67	2.00
J. Nolan McWilli	3	138.00	111.00	2.67	2.00	29.33	20	4.00	4.00
Matthew Crispino	3	64.00	64.00	3.33	3.00	12.67	10	4.33	4.00
James Allegretto	3	231.67	243.00	4.33	4.00	61.67	59	5.67	6.00
Perry Hindin	5	135.80	86.00	3.40	4.00	49.40	53	5.80	6.00
Michele M. Ander	5	134.00	104.00	3.40	4.00	50.60	50	4.80	5.00
No signature	4	41.00	25.00	1.50	1.00	10.00	2	2.25	1.50
Total	710	149.23	131.99	3.50	3.40	36.18	35.71	4.52	4.57

### Appendix 3.5. Impact of financial crisis 2008 - 2009 on the number of SEC comments

	#Comments
Financial crisis	0.007 (0.08)
Size	0.001 (0.05)
Age	0.007 (0.56)
Sales growth	0.001 (0.29)
Segments	0.036 (0.97)
Restructuring	0.145 (0.83)
M&A	-0.250 (-1.14)
Leverage	0.004 (1.24)
Z-score	0.001 (0.02)
Positive earnings	0.094* (1.70)
External financing	0.064 (0.57)
Big 4	-0.169 (-1.18)
CEOchairperson	0.079 (0.67)
Industry FE	Included
N	238
Pseudo R2	0.0089

This table presents the analysis of the impact of financial crisis 2008 - 2009 on the number of SEC comments in the initial comment letters on the sample of 238 IPOs between 2005-2011. The period of 2012-2017 is not included in this analysis in order to mitigate the impact of the JOBS Act enacted in 2012. Negative binomial regression is employed in this analysis. The dependent variables are SEC review attributes including *#Comments*. The independent variables are *Financial crisis*, IPO firm characteristics (*Size*, *Age*, *Sale growth*, *Segments*, *Restructuring*, *M&A*, *Leverage*, *Z-score*, *Positive earnings*, *External financing*, *Big4*, *CEOchairperson*). All variables are defined in Appendix 1. Results from Z-statistics are presented in parentheses below coefficient estimates, and are based on robust standard errors clustered at the industry level. \*, \*\*, and \*\*\* denote significance at the 10%, 5%, and 1% levels, respectively, based on a two-tailed test.

## Appendix 4. Supplemental tables for Chapter 4

### Appendix 4.1. Impact of the JOBS Act on SEC reviews (sales growth is included as a control variable)

	Duration	#Letters	#Comments	#Themes
JOBS Act	-1.051*** (-13.39)	-0.97*** (-13.1)	-2.27*** (-25.02)	-1.102*** (-19.44)
LnSize	-0.093*** (-3.05)	-0.023 (-0.98)	-0.118 (-1.39)	-0.028 (-1.11)
Sales growth	-0.001*** (-5.79)	-0.001 (-0.17)	-0.001 (-0.39)	-0.001 (-0.18)
Leverage	0.001 (0.14)	0.001 (0.21)	-0.005 (-1.26)	-0.001 (-0.98)
Firm age	-0.005 (-0.41)	0.004 (0.2)	0.015 (0.66)	0.005 (0.37)
Segments	-0.025 (-1.02)	-0.006 (-0.26)	0.05 (1.09)	0.008 (0.44)
Z-score	-0.001* (-1.81)	-0.002*** (-2.73)	-0.001 (-0.66)	-0.002*** (-2.72)
Big 4	-0.096 (-1.31)	-0.035 (-0.41)	-0.051 (-0.32)	0.042 (0.65)
Restructuring	0.006 (0.08)	0.093 (1.1)	-0.014 (-0.06)	-0.034 (-0.38)
M&A	0.071 (1.31)	0.054 (0.57)	0.467** (2.54)	0.195* (1.85)
Positive earnings	0.144** (2.31)	0.066 (1.11)	0.239** (2.14)	0.024 (0.4)
CEOchairperson	0.049 (0.65)	0.068 (0.81)	0.092 (0.67)	-0.031 (-0.52)
Industry FE	Included	Included	Included	Included
N	464	464	464	464
Pseudo R2	0.0814	0.1344	0.0753	0.136

This table presents the results of the multivariate analysis of effect of JOBS Act 2012 on SEC review attributes for the sample of 722 EGC-eligible IPOs between 2005 and 2017, in which *Sales growth* is included as a control variable. All other variables are defined in Appendix 1.1. Negative binomial regression is used to run this regression. The regressions include industry fixed effects using two-digit SIC code. Results from Z-statistics are presented in parentheses below coefficient estimates, and are based on robust standard errors clustered at the two-digit SIC industry level. \*, \*\*, and \*\*\* denote significance at the 10%, 5%, and 1% levels, respectively, based on a two-tailed test.

## Appendix 4.2. Marginal effects of JOBS Act on SEC review attributes

	<b>Duration</b>	<b>#Letters</b>	<b>#Comments</b>	<b>#Themes</b>
JOBS Act	-93.557*** (-18.36)	-2.313*** (-13.92)	-53.204*** (-8.71)	-3.552*** (-13.95)
LnSize	-10.968*** (-2.84)	-0.104 (-1.51)	-2.766** (-2.01)	-0.13*** (-2.82)
Leverage	0.033* (1.76)	0.001 (1.63)	-0.001 (-0.05)	0.001 (0.3)
Firm age	0.473 (0.32)	0.033 (0.81)	1.482 (1.34)	0.049 (1.34)
Segments	-1.88 (-0.43)	-0.024 (-0.36)	2.205* (1.72)	0.026 (0.44)
Z-score	0.04* (1.68)	-0.001** (-2.44)	-0.014 (-1.05)	-0.003*** (-6.86)
Big 4	-3.435 (-0.49)	-0.128 (-0.91)	-2.231 (-0.61)	0.072 (0.36)
Restructuring	6.385 (0.52)	0.199 (0.92)	-6.06 (-1.09)	-0.181 (-0.72)
M&A	6.691 (1.08)	0.056 (0.38)	6.913*** (2.91)	0.665*** (3.25)
Positive earnings	31.737*** (2.98)	0.36* (1.78)	8.685*** (4.23)	0.257* (1.89)
CEOchairperson	-4.079 (-0.56)	0.078 (0.56)	3.201 (1.18)	0.037 (0.22)
Industry FE	Included	Included	Included	Included
N	722	722	722	722

This table presents the results of the multivariate analysis of marginal effect of JOBS Act 2012 on SEC review attributes for the sample of 722 EGC-eligible IPOs between 2005 and 2017. Dependent variables are SEC review attributes including *Duration*, *#Letters*, *#Comments* and *#Themes*. Independent variable of interest is *JOBS Act*. Control variables are IPO firm characteristics, including *LnSize*, *Leverage*, *Firm age*, *Segments*, *Z-score*, *Big4*, *Restructuring*, *M&A*, *Positive earnings*, *CEOchairperson*. All variables are defined in Appendix 1.1. The regressions include industry fixed effects using two-digit SIC code. Results from Z-statistics are presented in parentheses below coefficient estimates, and are based on robust standard errors clustered at the two-digit SIC industry level. \*, \*\*, and \*\*\* denote significance at the 10%, 5%, and 1% levels, respectively, based on a two-tailed test.

**Appendix 4.3. Marginally moderating effect of the Herfindahl index on impact of JOBS Act on SEC review**

	<b>Duration</b>	<b>#Letters</b>	<b>#Comments</b>	<b>#Themes</b>
JOBS Act	-92.761*** (-14.87)	-2.618*** (-10.88)	-55.575*** (-8.44)	-4.039*** (-14.01)
Herfindahl Index	23.401 (1.05)	0.357 (0.94)	1.347 (0.24)	-0.201 (-0.72)
JOBS Act * Herfindahl index	12.637 (0.46)	1.866*** (2.77)	27.602 (1.53)	2.735*** (2.75)
LnSize	-10.906*** (-2.84)	-0.076 (-1.35)	-1.463 (-1.16)	-0.051 (-0.98)
Leverage	0.022 (1.19)	0.001 (1.27)	-0.006 (-1.59)	-0.001 (-0.23)
Firm age	-0.866 (-1.21)	0.003 (0.18)	0.475 (0.66)	0.016 (1.11)
Segments	1.946 (0.54)	0.019 (0.26)	2.54** (2.06)	0.037 (0.76)
Z-score	0.029 (0.98)	-0.001*** (-3.22)	-0.014 (-0.96)	-0.003*** (-5.7)
Big 4	1.692 (0.27)	-0.085 (-0.63)	-2.455 (-0.74)	-0.008 (-0.05)
Restructuring	3.678 (0.3)	0.156 (0.9)	-4.448 (-0.82)	-0.197 (-0.84)
M&A	8.641 (1.34)	0.132 (1.15)	6.714** (2.25)	0.62*** (2.74)
Positive earnings	25.581** (2.4)	0.299 (1.51)	8.169*** (3.17)	0.314* (1.83)
CEOchairperson	-4.529 (-0.68)	0.118 (0.84)	3.927 (1.55)	0.015 (0.08)
N	722	722	722	722

This table presents the results of the marginally moderating effect of Herfindahl index on the impact of JOBS Act on the SEC review attributes for the sample of 722 EGC-eligible IPOs between 2005 and 2017. The dependent variables are SEC review attributes including *Duration*, *#Letters*, *#Comments* and *#Themes*. The independent variables of interest are *JOBS Act* and *Herfindahl Index*. Moderating effects is indicated by interaction is *Herfindahl Index\*JOBS Act*. All variables are defined in Appendix 1.1. Results from Z-statistics are presented in parentheses below coefficient estimates, and are based on robust standard errors clustered at the two-digit SIC industry level. \*, \*\*, and \*\*\* denote significance at the 10%, 5%, and 1% levels, respectively, based on a two-tailed test.

**Appendix 4.4. Descriptive statistics for the percentage of each theme mentioned in SEC comment letters in pre- and post-JOBS Act period**

SEC review attributes	Pre-JOBS Act (N=349)		Post-JOBS Act (N=266)	
	Mean	Median	Mean	Median
%Core accounting issues	15.51	13.46	19.02	11.72
%Non-core accounting issues	2.8	1.85	5.2	0
%Offering issues	4.66	3.51	9.71	0
%Business issues	30.88	29.63	30.32	30
%Corporate governance issues	3.23	1.82	3.73	0
%Disclosure issues	40.95	41.86	29.46	25

This table presents the descriptive statistics of the percentage of each theme (*%Core accounting issues*, *%Non-core accounting issues*, *%Offering issues*, *%Business issues*, *%Corporate governance issues*, *%Disclosure issues*) mentioned in SEC comment letters between the pre- and post-JOBS Act period for EGC IPOs going public between 2005 and 2017. All variables are defined in Appendix 1.1.



## Appendix 4.5. Marginal impact of the JOBS Act 2012 on the types of issues of initial S-1 filings mentioned in SEC comment letters

	%Core accounting issues	%Non- core accounti ng issues	%Offering issues	%Business issues	%Corpo rate governan ce issues	%Disclos ure issues
JOBS Act	0.916 (0.45)	2.145* (1.89)	4.54** (2.07)	-5.584** (-2.15)	-1.293 (-1.15)	-8.747*** (-3.87)
LnSize	-0.153 (-0.18)	0.394 (0.52)	-0.503 (-1.23)	-1.711 (-1.14)	0.709** (2.31)	1.47** (1.96)
Leverage	-0.004 (-0.83)	-0.005** (-2.52)	0.001 (0.71)	0.003 (0.52)	0.01* (1.71)	0.009** (2.24)
Firm age	0.481 (1)	0.006 (0.04)	0.482*** (2.7)	-1.034 (-1.56)	-0.264 (-0.93)	-1.038** (-2.28)
Segments	0.62 (0.68)	0.187 (0.54)	0.82* (1.66)	-0.864 (-0.97)	-0.398 (-1.09)	0.102 (0.12)
Z-score	0.01 (1.53)	0.001 (0.21)	-0.005 (-1.39)	0.006 (0.6)	-0.006*** (-2.65)	-0.004 (-0.53)
Big 4	-1.693 (-0.98)	0.097 (0.12)	0.296 (0.43)	2.401 (1)	-2.729*** (-3.93)	-0.628 (-0.28)
Restructuring	-7.773** (-2.34)	-1.755 (-1.11)	-1.578* (-1.81)	-3.615 (-0.46)	-1.149 (-0.75)	12.106** (2.44)
M&A	1.154 (0.6)	-0.868 (-0.49)	0.673 (0.25)	10.608*** (4.5)	-1.887 (-0.99)	-8.369*** (-3.46)
Positive earnings	-2.717 (-1.26)	0.569 (0.63)	-0.707 (-1.19)	1.727 (1.18)	-2.342** (-2.52)	4.197** (2.1)
CEOchairperson	0.156 (0.08)	-3.176** (-2.21)	0.358 (0.45)	1.307 (0.53)	1.308 (1.5)	-0.464 (-0.2)
Industry FE	Included	Included	Included	Included	Included	Included
N	546	546	546	546	546	546

This table presents the results of the multivariate analysis of the marginal effect of the JOBS Act in 2012 on the percentage of each theme (*%Core accounting issues*, *%Non-core accounting issues*, *%Offering issues*, *%Business issues*, *%Corporate governance issues*, *%Disclosure issues*) mentioned in SEC comment letters issued to EGC-eligible IPOs. Negative binomial regression is employed in these analyses. Control variables are IPO firm characteristics, including *LnSize*, *Leverage*, *BM*, *Firm age*, *Segments*, *Z-score*, *Big4*, *Restructuring*, *M&A*, *Positive earnings*, *CEOchairperson*. All variables are defined in Appendix 1.1. The regressions include industry fixed effects using two-digit SIC code. Results from Z-statistics are presented in parentheses below coefficient estimates, and are based on robust standard errors clustered at the two-digit SIC industry level. \*, \*\*, and \*\*\* denote significance at the 10%, 5%, and 1% levels, respectively, based on a two-tailed test.

## Appendix 5. Supplemental tables for Chapter 5

### Appendix 5.1. Impact of the JOBS Act on IPO firms' earnings management activities

	DACC_abs	ACFO_abs	ADISEXP_abs
	0.306**	0.514**	0.731**
JOBS Act	(2.69)	(2.31)	(2.90)
	-0.196***	-0.230***	-0.347***
LnSize	(-5.61)	(-4.27)	(-5.19)
	-0.001	-0.001	0.001
Leverage	(-0.16)	(-0.14)	(0.27)
	-0.029**	-0.003	-0.022
Firm age	(-2.23)	(-0.25)	(-1.03)
	-0.031	-0.005	-0.121*
Segments	(-0.75)	(-0.15)	(-2.10)
	-0.001	-0.001	-0.001
Zscore	(-0.17)	(-0.99)	(-0.03)
	-0.428**	-0.062	-0.199
Big4	(-2.88)	(-0.76)	(-1.13)
	-0.036	-0.269	-0.250*
Restructuring	(-0.27)	(-0.95)	(-1.89)
	0.045	0.008	0.077
M&A	(0.76)	(0.07)	(0.65)
	0.302**	0.336***	0.566***
CEOchairperson	(2.81)	(3.51)	(9.66)
FE industry	Included	Included	Included
N	515	527	430
Pseudo R2	0.1330	0.2104	0.215

This table presents results for the impact of the JOBS Act on the level of earnings management engaged in by IPO firms, using the full sample of IPOs between May 2005 and December 2017. OLS regressions are employed in this analysis. The dependent variables are the absolute values of the earnings management proxies; *DAC\_abs*, *ACFO\_abs* and *ADISEXP\_abs*. The independent variable of interest is *JOBS Act*. All variables are defined in Appendix 1. The regressions include industry fixed effects using the Fama-French 12 industry classification. Results from t-statistics are presented in parentheses below coefficient estimates, and are based on standard errors which are robust and clustered at the industry level. \*, \*\*, and \*\*\* denote significance at the 10%, 5%, and 1% levels, respectively, based on two-tailed tests.

## Appendix 5.2. The marginal effects of IPO firms' earnings management on the extensiveness of SEC reviews

	<i>Duration</i>			<i>#Letters</i>			<i>#Themes</i>			<i>#Core-accounting issues</i>			<i>#Non-core-accounting issues</i>		
<i>DACC</i>	2.361*** (5.18)			0.054** (1.96)			0.111* (1.79)			0.153*** (3.82)			1.155 (1.29)		
<i>ACFO</i>		0.698* (1.85)			0.016 (0.57)			0.064 (1)			0.057 (0.89)			1.752* (1.64)	
<i>ADISEXP</i>			-1.322*** (-5.2)			-0.012 (-0.81)			-0.04 (-0.61)			-0.053 (-1.1)			-1.296 (-1.45)
LnSize	-2.174 (-0.72)	-2.428 (-0.79)	-2.228 (-0.81)	-0.045 (-0.45)	-0.05 (-0.48)	-0.048 (-0.43)	0.047 (0.63)	0.028 (0.35)	0.015 (0.13)	0.25* (1.65)	0.219 (1.53)	0.111 (0.56)	1.841 (1.62)	1.494 (1.24)	1.346 (0.94)
Leverage	-0.002 (-0.01)	0.015 (0.06)	-0.197 (-0.96)	0.003 (1.14)	0.003 (1.07)	0.002 (0.79)	0.001 (0.17)	0.002 (0.43)	0.001 (0.17)	-0.006 (-0.39)	-0.002 (-0.16)	0.004 (0.23)	-0.027 (-0.35)	-0.015 (-0.22)	-0.022 (-0.26)
Firm age	2.446*** (3.31)	2.4*** (3.25)	2.51*** (3.06)	0.034** (2.25)	0.035** (2.43)	0.036** (2.39)	0.016 (1.53)	0.016 (1.44)	0.015 (1.36)	0.042 (1.34)	0.043 (1.43)	0.049 (1.53)	0.151 (1.18)	0.167 (1.29)	0.172 (1.12)
Segments	5.002** (2.06)	4.83** (2.02)	4.855* (1.87)	0.102 (1.6)	0.095 (1.44)	0.09 (1.24)	0.093 (1.24)	0.087 (1.19)	0.077 (0.93)	0.136 (0.56)	0.137 (0.58)	0.22 (0.8)	0.989 (0.92)	0.907 (0.84)	0.807 (0.61)
Zscore	-0.038 (-1.18)	-0.031 (-1.06)	-0.041 (-1.64)	-0.001 (-1.22)	-0.001 (-1.37)	-0.001 (-1.61)	-0.003*** (-4.34)	-0.003*** (-4.41)	-0.003*** (-3.44)	-0.005** (-2.17)	-0.004** (-2.34)	-0.004* (-1.76)	-0.027** (-2.12)	-0.03*** (-2.75)	-0.028*** (-2.65)
Big4	-11.791*** (-2.9)	-12.016*** (-3)	-6.041 (-1.16)	-0.244 (-0.91)	-0.219 (-0.81)	-0.228 (-0.74)	-0.181 (-0.53)	-0.155 (-0.44)	-0.137 (-0.33)	-1.365*** (-3.12)	-1.386*** (-3.2)	-1.566** (-2.55)	-9.407*** (-3.14)	-9.651*** (-2.97)	-10.96** (-2.34)
Restructuring	20.607*** (3.72)	23.222*** (4.32)	23.621** (3.21)	0.614*** (2.81)	0.659*** (3.11)	0.684** (2.41)	1.038*** (6.59)	1.15*** (7)	1.395*** (5.07)	2.517*** (2.98)	2.727*** (3.2)	3.435*** (2.57)	16.149*** (4.73)	16.949*** (5.05)	21.485*** (3.67)
M&A	8.727 (1.3)	8.818 (1.27)	6.071 (1.11)	0.189* (1.89)	0.183* (1.89)	0.154 (1.47)	0.609*** (3.38)	0.596*** (3.1)	0.507*** (3.32)	0.879 (1.11)	0.827 (1)	0.586 (0.63)	7.272** (2.09)	7.383* (1.95)	6.751* (1.73)
CFOchairperson	-1.12 (-0.23)	-1.667 (-0.34)	-1.285 (-0.24)	0.152 (0.92)	0.131 (0.81)	0.198 (1.09)	-0.12 (-0.74)	-0.147 (-0.88)	-0.16 (-0.86)	-0.295 (-0.71)	-0.29 (-0.71)	-0.194 (-0.45)	-0.569 (-0.21)	-0.969 (-0.36)	-1.737 (-0.51)
JOBS Act	- (-15.4)	- (-16.11)	-115.882*** (-12.2)	-2.79*** (-3.33)	-2.63*** (-3.11)	-2.493*** (-2.86)	-4.687*** (-4.08)	-4.714*** (-4.39)	-4.469*** (-4.07)	-9.11*** (-3.09)	-9.092*** (-3.16)	-9.784*** (-2.81)	-73.49*** (-5.45)	-72.14*** (-6.01)	- (-5.01)
FE industry	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included
FE year	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included
N	567	579	479	567	579	479	567	579	479	567	579	479	567	579	479

This table presents the marginal effects of earnings management by IPO firms on the extensiveness of SEC reviews using the full sample of IPOs between May 2005 and December 2017. Negative binomial regressions are employed in this analysis. The dependent variables reflect the extensiveness of SEC reviews including; *Duration* (Model 1 - 3), *#Letters* (Models 4 - 6), *#Themes* (Model 7 - 9), *#Core-accounting issues* (Model 10 - 12) and *#Non-core-accounting issues* (Models 13 - 15). The independent variables of interest are proxies of earnings management including; *DACC* (Models 1, 4, 7, 10, 13), *ACFO* (Models 2, 5, 8, 11, 14) and *ADISEXP* (Models 3, 6, 9, 12, 15). All variables are defined in Appendix 1.1. The regressions include S-1 filings year fixed effects and industry fixed effects using Fama-French 12 industry. Z-statistics are presented in parentheses below coefficient estimates, and are based on standard errors which are robust and clustered at the industry level. \*, \*\*, and \*\*\* denote significance at the 10%, 5%, and 1% levels, respectively, based on a two-tailed test.