**SEC reviews of IPO registration statement**

**Abstract**

This paper examines the determinants of SEC reviews of IPO registration statements (i.e. S-1 filings) for firms going public in 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.

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.

*JEL classification:* G24, G38, K22, M41

*Keywords:* Initial Public Offerings; SEC reviews; S-1 filings

1. **Introduction**

This study aims to answer the key research question ‘What are the determinants of the SEC’s review on the S-1 filings?’. S-1 filings are general 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 in this context 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”. Although the SEC claim that key target of their review on S-1 filings is to improve disclosure quality in the IPO markets, effectiveness of this process is unclear. Ertimur & Nondorf (2006) come to no conclusion about whether SEC review on S-1 filings helps enhance IPO firms’ disclosure quality. Furthermore, while Li & Liu (2017) suggest that relationship between SEC comment letters and downward process revision may send a negative signal regarding S-1 disclosure quality, it is unclear whether the SEC review is effective in addressing deficiencies in information quality of S-1 filings. Their study mainly focuses on effects of the SEC’s review on IPO’s price formation other than ex-ante factors impacting the SEC review. Otherwise, IPO environment is claimed to confront high level of information asymmetry which may induce IPO firms to hype their stocks by providing insufficient or misleading disclosures to gain more proceeds at the offering (Li & Liu, 2017). Therefore, investigating the effectiveness of SEC review process on S-1 filings as well as determinants of the review is substantial since previous research suggest that investors base on the S-1 filings to make their investment decision because S-1 filings often contain an extensive number of intangible information about IPO’s future strategies and possible problems which should affect the investors’ firm evaluation (Loughran & McDonald, 2013). In order to answer the key research question, four categories of potential factors affecting the SEC review of S-1 filings are considered in this study, namely (1) IPO firms characteristics, (2) incidences of regulatory changes and crisis, (3) industry/market characteristics and (4) the SEC characteristics.

Supporting effectiveness of the regulatory intervention, public interest theory, developed by Pigou (1932), suggests that regulatory bodies are neutral and aim to protect interests of society as a whole, rather than those of individuals in weak and inefficient markets. In line with the assumption of public interest theory, Cassell et al. (2013) identify that firms with low profitability, and firms with high complexity, frailty in corporate governance or being audited by small auditors, who may have lower financial reporting quality, are likely to attract more SEC scrutiny on 10-K filings. Robinson et al. (2011) also observe that SEC review on proxy statement filings are more intense for firms with weak corporate governance and firms with excessive CEO compensation. Similarly, Ettredge et al. (2011) identify that intensity of SEC review on 8-K filings are lower when firms have stronger internal controls and corporate governance. Heese et al. (2017) also claim that SEC review on 10-K filings are more intense for bigger firms and older firms who have more complexity in their business as well as loss-making firms and firms with lower market-to-book value ratios who may have more information uncertainty, and less intense for firms not conducting external financing activities who may have higher reporting quality and compliance. Duro et al. (2017) find evidence SEC review on 10-K filings are more intense for firms with higher leverage, who have higher debt level, firms with higher ratio of book-to-market value and firms conducting M&A, who have more complexity in their business. Ertimur & Nondorf (2006) observe that SEC increase their scrutiny on S-1 and SB-2 filings prepared by firms with lower level of managerial expertise, who may have lower level of disclosure quality. Besides the impact of IPOs characteristics, prior literature also identify that incidences of regulatory changes and crisis could induce regulators to conduct their review in effective way. The Dodd–Frank Wall Street Reform and Consumer Protection Act in 2010 aims to strengthen oversight of particular organizations to protect economy and American consumers, investors and businesses (WilmerHale, 2011). Balasubramnian & Cyree (2014) identify that due to government intervention, the market discipline is improved after the enactment of Dodd-Frank 2010. The financial crisis in 2008-2009 created systemic risks, contagion, regulatory failures and increased risk-taking behaviours (Claessens & Kodres, 2014). Colaco et al. (2017) identify that IPO firms’ waiting periods, which include periods of regulatory oversight, are longer during the period of financial crisis 2008-2009. Blackburne (2014) also identifies estimated budget allocation for Division of Corporation Finance disclosure review office increased during the financial crisis 2008. Otherwise, regarding impact of industry/market characteristics, Ali et al. (2014)demonstratethat due to proprietary costs of disclosures, firms operating in highly-concentrated markets have greater information uncertainty, which may attract more SEC scrutiny on 10-K and 10-Q filings (Chen & Johnston, 2010) or on registration statements (Ertimur & Nondorf, 2006 and Colaco et al., 2017). Ertimur & Nondorf (2006) also observe that SEC review on S-1 and SB-2 filings are less intense for firms operating in regulated industries since the regulated firms have existing obvious external reporting duties, quality of the regulated firms' S-1 filings could be more standard than other firms. In addition, SEC characteristic is also demonstrated to enhance the effectiveness of the SEC review on firms’ disclosures. “Upper echelons theory”, a theory of individual style effect as set forth by Hambrick & Mason (1984), states that organization outcomes including; strategic decision and performance, are affected by career experience of decision maker. The theory assumes that an stable environment, the career experience of decision maker may increase the organization outcomes. Supporting this assumption, Baugh et al. (2017) identify that SEC reviewers, who hold position as Assistant Director, have more experience and tend to address more issues in initial comment letters in their review on annual filings (e.g. 10-K, 20-F, 40-F), which are more likely to improve IPO firms’ financial reporting quality.

However, the regulatory intervention is contrarily claimed to be not effective due to the impact of other specific factors, such as “capture” parties or industries, interest groups and regulator own characteristics. Capture theory, developed by Stigler (1971), assumes that although regulators aim to protect the public interest as a whole, they may also be controlled (or captured) by regulated parties or industries who intend to drive the regulation to their advantages. In line with capture theory, incidences of regulatory are demonstrated to have potential impact on the effectiveness of SEC review, e.g. Jumpstart Our Business Startups (JOBS) Act in 2012. The JOBs Act eliminates restrictions on emerging growth companies (EGCs) going public, which have total annual gross revenues lower than $1 billion in the most recent fiscal year (SEC, 2012). Agarwal et al. (2017) observe that SEC adjust their styles in reviewing IPO prospectuses prepared by of ECGs after the enactment of JOBs Act. Chaplinsky et al. (2017) state that Title I of JOBs Act decreases ability of regulators to address and prosecute fraud. Another theory supporting the ineffective regulatory intervention is economic interest group theory, developed by Posner (1974), which argues that dissimilar groups, with incompatible or conflicting interest and targets, will lobby regulators to protect benefit of themselves to the detriment of others. Consistent economic interest group theory, Colaco et al. (2017) identify that waiting periods, which include periods of SEC review, are shorter for technology firms, who confront serious competition in their industry and quickly becoming effective IPOs would be in their best interest. In addition, theories of individual style effects also support the ineffectiveness of the regulatory intervention. Another assumption of “upper echelons theory”, a theory of individual style effects developed by Hambrick & Mason (1984), states that in an weak and instable environment, the career experience of the decision maker may decrease the organization outcomes. Otherwise, “upper echelons theory” also assume that decision makers are more likely to follow policies to emphasize sectors in which they have expertise, and their expertises do not increase firms’ performance. Supporting this assumption, Baugh et al. (2017) observe that accountant reviewers, who have accounting expertise, tend to address more issues in initial comment letters since accounting information dominate annual filings (e.g. 10-K, 20-F, 40-F). Another theory of ineffective regulatory intervention is behavioural effects theorized by Tan & Netessine (2014) which states that excessive workload may obstruct worker from fulfilling their targets and reduce the workers’ motivation and commitments. Consistent with the assumption of behavioural effects, examining the impact of industry characteristics on SEC review on registration statements, Colaco et al. (2017) provide evidence that waiting period is shorter when IPO market is hot.[[1]](#footnote-2)

While various research exists examining factors affecting the extent of the SEC review as mentioned above, these research generally concentrate on the SEC review on the annual filings (e.g. 10-K, 20-F, 40-F), 8-K filings, proxy statement filings and filings other than the registration statements (e.g. S-1 filings). More relevant to our study, Ertimur & Nondorf (2006) examine determinants of SEC review on S-1 and SB-2 filings. However, the determinants employed in their study focus only on the IPO firms’ managerial expertise and their corporate governance. Otherwise, they conduct examination on the determinants of SEC review with a relatively limited sample period covering from May 12, 2005 to September 30, 2006. Recent regulatory changes, e.g. JOBs Act in 2012, are likely to have substantially affected the SEC review. Also similar to our study, Colaco et al. (2017) examine determinants of IPO waiting period, which is also employed in our study as an indicator of the duration of SEC review. However, the determinants employed in their study concentrate only on information uncertainty and industry/market characteristics. In addition, the sample period covered in their study is from 1986 to 2011, which is relatively behind the times and do not cover recent regulatory changes, e.g. JOBs Act in 2012. Our study differ from Ertimur & Nondorf (2006) and Colaco et al. (2017) in three aspects. First, our study examines a wider range of factors potentially impacting the SEC S-1 filings other than only IPO firms’ managerial expertise and their corporate governance (Ertimur & Nondorf, 2006) or industry/market characteristics (Colaco et al., 2017). Second, our study employ more recent sample period, which also cover recent and important regulatory changes, e.g. JOBs Act in 2012. Third, while Ertimur & Nondorf (2006) examine the SEC review on S-1 and SB-2 filings, our study focus only on S-1 filings in order to maintain the sample consistency since SB-2 is a simplified version of S-1 filings and contains less detailed information about IPO firms. Another study similar to our study is Agarwal et al. (2017) who examine the impact of JOBs Act in 2012 on the SEC comment letters. However, their study focuses on impact of JOBs Act on style of SEC comment letters (e.g. tone, percentage of quantitative items) other than intensity of the SEC review. Different to Agarwal et al. (2017), our study performs analyses on the intensity of the SEC review, which is more likely to reflect the effectiveness of their review activities, other than their review style, which is more likely to reflect the SEC behaviour.

Motivated by (1) unclear evidence on the effectiveness of the SEC review on registration statements in the previous literature, (2) two opposite strands in the regulatory theories and previous literature about the effectiveness of the regulatory intervention, (3 ) the lack of research on the impact of a wide range of factors on intensity of the SEC S-1 review, (4) the lack of research solely analysing the S-1 filings and (5) the lack of research examining the SEC S-1 review in recent period which includes the important regulatory change, e.g. JOBs Act, we develop the following key research question: ‘What are the determinants of the SEC’s review on the S-1 filings?’. We employ sample of 909 U.S. IPOs who issued their S-1 filings during the period of 12 May, 2005 to 31 December, 2017. Regarding the SEC review, we employ three attributes of the SEC review process, namely duration of the IPO process, the volume of SEC comment letters and the volume of comments for initial S-1 filings. We examine four groups of determinants of the SEC S-1 review including IPO firm’s characteristics, incidences of regulatory changes and crisis, industry/market’s characteristics and SEC’s own characteristics. Regarding the IPO firm’s characteristics, we employ proxies of business complexity, future performance, auditor characteristics, corporate governance characteristics*,* management’s plan to issue new equity or security debt and financial health including; debt level, financial distress and profitability. Regarding incidences of regulatory changes and crisis, we examine the impact of JOBs Act in 2012, Dodd-Frank Act in 2010 and financial crisis in 2008-2009. Regarding the industry/markets characteristics, we focus on regulated industries and technology industries as well as employ proxies of industry size and market concentration. Regarding the SEC’s characteristics, we examine impact of the SEC reviewers’ job position and job classification. Univariate tests including; parametric test (t-test), non-parametric test (Wilcoxon rank-sum test) and univariate regression, and a multivariate test with negative binomial regression are employed to examine the relationship between the SEC S-1 review process and their associated factors. Additional tests are also conducted to examine the impact of JOBs Act on the SEC review. Particularly, we investigate (1) whether the number of types of issues and the number of comments in each type of issues mentioned in the SEC comments letters for the initial S-1 filings decreased after the enactment of JOBs Act and (2) whether the negative impact of JOBs Act on the degree of the SEC review are less intense by moderating effect of information uncertainty and firms’ adoption of disclosure exemptions under the Act.

In line with the arguments of effective regulatory intervention, our first findings in the examination of the impact of IPO firms’ characteristics on the SEC review show that all SEC review attributes increase for IPO firms with higher sales growth who have higher information uncertainty, making-profit firms who are likely to engage in income-increasing earning management, and firms having dual CEO and chairman, who may have weak board’s monitoring effectiveness. We also identify that the SEC spend less time for the S-1 review of bigger firms who may have higher reporting quality, and more time on firms conducting M&A activities who have higher complexity and hence, lower reporting quality. The SEC is also identified to issue more comments for firms having more business segments who also have higher complexity. Secondly, regarding the impact of incidences of regulatory changes, we identify that the SEC spend more time on the S-1 review and issue more comment letters after the enactment of Dodd-Frank in 2010, which was enacted to enhance the investor protection. We additionally observe that the SEC spend less time on the S-1 review of firms in regulated industries who may have more standard disclosures, and more time on technology firms who may have more information uncertainty. In additional examination of the moderating effect of information uncertainty, we identify that information uncertainty, which is indicated by the firm’s growth rate and the market concentration, lessens the sensitivity of the SEC review to the JOBs Act. These findings are all consistent with the assumption of public interest theory.

Contrarily, in line with the arguments of the ineffectiveness of regulatory intervention, our findings in the examination on the impact of regulatory changes on the SEC review show that all SEC review attributes decrease substantially after the enactment of JOBs Act, which was enacted to eliminate the disclosure regulation and develop IPO activities on EGCs. Otherwise, supporting this evidence, in the additional examination on the impact of JOBs Act on the SEC review, we identify that after the enactment of JOBs Act, the SEC address fewer types of issues and provide fewer comments in each type of issues in their initial comment letters. In addition, regarding the examination on the moderating effect of firm’s adoption of disclosure exemptions, we find that the sensitivity of the SEC review to JOBs Act in 2012 is higher for younger firms who are more likely to use more disclosure exemptions under the Act. These findings are all consistent with the assumption of capture theory. As for the impact of the industry/market characteristics, we find that all SEC review attributes are lower for the markets having higher volume of IPO firms, which may increase the workloads in the SEC review. This finding is consistent with the assumption of behavioural effect theory. Regarding the impact of the SEC characteristics, we identify that SEC reviewers, who are holding job position of director or chief, spend less time on the S-1 review, which may not improve the disclosure quality. Additionally, we also observe that reviews conducted by accountant reviewers are less intense than those by other reviewers since the accountant reviewers are more likely to focus on accounting information which have lower proportion than other information in S-1 filings. These findings are both consistent with the assumption of “Upper echelons theory”.

Overall, our results highlight that SEC review on S-1 filings is likely to be sensitive to (1) IPO firms characteristics including; size, sales growth, profits, dual CEO and chairman, number of segments and M&A engagement, (2) incidences of regulatory changes including; JOBs Act in 2012 and Dodd-Frank Act in 2010, (3) industry/markets characteristics including; industry types (regulated industries and technology industries) and industry size, and (3) SEC characteristics including reviewers’ jobs position and job classification. Our results also shed light on the impact of information uncertainty and firm’s adoption of disclosure exemptions on the sensitivity of the SEC review to the JOBs Act. More importantly, these findings indicate that the sensitivity of the SEC S-1 review to IPO firms characteristics, regulated industries, technology industries, information uncertainty as well as the enactment of Dodd-Frank Act in 2010 could reflect the effectiveness of the SEC review. However, the sensitivity of the SEC S-1 review to the enactment of JOBs Act in 2012, industry size as well as the impact of SEC reviewers’ job position and job classification on the SEC review may reflect the ineffectiveness of their review.

Our study contributes to previous literature by providing new and broad evidence about the determinants of the SEC S-1 review process including; the IPO firms’ characteristics, the special event of regulatory changes, the industry/market characteristics and the SEC’s characteristics. Our findings are first to highlight the impact of (1) IPO firms characteristics including; size, sales growth, profitability, dual CEO and chairman, M&A engagement and number of segments, (2) enactment of JOBs Act in 2012 and Dodd-Frank Act in 2010, (3) regulated industries and volume of IPOs by industry and (4) SEC reviewer’s job position and job classification, on the SEC review on S-1 filings. Prior research on determinants of SEC review on registration statements only identify the impact of IPO firms’ managerial expertise (Ertimur & Nondorf, 2006), technology industries and hot market (Colaco et al., 2017) on the SEC review. Our findings are important since they reflects whether the SEC review on S-1 filings is effective or not, which would be useful to investors, auditors and other stakeholders, who employ the SEC S-1 comment letters to evaluate the quality of S-1 filings as well as the IPO firms’ reporting compliance and then make their own decision. We are also the first to provide evidence of the determinants of the SEC S-1 review in recent period, which includes the incidence of recent and important regulatory change, namely JOBs Act in 2012. Our study is also the first to investigate whether the sensitivity of SEC review to JOBs Act in 2012 is moderated by information uncertainty and the adoption of disclosure exemption under JOBs Act. This finding is important since it justifies that the reduction in mandated disclosure under JOBs Act in 2012 could raise information uncertainty and lead the SEC to be more conservative to ensure the effectiveness of their review and protect investors. This finding also justifies that IPOs firm may use fewer exemptions in order to improve the information environment and balance the possible underpricing occurring under JOBs Act. Furthermore, our study also contributes a new coding scheme which is a useful tool for future research on the issues occurred in S-1 filings.

1. **Institutional background**
   1. **IPOs in the U.S.**

Chen et al. (2005) state that the initial public offering (IPO) is one of the most important events for a firm, allowing it to attract more capital from outside investors in order to invest in their operating strategies. Figure 1 presents an overview of IPO process which a going-public firm needs to complete. Firstly, IPO firms choose their underwriters, begin filing registration statements and then send the statements to the SEC. Second stage is the SEC review process in which the SEC review the registration statements and send comment letters addressing issues in the statements to the IPO firms. Following that, the IPO firms respond the SEC comments and make amendments to their filings. The SEC review process is closed when all SEC comments are satisfied. Thirdly, the IPO firms arrange marketing meetings with potential stakeholders. In next stage, the IPO firm establish their offering price. Finally, the IPOs become effective to trade on a specific stock exchange. Bhabra et al. (2003) and Chen et al. (2005) claim that it is essential that registration statements or IPO prospectuses are carefully prepared in order to provide meaningful financial and other information to the investor, which could help them to evaluate the IPO firms at a plausible price. Bhabra et al. (2003) document that prospectuses convey key information including the firm’s history, financial statements, ownership, risks and prospects. Jensen and Meckling (1976) claim that the prospectus could be considered as a social construct which reflects the unofficial informational contracts between the managers (agents) and the investors (principals). A type of IPO prospectus is the S-1 registration statement which is the very first document required by the SEC in the IPO process. S-1 filings provide the investors with the first information about the IPO firms in terms of their business, the offering and financial position.

**[Insert Firgure 1 about here]**

* 1. **The SEC review process**

Various notable regulations providing the guidelines for preparing corporate disclosures, e.g. IPO prospectuses, are applied in each country or all over the world. In the U.S. market, going-public firms are governed by the disclosure guidelines enforced by the U.S. Securities and Exchange Commission (SEC). The key responsibility of the SEC is conducting a careful review of **all** IPO firms’ prospectuses in order to secure that the going-public firms are reporting “meaningful financial and other information to the public” (SEC, 2013). In fact, when going public for the first time, U.S. firms are required by the SEC to file the initial S-1 or equivalent registration documents 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 SEC has an oversight role in disciplining issuers by reviewing closely the contents of the initial S-1 filings. If the SEC consider the information contents of the initial S-1 filings to be unclear, inadequate or inappropriate, they may issue comment letters, publicly request amendments to the initial S-1 filing. Particularly, the SEC may require additional clarifications, justifications, disclosures or even require the issuers to change some important information in the initial S-1 filings. Only when all of the SEC’s comments are addressed will the SEC be willing to close their review and declare the registration statement as ‘effective’, allowing the issuers to conduct the IPO. Figure 2 visualizes an overview of the SEC review process.

**[Insert Figure 2 about here]**

The Division of Corporation Finance, which is one of five divisions run by the SEC, is designated to conduct the review of S-1 filings. The division is organized into 11 examining offices, also named as Assistant Directors offices. The assignment of S-1 review into the offices is based on the IPO’s industry as classified by 4-digits 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 3 shows the hierarchy organizational structure of each office in Division of Corporation Finance.

**[Insert Figure 3 about here]**

Although the SEC state that they will provide the first comment letters to the initial S-1 within 4 weeks, the duration of the SEC re**v**iew on initial S**-**1 filings is varied andaffected by various determinants including the complexity of S-1 filings and conditions of the market at the filing date (Hamilton, 2018).WilmerHale (2015) also 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 SEC review could be sometimes exceed the 30-day threshold by many days. Baugh et al. (2017) also suggest that the SEC scrutiny is determined by various elements, consisting of the criteria required in Section 408 of SOX and the elements recognized through the SEC’s review criteria which is not revealed to maintain the integrity of the SEC review.

* 1. **Incidences of regulatory changes and crisis**

Five milestones regarding the SEC disclosure regulation, the SEC’s public disclosure of their comment letters and crisis should be considered due to their potential impact on the SEC review process. The first milestone is on August 10, 2000, the SEC announced Regulation Fair Disclosure (RFD) applying for the reporting documents prepared by the IPO firms. RFD restricts selective reporting documents and calls for comprehensive and non-exclusionary reporting documents.

The second milestone is since May 2005, the SEC decided to publicly disclose their comment letters and the IPO firms’ response. A considerable number of prior research argue that the disclosure of the SEC’s comment letters and the IPO firms’ response perform an important role in enhancing the effectiveness of their disclosure regulations, their review process and the market discipline (Beyer et al., 2010; Leuz and Wysocki, 2016 and Duro et al., 2017).

The third milestone is the period of financial crisis 2008-2009, which is the worst crisis since the Stock Market Crash of 1929 causing systemic risks, contagion, regulatory failures and increasing risk-taking behaviours (Claessens & Kodres, 2014). The financial crisis results in more securities regulation reforms as well as reporting and disclosure requirements (Leuz & Wysocki, 2008).

The fourth milestone is on 21st July, 2010 when Dodd-Frank Wall Street Reform and Consumer Protection Act was enacted, with the goal of strengthening oversight of particular organizations, offering severe criterions and management to provide protection for the economy and American consumers, investors and businesses (WilmerHale, 2011). Responding to the Dodd-Frank 2010, the SEC adopted 67 mandatory rulemaking provisions of the Act (e.g. Section 952(b)-Additional executive compensation disclosure, Section 972-Chairman/CEO structure disclosure in annual proxy**)** and established 5 new offices (e.g. Office of the Investor Advocate**)**. In addition, Dodd-Frank Act requires the SEC to annually provide Congress with a report on the effectiveness of the control activities in each SEC’s divisions (Bozanic et al., 2017).

The fifth milestone is on April 5, 2012, President Barrack Obama signed JOBs Act, which appeals to the SEC for establishing rules and conducting research on capital formation, disclosure, and registration requirements. After the dot-come bubble collapse in 2000, Sarbanes-Oxley Act and other regulations have introduced which leads to prohibitive compliance costs on emerging growth companies going public regarding money and time wasted (Keating, 2012), which lead to the decrease in the volume of IPOs. JOBs Act aims to secure a decade-long decrease in the volume of IPOs, especially emerging IPOs, in the United States by lessening the mandatory reports and compliance duties during the IPO process (Gao et al., 2013).[[2]](#footnote-3) Particularly, JOBs Act eliminates restrictions on EGCs going public, which have total annual gross revenues that are less than $1 billion in the most recent fiscal year (SEC, 2018). It is also worth noting the adoption of disclosure exemptions under the Act is voluntary, not mandatory, that is, the IPO firms with emerging growth status have rights to decide which disclosure exemptions under the Act they would adopt (SEC, 2013).

1. **Theoretical background**

## **Effective regulatory intervention**

### **Public interest theory**

Public interest theory is developed by Pigou (1932) who suggests that the regulatory bodies aim to protect the benefits of the whole public 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 for intervening, monitoring and reforming inefficient practices. Two main assumptions of public interest theory are (1) the markets are very weak and inefficient and (2) regulatory bodies are neutral arbiters. Considering the application of public interest theory, Godfrey et al. (2010) express that regulatory bodies will intervene in the firms’ disclosure processes in order to correct the wrongdoings in reporting information, protect investors and gain the confidence of all market participants.

Watts & Zimmerman (1978) propose the hypothesis that political costs impact managers’ reporting and disclosure motivations. In addition, Watts & Zimmerman (1986) also claim that crises can strengthen the scrutiny of politicians and regulators to exact wealth transfers from regulated firms. However, there are some criticisms of public interest theory. According to Stigler (1971), public interest theory could be applied only when the market requires a higher allocative efficiency. Otherwise, the critical question is whether the markets may perform inefficiently if they are not regulated. Another criticism is that public interest theory is less practical than public choice theory which is prone to the regulatory bodies’ behaviour and incentives and claim that the regulatory bodies are not neutral. For example, Stigler (1971) claims that regulatory bodies are usually captured by the big firms, who have sizable shares of the capital markets, to restrain the entry of their new competitors. Watts and Zimmerman (1978) suggest that the interest groups may also lobby the regulatory bodies in order to protect their political and economic benefits as well as enhance their wealth.

* + 1. **Upper echelons theory – perspective of individuals’ experience**

Hambrick & Mason (1984) develop “Upper echelons theory” – a theory of individual style effects – stating that organizational performance in terms of strategies and effective is affected by values and cognitive behaviours of internal decision-makers. Particularly, career experiences – a value of decision-makers – are likely to have a significant impact on actions of decision makers and then organizational outcomes. Hambrick & Mason (1984) also develop two opposite strands of the impact of careers experiences on organization outcomes. On the one hand, the authors suggest that if an organization operates in a stable industry or market, career experience of decision-makers are assumed to enhance organizational performance. On the other hand, the authors suggest that if an organization operates in an weak and instable environment, career experience of decision-makers are assumed to decrease organizational performance since the career experience could not support the decision-makers to overcome abnormal problem and even constrain them from adopting innovative solutions.

* 1. **Ineffective regulatory intervention**
     1. **Capture theory**

Stigler (1971) argues that the regulators’ objectives to protect the public interest may not be met since the regulation that they release could be controlled (captured) by the regulated parties or industries who intend to drive the regulation in line with their advantages. Therefore, the regulators often face obstacles in being independent of these regulated parties or industries. Similarly, according to Mitnick (1980), a method by which a regulated party or industry could capture a regulatory body is controlling the regulation and the regulated agency.

* + 1. **Economic interest group theory**

As stated by Posner (1974), regarding the ‘economic interest’ perspective of regulation, the regulations are assumed to serve the private interest of politically effective parties. Specific interest groups exert disproportionate influence on regulators because they have more power (social, economic political resources). In addition, these private-interest parties may seek to lobby regulatory bodies to drive the regulation in line with their economic benefits to the detriment of others. Furthermore, according to Stigler (1971), regulatory bodies themselves are interest groups who will adopt policies that guarantee the re-election or their power within the society.

* + 1. **Upper echelons theory – perspective of individuals’ expertise**

Besides theorizing effect of career experience of decision-makers on organizational performance under “Upper echelons theory”, Hambrick & Mason (1984) also suggest that organizational outcomes are also impacted by decision-makers’ expertise in terms of their educational background, knowledge and skill base. The authors state that to some degree, decision-makers’ education indicates their value and cognitive preferences. For example, a staff has expertise on engineering may have different cognitive preferences compared with a staff has expertise on history or law. In short, according to “Upper echelons theory”, decision-makers are assumed to follow policies to emphasize sectors in which they have expertise. However, the decision-makers expertise are believed to not increase organizational performance.

* + 1. **Behavioural effects**

Tan & Netessine (2014) theorize behavioural effects when workload is excessive, it may be a hindrance that creates obstruction and induces anti-productive emotions, which obstructs workers from fulfilling their targets and reduces the workers’ motivation and commitment. Furthermore, extensive workload is claimed to put workers into a situation to conduct multiple works within a limited time. These multiple works possibly cause conflicts and intensify obstacle to reach targets and hence, reduce the workers’ commitment. In addition, extensive workload is also believed to result in tiredness which can decrease motivation and effort.

* 1. **Information uncertainty**

According to Healy and Palepu (2001), private firms decide to go public for the first time because they intend to raise additional capital from a wide range of investors in order to finance their operating strategies and expand their businesses. Outside investors may confront “lemon” problem, an outcome of information uncertainty, due to information asymmetry and different interest between inside managers and outside investors. According to Akerlof (1970), “lemon” problem could collapse operating mechanism of capital market. For instance, if good IPO firms coexist with bad IPO firms and the outside investors are rational, they will evaluate IPO firms’ quality based on the information from these firms’ reporting documents. According to Skinner (1994), both good and bad information are disclose voluntarily. It will be difficult for investors to determine which IPO firms are good because bad IPO firms may try to mislead by posing as good ones. To overcome this difficulty to some extent, investors may evaluate both good and bad IPO firms at an average level. Hence, if the “lemon” problem exists in the IPO information environment, investors may rationally underestimate good IPO firms and overestimate bad IPO firms.

In addition, when going public in order to attract capital from potential investors, self-interested IPO firms may have opportunistic behaviours, which could be contrary to the invertors’ interests, in order to obtain more proceeds, creating an agency problem which induces uncertainty in performance results due to moral hazard and adverse selection (Nilakant & Rao, 1994). The agency problem exists since investors put their money into IPO firms and delegate the decision-making authority to these firms. In addition, agency problems arise because IPO firm managers have overwhelming superiority in accessing internal information. Consequently, the IPO firms could undertake moral-hazard actions, for example, misleading reporting information, which is detrimental to investors, in order to benefit themselves. Jensen and Meckling (1976) find that when an investor buys an equity stake in a public firm, managers may invest their capital in opportunistic ways which are detrimental to investors.

1. **Literature review**
   1. **Effective regulatory intervention**

Growing literature examining factors affecting SEC review supports effectiveness of the SEC review. In terms of impact of IPO firm characteristics, Cassell et al. (2013) find evidence that besides factors suggested to raise SEC oversight on 10-K filings as required in Section 408 of the Sarbanes-Oxley Act, low profitability, high complexity, being audited by small auditors, and frailty in corporate governance, which are indicators of low reporting quality, have positive associations with the probability of receiving an SEC letter, the number of issues mentioned in the initial SEC comment letter, the review duration from the date of the initial comment letters to the date of “no further comment” letter and the number of comment letters during the review duration. Furthermore, employing the sample of firms whose mandatory executive compensation disclosures in proxy statement filings are reviewed by the SEC, Robinson et al. (2011)identify that the number of comments is more for firms with weak corporate governance as indicated by the combination of CEO and chairman positions and the small number of independent board members, and for the firm with excessive CEO compensation. Similarly, Ettredge et al. (2011) conduct examination on SEC review on 8-K filings and observe that the probability of receiving a comment letter is lower when the firms have stronger internal control and corporate governance as indicated by the separation of CEO and chairman positions and the increase in the frequency of board or audit committee meetings. Heese et al. (2017) examine SEC review on 10-K filings and identify that probability of receiving a SEC comment letter is higher for bigger and older firms who may have more complexity in their business, as well as firms having loss, firms with lower ratio market-to-book value who may have higher information uncertainty, and firms not conducting external financing activities, who may have lower reporting quality. Duro et al. (2017) also investigate the SEC review on 10-K filings and find evidence that after May 12th, 2005 when the SEC began publishing their comment letters and the firms’ correspondence, the probability of receiving a SEC comment letter is higher for firms with higher leverage who have higher debt level, firms with higher ratio of book-to-market value who may have higher information uncertainty, and firms conducting M&A who may have more complexity in their business**.**

Regarding impact of incidences of regulatory changes and financial crisis, Balasubramnian & Cyree (2014) find evidence that after the enactment of Dodd-Frank, regulatory oversight could improve market discipline. Blackburne (2014) observe that SEC increase estimated budget for Division of Corporation Finance to conduct review on firms’ disclosure during the financial crisis in 2008.

Concerning the impact of industry/market characteristics, Ali et al. (2014)demonstratethat due to proprietary costs of disclosures, firms operating in high-concentrated or low-competitive markets have wider dispersion in analysts’ earnings forecasts caused by the higher information uncertainty, which could attract more SEC scrutiny on 10-K and 10-Q filings ( Chen & Johnston, 2010)

Regarding impact of the SEC’s characteristics, in the study of effect of SEC reviewers on the review of annual filings (e.g. 10-K, 40-F), which provides a comprehensive summary of a company's financial health, Baugh et al. (2017) use SEC reviewers’ job position, which is Assistant Director, as a proxy of their ability and experience, and suggest that the reviewer with higher job position could have more experience. They also identify an Assistant Director reviewer tend to address more issues in initial comment letters.

In addition, previous literature identifies that when the information uncertainty increase, the SEC could conduct their review in more conservative way in order to protect investors from the possible misstatements in the IPO firms’ disclosure. Chen & Johnston, (2010) find evidence that the SEC tend to make more careful scrutiny on 10-K and 10-Q filings when information environments have higher operating uncertainty. The authors also identify that the firms with higher information uncertainty are more likely to make more reporting errors.

* 1. **Ineffectiveness of regulatory intervention**

Previous literature on factors affecting SEC review contrarily provide evidence of ineffectiveness of SEC review. In terms of impact of incidences of regulatory changes, Chaplinsky et al. (2017) suggest that Title I of JOBs Act, which aims to reduce regulatory burden, may constrain regulators from addressing and prosecuting fraud.

Regarding impact of SEC characteristics, Baugh et al. (2017) observe that reviewers who hold position as Assistant Directors are more likely to spend less time on review on annual filings (e,g, 10-K, 20-F, 40-F), which is not likely to enhance reporting quality. Furthermore, basing on assumption of personal expertise of the individual style effects theory, Baugh et al. (2017) suggest that accountant reviewers, who have more accounting expertise, could focus more on the accounting information in the filings review. They identify that accountant reviewers address more issues in the review of annual filings which mainly contain accounting information about the firms’ financial health.

* 1. **Research on SEC review on registration statements**

Previous research examining factors affecting SEC review as mentioned above generally concentrate on SEC review on the annual filings (e.g. 10-K, 20-F, 40-F), 8-K filings, proxy statement filings and filings other than registration statements (e.g. S-1 filings). More relevant to my study, Ertimur & Nondorf (2006) examine impacts of corporate governance and magerial expertise on SEC review on S-1 and SB-2 filings. Second study similar to my study is Colaco et al. (2018) who examine impact of industry/markets characteristics on duration of IPO process. Third study similar to my study is Agarwal et al. (2017) who examine impact of JOBs Act on style of SEC review on registration statements.

Supporting effectiveness of regulatory intervention, regarding impact of IPO firms characteristics, Ertimur & Nondorf (2006) examine the determinants of the SEC review on S-1 and SB-2 filings and observe negative relationship between the level of managerial expertise and the number of issues mentioned in the initial SEC comment letters. They also identify that the firms’ corporate governance is likely to affect the efficiency of the IPO process, as indicated by the duration form the date of initial registration statement to the date the IPO become effective time from filing an initial offering document through the IPO effective date. In terms of impact of incidences of regulatory changes and crisis, Colaco et al. (2018) observe that the IPO firms’ waiting periods, which include several oversights from underwriters, auditors, venture capitalists, institutional investors, and regulators, is longer during the period of financial crisis 2008-2009. In addition, previous literature find evidence that when SEC may conduct their review in more conservative way when information uncertainy increase. Ertimur & Nondorf (2006) find evidence that the SEC address more issues and provide more comments on S-1 filings when the level of information uncertainty is high. Colaco et al. (2018) identify that longer duration of IPO process is derived from higher ex-ante uncertainty about the IPO firms’ future cash flow.

Supporting ineffectiveness of regulatory intervention, regarding industry/market characteristics, Ertimur & Nondorf (2006) observe that the SEC address fewer issues on the initial S-1 filings prepared by the firms operating in the regulated industries including; electric/gas/sanitary services, banks, insurance carriers, real estate, holding and other investment offices. They suggest the explanation that the regulated firms are likely to have more skills in preparing the reports required by regulatory bodies. Colaco et al. (2018) provide evidence that the waiting period is shorter when the IPO market is hot.[[3]](#footnote-4). Colaco et al. (2018) also identify that the duration of waiting periods of the firms operating in the technology industries are shorter than those of other firms because the competition in the industry is very high. Regarding SEC characteristics, Agarwal et al. (2017) observe that the SEC adjust their styles in reviewing the registration statements after the enactment of JOBs Act. Particularly, they state that the SEC concentrate more on the quantitative contents and provide comment letters containing more negative tone and more forceful suggestion.

1. **Research design** 
   1. **Sample selection**

I collect from the Thomson Reuters Eikon database the population of IPOs who filed their S-1 forms during the period of 12 May, 2005 to 31 December, 2017. [[4]](#footnote-5) Following previous studies in the IPO context, I eliminate IPOs with the offering price less $5 per share, American Depositary Receipts (ADRs) and financial firms, unit issues, simultaneous offerings and withdrawals. Because my focus is on the S-1 review process, I exclude the IPO firms do not file S-1 filings. Consequently, the sample remains 909 IPOs firms. Of these, 784 IPO firms receive the SEC comment letters in which 710 IPO firms receive the SEC comment letters for their initial S-1 filings. Table 1 presents the sample selection procedures in more detail. The SEC comment letters are manually collected from the EDGAR database.[[5]](#footnote-6) I extract information about the SEC comments, the SEC reviewers’ job position and job classification from the SEC comment letters. If the SEC comment letters do not contain the information about the reviewers’ job position and job classification, I alternatively collect the data from the Federal.org website by using the reviewers’ names.[[6]](#footnote-7) The date of initial S-1 filings and the effective date of IPOs are collected.[[7]](#footnote-8) I obtain the IPO firms’ characteristics and the industry’s characteristics data from Compustat North America and Thomson Reuters Datastream databases.

**[Insert Table 1 about here]**

* 1. **Key variables**
     1. **The SEC review process**

As stated by Li & Liu (2017), the 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 by the SEC in the comment letters are addressed will the review process be complete and the SEC be willing to declare the registration statement as ‘effective’. Based on this institutional background, a number of attributes of the SEC review process could be considered including duration of IPO process (*Duration),* the volume of SEC comment letters (*Letters)* and the volume of comments for initial S-1 filings (*Comments)*.

Particularly, I measure *Duration* by calculating the number of days from the date of initial S-1 filing to the date that 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 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) suggest that a long IPO duration indicates multiple layers of oversight from the regulators.

Regarding *Letters,* I calculate 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. I consider 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 the period from the date of initial S-1 filings to the effective date of the IPO and (3) having the subject line as “Re: […] Registration Statement on Form S-1[..]” for initial SEC comment letter or “Amendment No.[…] to Registration Statement on Form S-1” for comment letters relating to amended S-1 filings.[[8]](#footnote-9)

I calculate *Comments* by counting the number of comments in initial comment letters that the SEC issues to each IPO firm. If the SEC do not issue the 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 numerous material relating to compliance with the SEC regulations, *Comments* is equal zero.[[9]](#footnote-10)

Regarding *Accounting/Offering/Business/Corporate Governance/Disclosure Comments,* I calculate these variables by counting the number of comments highlighted in initial SEC comment letters about the accounting/offering/business/corporate governance/ disclosure issues in the initial S-1 filing of each IPO firms. These variables are calculated by using the data from the manual coding of comment letters which is based on the self-constructed coding scheme to identify specific issues highlighted in the SEC’s comment letters as mentioned in Appendix 2.

* + 1. **IPO firms’ characteristics**

Regarding the IPO firms’ characteristics, following the studies of Cassell et al. (2013); Duro et al., (2017); Heese et al., (2017) and Johnston & Petacchi (2017), I employ proxies for business complexity (*Size, Firm age, Segments, Restructuring, M&A)*, future performance (*Sales growth, BM)*, auditor characteristics (*Big 4)*, corporate governance characteristics (*CEOchairman),* management’s plan to issue new equity or security debt (*External financing),* and financial health including; debt level (*leverage),* financial distress (*Zscore),* profitability (*Positive earnings).*

Particularly, regarding the business complexity, I measure *Size,* which is an indicator of the IPO firm’s market capitalization, as the natural logarithm of common share outstanding times the share price as reported in year prior to the filing year of initial S-1 filings (t-1) (Duro et al., 2017). I employ logarithmic transformations for the firm’s market capitalization since this variable is highly right-skewed. Mixed expectations are suggested on the relationship between *Size* and the SEC review attributes. This relationship is claimed to be positive, suggesting that bigger firm, who have more complexity in their business, may have lower reporting quality and hence attract more SEC oversight (Cassell et al., 2013; Heese et al., 2017). However, this relationship is claimed to be negative since Singhvi & Desai (1971), Lang & Lundholm (1993) and Doyle et al., 2007) identify that financial reporting quality is lower for smaller firms, suggesting a lower degree of the SEC review. These expectations are both in line with public interest theory assuming that the regulators are neutral and aim to protect the benefits of the whole public in the weak and inefficient markets.

As for *Firm age,* I follow the study of Heese et al. (2017) which calculates this proxy as the period between year t and the year when the data of IPO firm first appeared on Compustat database. Mixed expectation are suggested on the relationship between *Age* and the SEC review attributes. In terms of company complexity, this relationship is claimed to be positive because company complexity is higher for the older firm, who may have lower reporting quality and hen attract more SEC scrutiny (Cassell et al., 2013; Heese et al., 2017). However, in terms of information uncertainty, this relationship is claim to be negative because the older firms may have less information uncertainty (Barry & Brown, 1985; Zhang, 2006), who could attract less SEC scrutiny ( Ertimur & Nondorf, 2006; Chen & Johnston, 2010; Colaco et al., 2018). These expectations are both in accordance with public interest theory.

Concerning *Segments,* I calculate this proxy as the number of non-empty and unique segment industry codes as reported on Compustat. I also base on the company complexity arguments to expect that *Segments* has a positive relationship with the SEC review attributes because more segments indicated more complexity in the firms’ business (Cassell et al., 2013).

*Restructuring* is an indicator variable reflecting whether the IPO firms engage in the restructuring activities or not. This variable equals 1 if the firm has non-zero restructuring cost on a pre-tax basis in year t and 0 otherwise (Cassell et al., 2013; Heese et al., 2017). Company complexity is also the rationale for my expectation that *Restructuring* is positively related to the SEC review attributes since the company complexity increase when the firms conduct restructuring activities (Cassell et al., 2013; Heese et al., 2017).

Similarly, *M&A* is an indicator variable reflecting whether the IPO firms engage in the merge and acquisition activities or not. This variable equals 1 if the firm has non-zero restructuring cost on a pre-tax basis in year t and 0 otherwise (Cassell et al., 2013; Heese et al., 2017). I expect that the relationship between *M&A* and the SEC review attributes is positive since company complexity increase when the firm conduct M&A activities, suggesting higher extent of the SEC review (Cassell et al., 2013; Heese et al., 2017).

Regarding the future performance, I measure *Sales growth,* which is an indicator for survival and financial growth of the IPO firm, as the change in annual sales from year t-1 to year t divided by annual sale in year t-1. I expect that *Sales growth* is positively related to the SEC review attributes since higher growth rate of sales indicate that the firms have higher growth expectation, who are often targeted by the SEC for the review (Heese et al., 2017). This expectation is in agreement with the information uncertainty hypothesis, which assumes that the firms with greater expected growth are likely to be operating in higher information uncertainty environment (Jiang et al., 2005), and may therefore attract more SEC scrutiny ( Ertimur & Nondorf, 2006; Chen & Johnston, 2010; Colaco et al., 2018) as in line with the assumption of public interest theory.

Concerning *BM* or book-to-market ratio which is an indicator for the undervaluation/overvaluation of the IPO firm’s securities, I calculate this measure as the ratio of the book value of equity to the market value of equity in year t (Duro et al., 2017, Heese et al., 2017). Similarly, basing on the information uncertainty hypothesis, I expect that *BM* has a negative relationship with the SEC review attributes since the firms having lower book-to-market ratio, in other words, higher growth expectation, are often targeted by the SEC for the review (Heese et al., 2017). This expectation is in agreement with information uncertainty, which assumes that firms with lower book-to-market ratio are likely to be operating in higher information uncertainty environment (Jiang et al., 2005), and hence, could attract more the SEC scrutiny ( Ertimur & Nondorf, 2006; Chen & Johnston, 2010; Colaco et al., 2018) as in line with the assumption of public interest theory.

Regarding financial health, I calculate *Leverage,* which is an indicator of the IPO firm’s debt level, as the ratio of total liabilities to total equity in year t (Duro et al., 2017). I expect that *Leverage* is positive correlated with the SEC review attributes, which is in line with the finding of Duro et al. (2017) revealing that the firms with higher leverage are more likely to receive the SEC comment letters. In other words, firms with higher debt level are likely to attract more SEC scrutiny. This expectation is also derived from public interest theory which assumes that regulators are neutral and aim to protect the benefits of the whole public in the weak and inefficient markets.

Regarding *Zscore*, which is an indicator of the firm’s financial distress, I follow Altman (1969) and Cassell et al. (2013) and measure this variable by using the following equation

where: is current assets of firm i in year t ; is current liabilities of firm i in year t; is retained earnings; is pre-tax income of firm i in year t; is interest and related expense of firm i in year t; is the number of common shares outstanding of firm i in year t; is annual closing price of firm i in year t; is sales of firm i in year t; is total assets of firm i in year t and is total liabilities of firm i in year t. A Zscore of higher than 2.99 indicates that the IPO firm has a low risk of bankruptcy. A score of lower than 1.81 indicates that the IPO firm is having financial distress and is likely to go into bankruptcy, while scores in between 2.99 and 1.81 indicate a very first signal for possible bankruptcy (Altman, 1968). Firms with financial distress are more likely to be noncompliant with GAAP ( Dechow et al., 1996; Brazel et al., 2009), hence, the SEC review could be more intense for these firms (Heese et al., 2017). Therefore, I expect that the relationship between *Zscore* and the SEC review attributes is negative, suggesting that the firm with higher level of financial distress will attract more the SEC review attributes. This expectation is also derived from the assumption of public interest theory.

As for *Positive earnings* which is an indicator of the IPO firms’ profitability, I construct this proxy as an indicator variable which equals to 1 if firm i has net income in year t equal or higher than zero (Hesse et al., 2017). Mixed expectation on the relationship between *Positive earnings* and the SEC review attributes. In terms of earnings quality, this relationship is claimed to be positive since the firm may mislead the accounting information by reporting positive earnings to attract investors in the IPO year (Teoh et al., 1998), suggesting that the SEC review could be more intense for these firms. However, in terms of profitability, the loss-making firms are more likely to receive the SEC comment letters (Heese et al., 2017). These expectations are both in accordance with the assumption of public interest theory.

Regarding management’s plan to issue new equity or securities debt, I measure *External financing*, which is an indicator of the IPO firm’s funding activities via new borrowing and stock issue, by using the following equation

Where: is sales of common and preferred stock of firm i in year t, is purchases of common and preferred stock of firm i in year t; is dividends made by firm i in year t; is long-term debt issued by firm i in year t, is long-term debt reduction of firm i in year t and is change in current debt of firm i in year t. I expect *External financing* is negatively associated with the SEC review attributes since disclosure quality and reporting compliance are higher when the firms previously issued debt or equity securities (Ettredge et al., 2011), suggesting less SEC scrutiny on these firms (Heese et al., 2017). This expectation is also developed from the assumption of public interest theory.

Regarding auditor characteristics, *Big 4* is an indicator of the audit quality of the IPO firms’ financial statements. I measure this proxy as an indicator variable which equals 1 if the IPO firm is audited by Big 4 Auditors including Ernst & Young, Deloitte & Touche, KPMG, PricewaterhouseCoopers (Johnston & Petacchi, 2017), and 0 otherwise. I expect *Big 4* is negatively associated with the SEC review attributes since firms audited by Big 4 auditors may have more standard reports which could attract less SEC scrutiny (Johnston & Petacchi, 2017). This expectation is also derived from the assumption of public interest theory.

Regarding corporate governance characteristics, *CEOchairman* is an indicator of the strength of internal monitoring mechanisms in the IPO firm*.* I measure this proxy as an indicator variable which equals 1 if firm i has CEO that is also the chairman of the board member of in year t, and 0 otherwise (Hesse et al., 2017). This variable is also equal 0 if the data are missing (Cassell et al., 2013). I expect that *CEOchairman* is positively correlated with the SEC review attributes since when the board is led by a member of management, the board’s monitoring effectiveness may be weaker (Ertimur & Nondorf, 2006)and hence, the degree of SEC review may be more intense for these firms ( Ertimur & Nondorf, 2006; Ettredge et al., 2011; Robinson et al., 2011; Cassell et al., 2013). This expectation is also derived from the assumption of public interest theory.

* + 1. **Incidences – Regulatory change and crises**

Regarding the examination of the impact of incidences on the SEC review, I employ three important events, which occurred in the sample period of my study and could have potential effect on the SEC scrutiny as I mentioned in Section 2.2., including the enactment of the JOBs Act in 2012, the enactment of the Dodd-Frank Wall Street Reform and Consumer Protection Act in 2010 and the financial crisis occurring in 2008-2009*.* As for the enactment of the JOBs Act in 2012, I employ *JOBs Act* which is an indicator variable equal to 1 if the filing year of S-1 is in post-JOBs Act period, particularly from 2012 to 2017, and 0 otherwise. My expectation is that relationship between *JOBs Act* and the SEC review attributes is negative since JOBs Act aims to eliminate restrictions and SEC disclosure regulation on EGCs going public, which have total annual gross revenues that are less than $1 billion in the most recent fiscal year (SEC, 2012). Agarwal et al. (2017) observe that SEC adjust their styles in reviewing IPO prospectuses prepared by of ECGs after the enactment of JOBs Act. Chaplinsky et al. (2017) state that Title I of JOBs Act decreases ability of regulators to address and prosecute fraud As for the enactment of Dodd-Frank in 2010, I employ *Dodd-Frank* which is an indicator variable equal to 1 if the filing year of S-1 is in post-Dodd-Frank period, particularly, from 2010 to 2011, and 0 if the filing year of S-1 is from 2005 to 2009.[[10]](#footnote-11) I expect that *Dodd-Frank* is positively related to the SEC review attributes because Dodd-Frank Act enhances the oversight of particular organizations to provide protection for the economy and American consumers, investors and businesses (WilmerHale, 2011). Furthermore, Balasubramnian & Cyree (2014) observe that due to government intervention, market discipline is improved after the enactment of Dodd-Frank Act. As for the occurrence of financial crisis, I employ *Financial crisis* which is an indicator variable equal 1 if the filing year of S-1 is in 2008 or 2009, and 0 if the filing year if from 2005 to 2007 or from 2010 to 2011.[[11]](#footnote-12) I expect that *Financial crisis* is positively associated with the SEC review attributes as in line with the findings of Colaco et al. (2018) who identify that IPO firms’ waiting periods are longer during the period of financial crisis 2008-2009. Blackburne (2014) also observe more SEC oversight over corporate disclosures in the financial crisis 2008. Application of public interest theory as developed by Watts & Zimmerman (1986) suggests that crises can strengthen the oversight of politicians and regulators in order to extract wealth transfers from regulated firms.

* + 1. **Industry/market characteristics**

Regarding the impact of industry/market characteristics on the SEC review, I focus on two particular types of industries, which are regulated industries (*Regulated)* and technological industries (*Technology)*. I also employ variables for industry size (*IPOs by industry)* and market competition (*Herfindahl Index)*. *Regulated* is an indicator variable equal to 1 if the IPO firm’s SIC codes is 4900–4939 (electric and gas), 1300 (oil and gas extraction), 4000–4700 (transportation), 4800 (telecommunications), or 4950–4959 (sanitary services) (Ertimur & Nondorf, 2006). I expect a negative relationship between *Regulated* and the SEC review attributes since regulated firms have specific external reporting duties and thus the quality of the regulated firms' S-1 filings could be more standard than other firms (Ertimur & Nondorf, 2006), suggesting less SEC scrutiny on the regulated firm as in line with the assumption of public interest theory.

*Technology* is an indicator variable equals to 1 if the IPO firm’s industry as classified by SIC codes is 3571, 3572, 3575, 3577, 3578 (i.e. computer hardware); 3661, 3663, 3669 (i.e. communications equipment); 3671, 3672, 3674, 3675, 3677, 3678, 3679 (i.e. electronics); 3812 (i.e. navigation equipment); 3823, 3825, 3826, 3827, 3829 (i.e. measuring and controlling devices); 3841, 3845 (i.e. medical instruments); 4812, 4813 (i.e. telephone equipment); 4899 (i.e. communications services) or 7371, 7372, 7373, 7374, 7375, 7378,7379 (i.e. software) (Colaco et al., 2018). Mixed expectations are suggested on the relationship between *Technology* and the SEC review attributes. This relationship is likely to be negative as in line with the finding of Colaco et al. (2018) who identify that duration of waiting periods of the firms operating in the technology industries are shorter than other firms since technology firms confront serious competition in their industry and quickly becoming effective IPOs would be in their best interest. This expectation is in line with the assumption of economic interest group theory. However, in terms of information uncertainty, this relationship is claimed to be positive because the technology industries may have more information uncertainty (Chahine et al., 2015; Colaco et al.; 2018), who could attract more SEC scrutiny ( Ertimur & Nondorf, 2006; Chen & Johnston, 2010; Colaco et al., 2018) as in line with the assumption of public interest theory.

I calculate *IPOs by industry* as the number of IPO firms in the same two-digit-SIC-code industry. I expect that the relationship between *IPOs by industry* and the SEC review attributes are negative, suggesting that in the market having a large number of IPOs, in order to complete the review of the IPOs’ filings more quickly to meet the reviewing target, the SEC may spend less time and effort for the review of the firms' filings. This expectation is derived from behavioural effects theorized by Tan & Netessine (2014) which states that when workload is too high, it obstructs workers from fulfilling their targets and reduces workers’ motivation and commitment. Colaco et al. (2018) provide evidence about the decrease in waiting period in the hot IPO market.[[12]](#footnote-13)

Regarding *Herfindahl index*, I follow Wang (2016) by using the following equation.

Where is firm i’s sales in industry j, as defined by two-digit SIC codes, is the sum of sales for all firms in industry j. I expect a positive relationship between *Herfindahl index* and the SEC review attributes as in line with the finding ofAli et al. (2014)who identify that due to proprietary costs of disclosure,in high-concentrated or low-competitive markets, information uncertainty, which is measured by dispersion in analysts’ earnings forecasts, is higher, suggesting more SEC scrutiny . This expectation is in agreement with the assumption of public interest theory.

* + 1. **SEC characteristics**

Regarding the examination of the impact of the SEC reviewers’ characteristics on the SEC review, I employ a proxy of the reviewers’ job position (*Directors/Chiefs*) and a proxy of the reviewers’ job classification (*Accountant)*. Following Baugh et al. (2017), I recognize the reviewer as the person who approves and signs the first comment letter. *Directors/Chiefs* is an indicator variable which equals to 1 if job position of the reviewer is Assistant Director, Senior Assistant Chief Accountant, Legal Branch Chief or Accounting Branch Chief, and 0 if the job position of the reviewer is Professional (Baugh et al., 2017). Organizational hierarchy of an office in Corporate Finance Division is provided in Figure 3. I expect a negative relationship between *Directors/Chiefs* and *Duration* as in line with the findings of Baugh et al. (2017) who basing on the assumption of personal experience of the individual style effects theory, suggesting that the reviewer with a higher job position could have more experience, and hence, spend less time conducting the review. In addition, I expect a positive relationship between *Directors/Chiefs* and *Letters* and *Comments* in accordance with the findings of Baugh et al. (2017) suggesting that Assistant Directors tend to address more issues in initial comment letters, which are more likely to improve IPO firms’ financial reporting quality. These expectations are both in line with “Upper echelons theory”.

*Accountant* is an indicator variable equal to 1 if the job classification of the reviewer is an accountant, and 0 if the job classification of the reviewer is General Attorney (Baugh et al., 2017). Following the expertise assumption in “upper echelons theory” as well as Baugh et al. (2017)’s arguments about the accounting expertise, I conjecture that accountant reviewers may focus more on accounting information in their S-1 review. In addition, according to the results obtained from the coding of types of issues as presented in Appendix 2, the proportion of accounting issues, including earnings management issues and other accounting issues, is less than that of other issues in S-1 filings, suggesting a lower proportion of accounting information in S-1 filings. Therefore, contrary to the finding of Baugh et al. (2017) who examine the annual filings with the dominance of accounting information and identify that accountant reviewers address more issues in the review of annual filings, I expect a negative relationship between *Accountant* and the SEC review attributes on S-1 filings which contain less proportion of accounting issues comparing to other issues. Table 3 summaries the expectations of the impacts of determinants on the SEC S-1 review.

**[Insert Table 2 about here]**

1. **Empirical tests and models**

Both univariate tests and multivariate test with negative binomial regression are employed to examine the relationship between the SEC S-1 review process and their associated factors. The univariate analysis is conducted to examine significant differences in the SEC review attributes between

(1) firms conducting restructuring activities and other firms;

(2) firms conducting M&A activities and other firms*;*

(3)firms audited by Big4 auditors and other firms*;*

(4) firms having profits and firms having loss*;*

(5) firms having CEO who is also the chairman of the board of directors and other firms*;*

(6) firms filing S-1 before and after JOBs Act;

(7) firms filing S-1 before and after Dodd-Frank Act;

(8) firms filing S-1 in financial crisis period and in other period;

(9) firms operating in regulated industries and others;

(10) firms operating in technology industries and others;

(11) firms with S-1 filings reviewed by SEC reviewers who are directors or chiefs and the other reviewers;

(12) firms with S-1 filings reviewed by SEC reviewers who are accountants and the other reviewers.

In particular, parametric test (t-test) and non-parametric test (Wilcoxon rank-sum test) are used to examine the differences between mean and median, respectively, of each group according to a specific determinant of the SEC review as mentioned above. Similar descriptive analyses have been employed in various prior studies on the SEC review. For examples, Li & Liu (2017) compare the IPO waiting periods and number of amendments of S-1 filings between IPO firms with SEC comment letters and those with no SEC comment letters. Wang (2016) compare firms’ characteristics (e.g. market-to-book ratio, total assets) and industry characteristics (e.g. Herfindahl index) for firms receiving an SEC comment letter related to segment disclosure versus those without segment disclosure deficiencies. In addition, I also employ univariate regression to examine the relationship between the SEC review attributes and their determinants including; *Size, Sales growth, Leverage, BM, External financing, Firm age, Segments, Zscore, IPOs by industry, Herfindahl index.*

Regarding the multivariate tests, a negative binomial regression is employed to examine the impact of the IPO firms’ characteristics, the incidences, the industry/markets characteristics and the SEC characteristics on the SEC review attributes as a whole. As stated by Greene (2012), a variable is discrete if the set of its values is finite or countable and these values are obtained through the counts of occurrence. In my study, the dependent variables are three attributes of the SEC review including, *Duration, Letter, Comments*, are discrete because they all have finite values which are obtained through the counts of days of IPO process, comment letters, comments in each initial letter. According to Rock et al. (2000), negative binomial regression outperforms other methods in estimating cross-sectional regression on discrete-count dependent variables. Therefore, I employ negative binomial regression to estimate the following models.

where the definitions of these variables are discussed in Section 5.2 and Appendix 1.

1. **Sample descriptive statistics**
   1. **Sample distribution**

According to Panel A in Table 3, the number of IPOs dramatically increase in 2013 and reach a peak in 2014 with a value of 114 (12.54%) and 123 (13.53%), respectively, which are in line with the expansion period of IPO activities after the enactment of JOBs Act. The number of IPOs is smallest in 2008 with a value of 19 (2.09%), which is at the height of financial crisis in 2008. The number of IPOs receiving initial comment letters are largest in 2006 with a value of 93 (13.10%), which could be because after deciding to publicly disclose their comment letters and the IPO firms’ response since 12th May, 2005, the SEC strengthen their regulatory discipline to decrease the information asymmetry, protect investors as well as their own reputation (Boone et al., 2013; Bozanic et al., 2017; Brown et al., 2015; 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 the dramatic increase of the number of IPOs in 2013. The number of IPOs receiving initial comment letters is smallest in 2017 with a value of 15 (2.11%), which could be due to the less onerous disclosure regulation under JOBs Act. The number of IPOs receiving initial comment letters is also relatively small in 2008 which is in line which the sudden decrease in the number of IPOs in 2008. The proportion of IPOs receiving initial comment letter is largest in 2009 with a value of 97.56%, which coud be due to the higher intensity of the SEC review in the recession period of financial crisis 2008-2009. The proportion of IPOs receiving initial comment letter significantly decreases from 2013 and reach a bottom in 2017 with a value of 31.91%, which could be due to the relief of disclosure regulation on emerging growth companies under JOBs Act. Figure 4 visualizes the distribution of the sample by year.

**[Insert Figure 4 about here]**

Panel B in Table 3 presents the sample distribution by industry. My sample includes 53 industries as classified by the two-digit SIC code. With 28 of these representing at least 1% of the sample, this implies a broad selection of industries. Particularly, the number of IPOs are large in Computer equipment & service and largest in Chemical products with a value of 225 (24.75%) and 265 (29.15%), respectively. The number of IPOs is smallest in Food products with a value of 8 (0.88%). Similarly, the number of IPOs receiving initial comment letters are large in Computer equipment & service and largest in Chemical products with a value of 173 (24.37%) and 175 (24.65%), respectively. The number of IPOs receiving initial comment letters is smallest in Food products with a value of 8 (1.13%). The proportion of IPOs receiving initial comment letters is largest in Food products, Paper and Paper products, Engineering and Management Services which all have 100% of IPOs receiving initial comment letters. The proportion of IPOs receiving initial comment letters is smallest in Chemical products (66.04%). To some extent, the results reveal that if an industry has a higher volume of IPOs, the proportion of IPOs receiving initial comment letters may be lower.

**[Insert Table 3 about here]**

* 1. **Descriptive statistics of SEC review attributes**

Table 4 provides descriptive statistics of three proxies of SEC review on IPO firms’ initial S-1 filings, including duration of IPO process (*Duration)*, number of comment letters (*Letters)* and number of comments in the initial comment letter *(Comments)*. Table 4, Panel A present the summary descriptive statistics of three SEC review attributes. Regarding *Duration*, the mean (median) value of this measure is 120.11 (90). The mean (median) value of *Letters* is 2.77 (3). Regarding *Comments,* the mean (median) IPO firm receives 26.63 (22) comment in initial comment letter. These results are all lower than comparable findings in the studies of Ertimur & Nondorf (2006) and Li & Liu (2017), who also employs the same measure of the SEC review on S-1 filings. The reason could be the sample period employed by Ertimur & Nondorf (2006) and Li & Liu (2017) are from 12th May, 2005 to 30th September, 2006 and from 12th May, 2005 to 31st December, 2011, respectively, meanwhile, my study focuses on the wider period, which is from 12th May, 2005 to 31st December, 2017. Especially, my sample period includes the period after the enactment of JOBs Act, which relieves some SEC’s disclosure regulations on the emerging growth companies, and hence could decrease the value of the SEC review attributes. It is also worth noting that *Duration* and *Comments* are highly skewed as well as *Letters* is relatively skewed. Otherwise, all three proxies are discrete and countable. Therefore, it would be statistically problematic if these proxies are employed as independent variables within conventional OLS regressions.

Table 4, Panel B presents the descriptive statistics of the three SEC review attributes by year. Generally, the mean (median) values of the three SEC review attributes tend to decrease from 2005 to 2017, especially after 2012. Regarding the *Duration*, it is worth noting that the mean (median) 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 increase from 2010 (2011), which could be due to the higher intensity of the SEC review to protect investors under Dodd-Frank Wall Street Reform and Consumer Protection Act 2010. Importantly, the results reveal a steady decrease in the mean (median) value of *Duration* from 2012 (2011) to a low in 2017 (2017) with a value of 36.79 (27), which could be due to the relief of disclosure regulation on emerging growth companies under JOBs Act. Regarding *Letters,* I observe a gradual increase from 2005-2008 (2005-2008) and reach a peak in 2008 (2008) with a value of 4.89 (5), which is at the height of financial crisis in 2008. A slight increase in the mean value of *Letters* is shown, which is after the enactment of Dodd-Frank Wall Street Reform and Consumer Protection Act 2010. The results also reveal a steady decrease in the mean (median) value of *Letters* from 2012 (2012) to reach a low in 2017 (2017) with a value of 0.87 (0), which is in the period after the enactment of JOBs Act. Regarding *Comments*, I observe a sudden decrease in the mean (median) value of this proxy from 2012 (2011) to reach a low in 2017 (2017) with a value of 2.96 (0), which could be also due to the relief of disclosure regulation on emerging growth companies under JOBs Act. Figure 2, 3, 4 visualize the mean and median value of three SEC review attributes by year including, *Duration, Comments* and *Letters.*

**[Insert Figure 5, 6, 7 about here]**

Table 4, Panel C provides the descriptive statistics of three SEC review attributes by industry. Regarding *Duration*, the mean (median) value is smallest for Chemical products (Chemical products) with a value of 94.79 (53.00) and largest for Paper and paper products (Paper and paper products) with a value of 263.40 (131.5). Regarding the number of comment letters, the mean (median) value is smallest for Chemical products (Chemical products, Scientific instruments) with a value of 2.07 (2) and largest for Paper and paper products (Paper and paper products, Manufacturing) with a value of 4.3 (4). Regarding *Comments*, the mean (median) value is smallest for Chemical Products (Chemical Products) with a value of 14.73 (3) and largest for Paper and paper products (Manufacturing) with a value of 45.2 (48). In general, I can observe that the SEC review is the most intensive in Paper and Paper Products and the least intensive in Chemical Products.

According to Table 4, Panel D, the mean and median value all three SEC review attributes in NYSE and AMEX are higher than those in NASDAQ. According to Hegde et al., (2010), small firms prefer listing on NASDAQ due to the highest cost efficiency. Furthermore, JOBs Act aims to relieve some disclosure regulation on the emerging growth or small companies. Therefore, the SEC review of IPOs on NASDAQ, which attracts more the small companies, could be less intense.

Table 4, Panel E provides summary descriptive statistics of three 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. Regarding *Duration*, the mean (median) value of this measure is 149.23 (125.44). The mean (median) value of *Letters* is 3.50 (3.32). Regarding *Comments,* the mean (median) IPO firm receives 36.18 (37) comment in initial comment letter. It also could be identified that the variation in *Duration* and *Comments* is relatively large with a standard deviation of 123.77 and 18.99, respectively.

Table 4, Panel F provides descriptive statistics of three SEC review attributes by offices of the Division of Corporation Finance. My sample includes 10 offices from 11 offices currently operating in the Division of Corporation Finance, which indicates a broad selection of the offices.[[13]](#footnote-14) Regarding *Duration*, the mean (or median) value of duration is lowest for Office of Healthcare and Insurance (Office of Healthcare and Insurance) with a value of 94.57 (49.50) and highest for Office of Transportation and Leisure (Office of Telecommunications) with a value of 166.49 (106). Regarding the number of comment letters, the mean (or median) value is lowest for the Office of Healthcare and Insurance (Office of Healthcare and Insurance) with a value of 1.98 (2) and highest for Office of Manufacturing and Construction (Office of Manufacturing and Construction) with a value of 3.88 (4). Regarding the number of comments in initial comment letters, the mean (or median) value is lowest for the Office of Healthcare and Insurance (Office of Healthcare and Insurance) with a value of 13.39 (2) and highest for the Office of Manufacturing and Construction (Office of Manufacturing and Construction) with a value of 42.28 (46.5). In general, it could be identified that the SEC review is the least intense in the Office of Healthcare and Insurance and the most intense in the Office of Manufacturing and Construction.

**[Insert Table 4 about here]**

* 1. **Descriptive statistics of the determinants of the SEC review**

Table 5 provides the descriptive statistics for the determinants of the SEC review.[[14]](#footnote-15) Regarding IPO firm’s characteristics, the median value *Size*, which is based on the firms’ market capitalization (natural logarithm), is 6.22 (equivalent to $502.70 million), which indicates that on average, the U.S IPOs in my sample are small-cap companies.[[15]](#footnote-16) *Sales growth* is positive with the median value of 0.32, which indicates that the U.S IPOs generally experience a relatively high potential growth in sales with an increase of 32% on average. *Leverage* is lower than 1 on average with a median value of 0.32, which indicates that on average, the U.S IPOs’ liabilities are 32% of shareholders’ equity which is an acceptable capital structure since on average, no more than half of the firms’ assets are financed by debts. *BM* is lower than 1 on average with a mean value of 0.25, which indicates that U.S. IPOs’ stocks are generally undervalued and the investors would be willing to pay higher prices than the firms’ true values. Median value of E*xternal financing* is 0.41, which indicates that on average, U.S. IPOs’ funds acquired from outside sources (debt or equity) are 41% of their total assets, which is a relatively high need of external financing. Median value of *Firm age* is 2, which indicates that on average, U.S IPOs are young who have been established for approximately 2 years. Median value of *Segments* is 1, which indicates that U.S IPOs are not diversified and complicated in their areas of operation, generally having only one business segment. The median value of *Zscore* is 5.52, which is higher than 2.99 and indicates that in general, U.S IPOs are safe from bankruptcy. Mean value of *Big 4* is 0.81, which indicates that on average, 81% or most of U.S IPOs in my sample are audited by Big 4 auditors. Mean value of *Restructuring* is 0.11, which indicates that on average, 11% of U.S. IPOs in my sample engage in the restructuring activities. Mean value of *M&A* is 0.14, which indicates that on average, 14% of U.S IPOs in my sample conduct the M&A activities. Mean value of *Positive earnings* is 0.4, which indicates that on average, 40% of U.S IPOs in my sample have profit. The mean value of *CEOchairman* is 0.52, which indicates that on average, 52% U.S. IPOs in my sample have CEO who is also the chairman of the board of directors.

Regarding incidences of regulatory changes and crisis, the mean value of *JOBs Act* is 0.51, which indicates that on average, 51% U.S IPOs in my sample file S-1 Form in the post-JOBs-Act period (2012 – 2017). Mean value of *Dodd-Frank* is 0.30, which indicates that on average, 30% U.S IPOs in my sub-sample, which only cover the period from 2005 to 2011, file S-1 Form in the post-Dodd-Frank period (2010 – 2011). Mean value of *Financial crisis* is 0.13, which indicates that on average, 13% U.S IPOs in my sub-sample, which only covers the period from 2005 to 2011, file S-1 Form in the period of global financial crisis (2008 - 2009).

Regarding industry characteristics, mean value of *Regulated* is 0.01, indicating that on average, only 1% of IPOs in my sample operate in regulated industries. Mean value of *Technology* is 0.2, which indicates that 20% of IPOs in my sample operate in technology industries. Median value of *IPOs by industry* is 64, which indicates that on average, each industry in my sample contains 64 U.S IPOs. Median value of Herfindahl index is relatively low with a value of 0.10, which indicates that in the whole, the markets in my sample have low concentration or high competition.

Regarding SEC characteristics, Mean value of *Directors/Chiefs* is 0.93, which indicates that on average, 93% or most of the initial S-1 Form filed by U.S IPOs in my sample are reviewed by the reviewers holding the job position of Directors/Chiefs. Mean value of *Accountant* is 0.31, indicating that 31% initial S-1 Form filed by the U.S IPOs in my sample are reviewed by the accountant reviewers.

**[Insert Table 5 about here]**

* 1. **Correlation matrix of the SEC review attributes and their determinants.**

A correlation matrix for the key variables including, the SEC review attributes and their determinants is presented in Table 6. Regarding the correlation between the SEC review attributes and IPO firms’ characteristics, I observe a negative correlation between all SEC review attributes (*Duration, Letters, Comments)* and *External financing*, in line with assumption of higher reporting quality of the firm acquiring funds from outside sources (Ettredge et al., 2011), suggesting less SEC scrutiny on these firms (Heese et al., 2017). A positive correlation between all SEC review attributes and *Firm age* is identified, consistent with arguments of more complexity in the reports prepared by the older firm, suggesting higher degree and likelihood of the SEC review (Cassell et al., 2013; Heese et al., 2017). Otherwise, it could be also identified that *Firm age* is positively correlated with *Size* and *Segments,* which are two indicators of the firms’ complexity, suggesting that older firms have more complexity in their business. The correlation between all SEC review attributes and *Segments* is also positive, in agreement with the arguments of more complexity in the reports prepared by the firm having more business segments, suggesting higher degree of the SEC review (Cassell et al., 2013). I observe a negative correlation between all SEC review attributes and *Zscore,* in line with argument of more problems in the reports prepared by the firm experiencing financial distress ( Dechow et al., 1996; Brazel et al., 2009), suggesting more intense SEC review on these firms (Heese et al., 2017). A positive correlation between all SEC review attributes and *Positive earnings,* consistent with the hypothesis of income-increasing earning management in the firm going public (Teoh et al., 1998), suggesting higher extent of the SEC review as in line with the assumption of public interest theory. The relatively strong correlation between all SEC review attributes and *CEOchairman* is identified, consistent with hypothesis of weak monitoring effectiveness in firms having board of directors led by a CEO (Ertimur & Nondorf, 2006)**,** suggestingthe high degree of SEC review ( Ertimur & Nondorf, 2006; Ettredge et al., 2011; Robinson et al., 2011; Cassell et al., 2013). In addition, I observe a positive correlation between two SEC review attributes including; *Letters, Comments,* and *Size,* in line with the hypothesis of more complexity in the reports prepared by the bigger firms, suggesting more intense SEC review (Cassell et al., 2013; Heese et al., 2017). The correlation between *Letters* and *Restructuring* is positive, in agreement with arguments of more complexity in the reports prepared by firms conducting restructuring activities, suggesting more intense SEC review (Cassell et al., 2013; Heese et al., 2017). I also find that *Restructuring* is positively correlated with *Size* and *Segments,* which are two indicators of the firms’ complexity, suggesting that the firms conducting restructuring activities could have more complexity in their business. A negative correlation between two SEC review attributes including; *Duration, Comments,* and *M&A,* is inconsistent with the hypothesis of more complexity in the reports prepared by the firm conducting M&A activities, suggesting higher degree of the SEC review (Cassell et al., 2013; Heese et al., 2017). I also identify that *M&A* is positively correlated with *Segments,* which is an indicator of the firms’ complexity, suggesting that firms conducting M&A activities could have more complexity in their business.

Regarding the incidences of regulatory changes and crisis, I observe a strong negative correlation between all SEC review attributes and *JOBs Act,* in line with the key target of JOBs Act which is relieving some SEC disclosure regulation (SEC, 2012; Gao et al., 2013). The negative correlation between two SEC characteristics including; *Duration, Letters,* and *Dodd-Frank* is identified, consistent with the key target of Dodd-Frank 2010 which is enhancing the regulatory oversight to protect investors (WilmerHale, 2011). The correlation between two SEC characteristics including; *Duration, Letters,* and *Financial crisis* is positive, in line with the application of public interest theory and the findings of more regulatory scrutiny during financial crisis (Blackburne, 2014; Colaco et al., 2018).

Regarding industry characteristics, I observe a negative correlation between all SEC review attributes and *IPOs by industry,* in agreement with the assumption of economic interest group theory and behavioural effects stating that excessive workload could reduce the workers’ motivation and commitment. The correlation between all SEC review attributes and *Herfindahl index* is positive, consistent with the argument of higher information uncertainty in high-concentrated markets (Ali et al., 2014), suggesting more intense SEC scrutiny ( Ertimur & Nondorf, 2006; Chen & Johnston, 2010; Colaco et al., 2017). A positive correlation between two SEC review attributes including; *Letters, Comments,* and *Technology* is identified, in line with the argument of higher information uncertainty in the technology industries (Chahine et al., 2015; Colaco et al.; 2017), suggesting more intense SEC scrutiny ( Ertimur & Nondorf, 2006; Chen & Johnston, 2010; Colaco et al., 2018).

Regarding the SEC characteristics, I observe a negative correlation between *Duration* and *Directors/Chiefs*, in line with the findings of Baugh et al. (2017) and the assumption of personal experience of the individual style effects theory. The correlation between two SEC review attributes including; *Letters, Comments,* and *Accountant* is negative, consistent with expertise assumption in theory of individual style effects and the arguments of less accounting information in S-1 filing which could lead to less intense review conducted by the account reviewers, who mainly focus on accounting information (Baugh et al., 2017)

**[Insert Table 6 about here]**

1. **Univariate Analysis**

I conduct univariate analyses in order to provide initial evidence about the impact of IPO firm’s characteristics, incidences, industry/market characteristics and the SEC’s characteristics on the SEC review of S-1 filings. Particularly, the univariate analysis is employed to examine whether significant differences in the SEC review attributes exist between two distinct groups of the determinants of the SEC review by applying both parametric t-test and nonparametric Wilcoxon signed-rank test. I also employ univariate linear regression to examine the relationship between the SEC review attributes and their determinants.

* 1. **IPO firms’ characteristics**

Table 7 presents the univariate tests of the impact of IPO firms’ characteristics on the SEC review attributes. Regarding *Restructuring,* Panel A in Table 7 shows that the t-test of difference in means of *Letters* between restructuring firms (*Restructuring = 1)* and non-restructuring firm (*Restructuring = 0)* are highly significant at 1% as the difference in median of *Letters* based on Wilcoxon signed-rank test. Particularly, mean of *Letters* in the group of restructuring firms is higher than that in the group of non-restructuring firms, meanwhile, the median of *Letters* in the group of restructuring firms is equal that in the group of non-restructuring firms. The parametric results indicate that firms conducting restructuring activities receive more comment letters from the SEC. On the contrary, I observe no difference in both *Duration* and *Comments* between restructuring firms and non-restructuring firm in terms of both parametric and non-parametric analysis.

Regarding *M&A*, Panel B in Table 7 presents that t-test of difference in means of *Duration* and *Comments* between M&A firms (*M&A = 1)* and non-M&A firms (*M&A = 0)* are significant as the difference in median of *Duration* based on Wilcoxon signed-rank test. Particularly, mean and median of *Duration* and *Comments* in the group of M&A firms are lower than those in the group of non-M&A firms. Overall, both parametric and non-parametric results reveal that *Duration* and *Comments* in the group of M&A firms are lower than those in the group of non-M&A firms, which indicates that for M&A firms, the SEC spend less time for the review of the firms’ S-1 filings and issue fewer comments for their initial S-1 filings. On the contrary, I observe no difference in *Letters* between M&A firms and non-M&A firms in terms of both parametric and non-parametric analysis.

Regarding *Big4,* Panel C in Table 7 reveals that Wilcoxon signed-rank test of difference in median of *Duration* between firms audited by Big 4 auditors (*Big4 = 1)* and firms not audited by Big 4 auditors (*Big4 = 0)* are slightly significant at 10%, meanwhile, t-test of difference in mean of *Duration* is not significant. Particularly, the median of *Duration* in the group of firms audited by Big 4 auditors is lower than in the group of firms not audited by Big 4 auditors. Overall, non-parametric results indicate that the SEC spend less time for the review of S-1 filings which are prepared by the firms audited by Big 4 auditors. Contrarily, I observe no difference in *Letters* and *Comments* between the firms audited by Big 4 auditors and the firms not audited by Big 4 auditors.

Regarding *Positive-earnings,* Panel D in Table 7 shows that t-test of difference in means of all SEC review attributes including; *Duration, Letters, Comments,* between firms having profits (*Positive-earnings = 0*) and firms suffering loss (*Positive-earnings = 1*) are all strongly significant at 1% as the difference in median of all SEC review attributes based on Wilcoxon signed-rank test. Particularly, mean and median of all SEC review attributesin the group of firms having profits are higher than those of firms suffering loss. Overall, both parametric and non-parametric results reveal that for firms having profits, the SEC spend more time, issue more comment letters in the review of the firms’ S-1 filings and issue more comments for their initial S-1 filings.

Regarding *CEOchairman,* Panel E in Table 7 reveals that t-test of difference in means of all SEC review attributes including; *Duration, Letters, Comments,* between firms having CEO who is also a chairman of board of directors (*CEOchairman = 1*) and firms having CEO who is not a chairman of board of directors (*CEOchairman = 0*) are all strongly significant at 1% as the difference in median of all SEC review attributes based on Wilcoxon signed-rank test. Particularly, mean and median of all SEC review attributesin the group of the firms having CEO who is also a chairman of board of directors are higher than those in the group of firms having CEO who is not a chairman of board of directors. Overall, both parametric and non-parametric results indicate that for the firm having CEO who is also a chairman of board of directors, the SEC spend more time, issue more comment letters in the review of the firms’ S-1 filings and issue more comments for their initial S-1 filings.

Table 7, Panel F presents the results from estimating the univariate negative binomial regressions involving a dependent variable, which is *Duration, Letters* or *Comments,* and an independent variable, which is *Size, Sales growth, Leverage, BM, External financing, Firm age, Segments* or *Zscore.* The results reveal that effects of *Size* on *Letters* and *Comments* are positive and highly significant, which indicates that the SEC issue more comment letters during their review and more comments on initial S-1 filings for the bigger firms. In addition, I observe that the effect of *Sales growth* on *Duration* and *Letters* are positive, which indicates that the SEC spend more time issue more comment letters in the review of S-1 filings which are prepared by the firms having higher growth in sales or potential performance in the future. Furthermore, I identify that the effects of *External financing* on all three SEC review attributes are negative and strongly significant, which indicate that for firms conducting funding activities via new borrowing and stock issue, the SEC spend more time, issue more comment letters in the review of the firms’ S-1 filings and issue more comments for their initial S-1 filings. Otherwise, the results also present that the effects of *Firm age* on all three SEC review attributes are positive and strongly significant, which indicates that for older firms, the SEC spend more time, issue more comment letters in the review of the firms’ S-1 filings and issue more comments on their initial S-1 filings. Moreover, I observe that the effects of *Segments* on all three SEC review attributes are positive and strongly significant, which indicate that for the firms having more segments in their business, the SEC spend more time, issue more comment letters in the review of the firms’ S-1 filings and issue more comments on initial S-1 filings. Additionally, the results reveal that the effects of *Zscore* on *Duration* and *Letters* are negative, which indicates that the SEC spend more time and issue more comment letters in the review of S-1 filings prepared by the firm having higher probability of financial distress.

**[Insert Table 7 about here]**

* 1. **Incidences – Regulatory events and crises**

Table 8 presents the univariate tests of the impact of the incidences of regulatory changes and crisis on the SEC review attributes. Regarding *Financial crisis,* Panel A in Table 8 presents that the t-test of difference in means of *Duration* and *Letters,* between the period of financial crisis (*Financial crisis = 1)* and other periods (*Financial crisis = 0)* are significant as is the difference in median of all SEC review attributesbased on Wilcoxon signed-rank test. Particularly, the mean and median of *Duration* and *Letters* in the period of financial crisis are higher than those in other periods. Wilcoxon signed-rank test of difference in median of *Comments* between the period of financial crisis and other periodsare weakly significant at 10%, meanwhile, t-test of difference in mean of *Comments* is not significant. Particularly, the median of *Comments* in the period of financial crisis is higher than that in other periods. Overall, both parametric and non-parametric results indicate that the SEC spend more time in their review and issue more comment letters during the financial crisis, and the non-parametric results indicate that the SEC issue more comments on initial S-1 filings during the financial crisis.

Regarding *Dodd-Frank,* Panel B in Table 8 presents that the t-test of difference in means of *Duration* and *Letters,* between the period of post-Dodd-Frank 2010 (*Dodd-Frank = 1)* and the period of pre-Dodd-Frank 2010 (*Dodd-Frank = 0)* are highly significant at 1% as the difference in median of all SEC review attributesbased on Wilcoxon signed-rank test. Particularly, the mean and median of *Duration* and *Letters* in the period of post-Dodd-Frank 2010 are higher than those in the period of pre-Dodd-Frank 2010. Overall, both parametric and non-parametric results indicate that the SEC spend more time in their review and issue more comment letters in the period after the enactment of Dodd-Frank 2010.

Regarding *JOBs Act,* Panel C in Table 8 shows that the proportion of emerging growth companies pre and post- JOBs Act are similar and emerging growth companies dominate the sample with the proportion of 87.5% and 85.03%. Therefore, we could test the impact of JOBs Act by dividing the whole sample, rather than the sub-sample of emerging growth companies, into pre- and post-JOBs Act. The results reveal that the t-test of difference in means of all SEC review attributes including; *Duration, Letters,* and *Comments,* between post-JOBs Act period (*JOBs Act = 1)* and pre-JOBs Act period(*JOBs Act = 0)* are highly significant at 1% as the difference in median of all SEC review attributesbased on Wilcoxon signed-rank test. Particularly, mean and median of all SEC review attributesin the period of post-JOBs Act are lower than those in the period of pre-JOBs Act. Overall, both parametric and non-parametric results indicate that the SEC spend less time, issue fewer comment letters in the review of the firms’ S-1 filings and issue fewer comments for their initial S-1 filings in the period after the enactments of JOBs Act.

**[Insert Table 8 about here]**

* 1. **Industry and market**

Table 9 presents the univariate tests of the impact of industry/market characteristics on the SEC review attributes. Regarding *Regulated,* Panel A in Table 9 shows no difference in all SEC review attributes including; *Duration, Letters, Comments,* between firms operating in regulated industries (*Regulated = 1)*and firms operating in non-regulated industries (*Regulated = 0)*

Regarding *Technology,* Panel B in Table 9 reveals that t-test of difference in means of *Letters* and *Comments,* between the firms operating in technology industries (*Technology = 1)* and the firms operating in non-technology industries (*Technology = 0)* are significant as the difference in median of all SEC review attributesbased on Wilcoxon signed-rank test. Particularly, the mean and median of *Letters* and *Comments* in the group of firms operating in technology industries higher than those in the group of firms operating in non-technology industries. Wilcoxon signed-rank test of difference in median of *Duration* between the firm operating in technology industries and the firm operating in non-technology industries are strongly significant at 10%, meanwhile, t-test of difference in mean of *Duration* is not significant. Particularly, the median of *Duration* in the group of firms operating in technology industries is higher than that in the group of firms operating in non-technology industries. Overall, both parametric and non-parametric results indicate that for the firms operating in technology industries, the SEC issue more comment letters and more comments on their initial S-1 filings. Only non-parametric results indicate that the SEC spend more time for the review of S-1 filings prepared by the firms operating technology industries.

Table 9, Panel C presents the results from estimating the univariate negative binomial regressions involving a dependent variable, which is *Duration, Letters* or *Comments,* and an independent variable, which is *IPOs by industry* or *Herfindahl Index.* The results show that the effects of *IPOs by industry* on all three SEC review attributes are negative and strongly significant, which indicate that in industries having more IPO firms, the SEC spend less time, issue fewer comment letters in the review of the firms’ S-1 filings and issue fewer comments for their initial S-1 filings. In addition, the results also presents that the effects of *Herfindahl Index* on all three SEC review attributes are positive and strongly significant, which indicate that in markets with higher concentration or less competition, the SEC spend more time, issue more comment letters in the review of the firms’ S-1 filings and issue more comments for their initial S-1 filings. Appendix 4 provides descriptive statistics of SEC review attributes and Herfindahl index by industry in more detail.

**[Insert Table 9 about here]**

* 1. **SEC’s characteristics**

Table 10 shows univariate tests of the impact of the SEC characteristics on the SEC review attributes. Regarding *Director/Chief,* Table 10, Panel A reveals that Wilcoxon signed-rank test of difference in median of *Duration* between the initial S-1 filings reviewed by reviewers who are directors or chiefs (*Director/Chief = 1)* and the initial S-1 filings reviewed by the reviewers who are not directors or chiefs (*Director/Chief = 0)* are significant at 5%, meanwhile, t-test of difference in mean of *Duration* is not significant. Particularly, the median of *Duration* in the group of the initial S-1 filings reviewed by the reviewers who are directors or chiefs is lower than that in the group of the initial S-1 filings reviewed by the reviewers who are not directors or chiefs. Overall, the non-parametric results indicate that reviewers who hold the job position of director or chief spend less time for the review of S-1 filings. On the contrary, I observe no difference in *Letters* and *Comments* between the group of the reviewers who are directors or chiefs and the group of the reviewers who are not directors or chiefs.

Regarding *Accountant,* Table 10, Panel B shows thatt-test of difference in means of *Letters* and *Comments,* between the initial S-1 filings reviewed by the reviewers who are accountants (*Accountant= 1)* and the initial S-1 filings reviewed by the reviewers who are not accountants (*Accountant = 0)* are significant as the difference in median of all SEC review attributesbased on Wilcoxon signed-rank test. Particularly, the mean and median of *Comments* in the group of firms reviewed by the reviewers who are accountants lower than those reviewed by the reviewers who are not accountants. Only the mean of *Letters* is lower for firms reviewed by the reviewers who are accountants. Overall, both parametric and non-parametric results indicate that reviewers who are accountants issue fewer comments on initial S-1 filings. Parametric result indicates that the reviewers who are accountant issue fewer comment letters on the S-1 filings. On the contrary, I observe no difference in *Duration* between firms reviewed by the reviewers who are accountants and firms reviewed by the reviewers who are not accountant.

**[Insert Table 10 about here]**

1. **Multivariate analysis**

In order to provide further evidence supporting the results from the univariate analysis of the determinants of the SEC review as described in Section 8, I conduct a multivariate analysis by estimating the negative binomial regressions in which the dependent variable is one of three SEC review attributes including; *Duration, Letters* or *Comments,* and independent variables are more than one proxies of the determinants of the SEC review. Particularly, in Table 11, Panels A, B, C present the results of the regression on *Duration, Letters, Comments,* respectively, and the proxies of IPO firm characteristics, Incidences, Industry/market characteristics and the SEC characteristics. In each panel, model (1) employs all IPOs characteristics including; *Size, Sales growth, Leverage, BM, External financing, Firm age, Segments, Zscore, Big4, Restructuring, M&A, Positive earnings* and *CEOchairman* as independent variables. Model (2) – (10) employ a proxy of other determinants of the SEC review including; incidences (*JOBs Act, Dodd-Frank, Financial crisis),* industry/market characteristics (*Regulated, Technology, IPOs by industry, Herfindahl index)*, the SEC characteristics *(Directors/Chiefs, Accountant),* as independent variable and all IPOs firms characteristics as control variables. My multivariate analysis, which controls for the variation in the IPOs firm characteristics among the IPO firms, could resolve to some extent the problems of the omitted correlated variables that may lead to mislead results in the univariate analyses. According to the correlation matrix as stated in Table 6, I observe a considerable number of significant correlations between the proxies of IPO firm characteristics and proxies of other determinants of the SEC review.

Regarding the relationship between *Duration* and proxies of IPO firms characteristics, Table 11, Panel A, Model (1) reveals that the estimated coefficient on *Size* is negative and slightly significant, meanwhile, the estimated coefficients on *M&A, Positive earnings* and *CEOchairman* are all positive. The results indicate that the SEC spend less time for reviewing the S-1 filings prepared by bigger firms and more time reviewing firms who conduct M&A activities, have profits or have CEO who is also the chairman of board of directors. Regarding the relationship between *Duration* and proxies of the incidences of regulatory changes and crisis, Table 11, Panel A, Model (2) – (4) show that the estimated coefficient on *JOBs Act* is negative and strongly significant, meanwhile, the estimated coefficient on *Dodd-Frank* is positive. The results indicate that the SEC spend less time reviewing IPO firm’s S-1 filings after the enactment of JOBs Act, and more time after the enactment of Dodd-Frank 2010 (before JOBs Act). Regarding the relationship between *Duration* and industry characteristics, Table 11, Panel A, Models (5) – (8), reveal that the estimated coefficients on *Regulated* and *IPOs by industry* are both negative, meanwhile, the estimated coefficient on *Technology* is positive. The results indicate that the SEC spend less time revewing firms who are operating in regulated industries or in markets with a higher volume of IPOs, and more time reviewing in the technology industries. Regarding the relationship between *Duration* and the SEC characteristics, Table 11, Panel A, Models (9) – (10) reveal that the estimated coefficients on *Directors/Chiefs* are positive, meanwhile, the estimated coefficient on *Accountant* is negative. The results indicate that the SEC reviewers, holding the position of director or chief, spend more time for the review, meanwhile, the SEC reviewers who are accountants spend less time for the review.

Regarding the relationship between *Letters* and IPO firm characteristics, Table 11, Panel B, Model (1) reveals that the estimated coefficient on *Sales growth, Positive earnings, CEOchairman* are all positive. The result indicate that the SEC issue more comment letters in the review of S-1 filings prepared by firms who have higher growth of sales, gain profits, and have CEO who is also a chairman of the board of directors. Regarding the relationship between *Letters* and incidences of regulatory changes and crisis, Table 11, Panel B, Models (2) – (4) show that the estimated coefficient on *JOBs Act* is negative and strongly significant, meanwhile, the estimated coefficient on *Dodd-Frank* is positive. The results indicate that the SEC issue fewer comment letters in the review of S-1 filings after the enactment of the JOBs Act, and more comment letters in the review after the enactment of Dodd-Frank 2010. Regarding the relationship between *Letters* and industry/market characteristics, Table 11, Panel B, Models (5) – (8) reveal that the estimated coefficient on *IPOs by industry* is negative, which indicates that the SEC issue less comment letters in the review of the S-1 filing prepared by the firms who are operating in the markets with a higher volume of IPOs. Regarding the relationship between *Letters* and proxies of the SEC characteristics, Table 11, Panel B, Models (9) – (10) show that the estimated coefficient on *Accountant* is negative, which indicates that the SEC reviewers, who are accountants, issue fewer comment letters.

Regarding the relationship between *Comments* and proxies of IPO firm characteristics, Table 11, Panel C, Model (1) reveals that the estimated coefficients on *Sales growth, Segments, Positive earnings, CEOchairman* are all positive. The results indicate that the SEC issue more comments on the initial S-1 filings prepared by firms who have higher growth of sales, more segments, gain profits, and have a CEO who is also the chairman of the board of directors. Regarding the relationship between *Comments* and proxies of the incidences of regulatory changes and crisis, Table 11, Panel C, Models (2) – (4) show that the estimated on *JOBs Act* is negative and strongly significant, which indicates that the SEC issue less comments on the initial S-1 filings after the enactment of JOBs Act. Regarding the relationship between *Comments* and proxies of the industry characteristics, Table 11, Panel C, Models (5) – (8) reveal that the estimated coefficient on *IPOs by industry* is negative, which indicates that the SEC issue less comments on initial S-1 filings prepared by firms operating in markets with a higher volume of IPOs. Regarding the relationship between *Comments* and proxies of the SEC characteristics, Table 11, Panel C, Models (9) – (10) reveal that the estimated coefficient on *Accountant* is negative, which indicates that SEC reviewers, who are accountants, issue fewer comments on the initial S-1 filings.

**[Insert Table 11 about here]**

1. **Discussion of main results**

When conducting examination of determinants of SEC review on S-1 filings, differences in the results obtained from univariate analysis and multivariate analysis sometimes occur due to high correlations between independent variables of interestand other variables. In that case, I will draw my conclusion by basing on the results obtained from the multivariate analysis which includes the control for other firm characteristics and has higher value of R2.

* 1. **Impact of IPO firms’ characteristics on the SEC review**

Regarding impact of *Size* on SEC review, multivariate analysis shows a negative effect of *Size* on *Duration,* and no effect of *Size* on *Letters* and *Comments.* This indicates that the SEC spend more time reviewing smaller firms. This result supports the arguments that financial reporting quality is lower for smaller firms ( Singhvi & Desai, 1971; Lang & Lundholm, 1993; Doyle et al., 2007), suggesting a higher degree of the SEC review as consistent with the assumption of public interest theory.

As for impact of *Sales growth* on SEC review*,* positive effects of *Sales growth* on *Duration, Letters* and *Comments* are identified in multivariate analysis*.* Univariate analysis also reveals positive effects of *Sales growth* on *Duration* and *Letters.* These results indicate that the SEC spend more time reviewing S-1 filings, issue more comment letters in the review and more comments on initial S-1 filings prepared by firms who have higher growth of sales. This finding is in line with information uncertainty hypothesis, which assumes that firms with greater expected growth are likely to be operating in higher information uncertainty environment (Jiang et al., 2005), who could attract more SEC scrutiny ( Ertimur & Nondorf, 2006; Chen & Johnston, 2010; Colaco et al., 2018; Heese et al., 2017).

Concerning impact of *Leverage* on SEC review, both the univariate analysis and multivariate analysis reveal no effect of *Leverage* on *Duration, Letters* and *Comments*, which indicates that the SEC review is not sensitive to IPO firms’ leverage ratios or their debt levels.

In terms of impact of *BM* on SEC review, both the univariate analysis and multivariate analysis reveal no effect of *BM* on *Duration, Letters* and *Comments*, which indicates that the SEC review is not affected by IPO firms’ book-to-market ratios.

With regard to impact of *External financing* on SEC review, multivariate analysis reveals no effect of *External financing* on all three SEC review attributes, which indicates that the SEC review is not impacted by the IPO firm’s funding activities via new borrowings and stock issues.[[16]](#footnote-17)

Regarding impact of *Firm age* on SEC review, multivariate analysis reveals no effect of *Firm age* on all three SEC review attributes, which indicates that the SEC review is not sensitive to the IPO firm’s age.[[17]](#footnote-18)

As for impact of *Segments* on SEC review, multivariate analysis reveals positive effect of *Segments* on *Comments,* and no effect of *Segments* on *Duration* and *Letters.* Positive effects of *Segments* on *Duration, Letters* and *Comments* are also identified in the univariate regressions*.* These results indicate that the SEC review is more intense for firms who have more segments in their business. This finding is in line with the argument that the firm having more segments could have more complexity in their business and hence attract more SEC scrutiny (Cassell et al., 2013).

Concerning impact of *Zscore* on SEC review, multivariate analysis shows no effect of *Zscore* onall SEC review attributes, which indicates that the SEC review is not impacted by the IPO firms’ financial distress.[[18]](#footnote-19)

In terms of impact of *Big 4* on SEC review, parametric univariate analysis and multivariate analysis reveal no effect of *Big 4* on all three SEC review characteristics, which indicates that SEC review is not sensitive to reputation of the IPO firms’ auditor.[[19]](#footnote-20)

In respect of impact of *Restructuring* on the SEC review, non-parametric univariate analysis and multivariate analysis shows no effect of *Restructuring* on all SEC review attributes, which indicates that the SEC review is not affected by the IPO firms’ restructuring activities.[[20]](#footnote-21)

Regarding impact of *M&A* on the SEC review, multivariate analysis shows positive effect of *M&A* on *Duration* and no effect of *M&A* on *Letters* and *Comments,* which indicates that the SEC spend more time for the review on the firms who conduct M&A activities. This result is consistent with the arguments that the firm conducting M&A activities could have more complexity in the business, and hence, increases extensiveness of SEC review (Cassell et al., 2013; Hesse et al., 2017).

Regarding impact of *Positive earnings* on SEC review, both univariate and multivariate analysis reveal positive effects of *Positive earnings* on *Duration, Letters* and *Comments*, which indicates that for the firm having profits, the SEC spend more time, issue more comment letters in the review of the firms’ S-1 filings and issue more comments for their initial S-1 filings. This result is in line with the arguments that IPO firm may mislead accounting information in the year of IPO by reporting positive earnings to attract investors (Teoh et al., 1998), therefore, the degree of SEC review may be more intense for these firms.

Regarding impact of *CEOchairman* on SEC review, the multivariate test is the most robust to the comparable univariate test since both univariate and multivariate analysis show positive effects of *CEOchairman* on all SEC review attributes at the same level of significance (1%). These results indicate that for the firm having CEO who is also a chairman of board of directors, the SEC spend more time, issue more comment letters in the review of the firms’ S-1 filings and issue more comments for their initial S-1 filings. This finding is in line with the arguments that when the IPO firm board is led by a member of management, the board’s monitoring effectiveness may be weaker (Ertimur & Nondorf, 2006), and hence, the degree of SEC review may be more intense for these firm ( Ertimur & Nondorf, 2006; Ettredge et al., 2011; Robinson et al., 2011; Cassell et al., 2013). However, this finding is not in agreement with the finding of Ertimur & Nondorf (2006) because the sample period that they employ is different from my study. Furthermore, Ertimur & Nondorf (2006) do not employ control variables of other IPO firms’ characteristics which may also have potential correlation with variables of corporate governance and potential impact on SEC review on registration statements, e.g. IPO firms’ sales growth, profitability.

* 1. **Impact of incidences of regulatory changes and crises on the SEC review**

Regarding the impact of *JOBs Act* on the SEC review, the multivariate test is the most robust to the comparable univariate test since both univariate and multivariate analysis reveal negative effects of *JOBs Act* on *Duration, Letters* and *Comments* at the same significance level of 1%*.*[[21]](#footnote-22)These results indicate that the SEC spend less time, issue fewer comment letters in the review of the firms’ S-1 filings and issue fewer comments for their initial S-1 filings in the period after the enactments of JOBs Act. This finding supports key target of JOBs Act, which is relieving some SEC regulation on the emerging growth companies to revitalize the IPO market (SEC, 2012; Gao et al. 2013). This finding is also in agreement with arguments that SEC adjust their styles in reviewing IPO prospectuses prepared by of ECGs after the enactment of JOBs Act (Agarwal et al., 2017) and Title I of JOBs Act decreases ability of regulators to address and prosecute fraud (Chaplinsky et al., 2017).

In terms of impact of *Dodd-Frank* on SEC review, both univariate and multivariate analysis show positive effects of *Dodd-Frank* on *Duration* and *Letters* as well as no effect of *Dodd-Frank* on *Comments*, which indicates that the SEC spend more time in their review and issue more comment letters in the period after the enactments of Dodd-Frank Act. This finding support the key target of Dodd-Frank Act, which is strengthening oversight of particular organizations, offering severe criterions and management to provide protection for the economy and American consumers, investors and businesses (WilmerHale, 2011). This finding also support arguments that due to government intervention, market discipline is improved after the enactment of Dodd-Frank Act (Balasubramnian & Cyree, 2014)

With regard to impact of *Financial crisis* on SEC review, multivariate analysis shows no effect of *Financial crisis* on all SEC review attributes, which indicates SEC review is not sensitive to financial crisis 2008-2009.[[22]](#footnote-23) This result is not consistent with findings of Colaco et al. (2018) because the authors focus on different sample period to my study. In addition, Colaco et al. (2018) do not employ any control variable of IPO firms’ characteristics which could have potential correlation with dummy variable of financial crisis and potential impact on SEC review, e.g. IPO firms’ profitability, corporate governance.

* 1. **Impact of industry/market characteristics on the SEC review**

In terms of impact of *Regulated* on SEC review, multivariate analysis shows negative effect of *Regulated* on *Duration* as well as no effect of *Regulated* on *Letters* and *Comments,* which indicates that the SEC spend less time reviewing firms who are operating in regulated industries. This result is consistent with the argument that regulated firms have existing obvious external reporting duties therefore, the quality of the regulated firms' S-1 filings could be more standard rather than that of non-regulated firms (Ertimur & Nondorf, 2006), suggesting less SEC scrutiny on the regulated firms.

Concerning impact of *Technology* on SEC review, multivariate analysis reveals positive effects of *Technology* on *Duration* and no effect of *Technology* on *Letters* and *Comments.* Univariate analysis reveals positive effects of *Technology* on all SEC review attributes*.* These results indicate that SEC spend more time reviewing firms operating in technology industries. This finding is in line with arguments that technology industries may have more information uncertainty (Chahine et al., 2015; Colaco et al.; 2018), who could attract more SEC scrutiny ( Ertimur & Nondorf, 2006; Chen & Johnston, 2010; Colaco et al., 2018). This result is also in agreement with the findings of Colaco et al. (2018) who identify that waiting periods of IPO firms operating in technology industries are longer than those of other firms.

As for impact of *IPOs by industry* on SEC review*,* both univariate and multivariate analysis reveal negative effects of *IPOs by industry* on *Duration, Letters* and *Comments,* which indicates that in industries having more IPO firms, the SEC spend less time, issue fewer comment letters in the review of the firms’ S-1 filings and issue fewer comments for their initial S-1 filings. This result is in line with arguments about the behavioural effects of excessively high workload (Tan & Netessine, 2014) which suggests that when workload is too enormous, it may which obstructs workers from fulfilling their targets and reduce the workers’ motivation and commitment. This finding is also consistent with the findings of Colaco et al. (2018) who provide evidence of decrease in waiting periods in hot IPO markets where moving average of the volume of IPOs in each quarter is 50% higher than the historical average.

With regard to impact of *Herfindahl index* on SEC review*,* multivariate analysis reveals no effect of *Herfindahl index* on all three SEC review attributes, which indicates that the SEC review is not sensitive to the market competition.[[23]](#footnote-24) This finding is not consistent with findings of Colaco et al. (2018) because I employ different proxies of the market concentration as well as different sample period in my study. Furthermore, Colaco et al. (2018) do not employ any control variable of IPO firms’ characteristics which could have potential correlation with variable of market competition and potential impact on SEC review, e.g. IPO firms’ size, profitability.

* 1. **Impact of the SEC characteristics on the SEC review**

In terms of impact of *Directors/Chief* on SEC review*,* both univariate and multivariate analysis show negative effects of *Directors/Chiefs* on *Duration* as well as no effects of *Directors/Chiefs* on *Letters* and *Comments*, which indicates that reviewers who hold job position of director or chief spend less time reviewing S-1 filings. This result supports arguments of Baugh et al. (2017) who suggest that reviewer with higher job position could have more experience, and hence, could spend less time to conduct the review. Appendix 3 reveals that Directors/Chiefs have higher annual salary than Professionals, which indicates that Directors/Chiefs could have more experience that Professionals.

Regarding impact of *Accountant* on SEC review, multivariate analysis shows negative effects of *Accountant* on all three SEC review attributes. Univariate analysis also shows negative effects of *Accountant* on *Letters* and *Comments.* These results indicate that SEC reviewers, who are accountant, spend less time for the review, issue fewer letters and fewer comments on the initial S-1 filings.This result is in line with arguments that accountant reviewers are more likely to focus on accounting information (Baugh et al., 2017). Therefore, the SEC review conducted by accountant reviewers may be less intense since the proportion of accounting issues is less than that of other issues in S-1 filings according to the results obtained from the coding of types of issues as presented in Appendix 2. My finding is contrary to the finding of Baugh et al. (2017) who examine the annual filings with the dominance of accounting information.

Overall, my study is the first to identify the sensitivity of SEC review on S-1 filings to (1) IPO characteristics including; firms’ size, growth of sales, number of segments, M&A activities, earnings number, dual of CEO and chairman of board of directors; (2) JOBs Act in 2012 and Dodd-Frank Act in 2010; (3) regulated industries; and (4) SEC reviewers’ job positions and job classifications.. Otherwise, my study also identify the sensitivity of SEC review on S-1 filings to technology industry and industry size, which is consistent with findings of Colaco et al. (2018) and validate their findings in more recent period which include important incidences of regulatory change under JOBs Act in 2012. Notably, the sensitivities of SEC S-1 review to (1) dual of CEO and chairman of board of directors and (2) JOBs Act in 2012 are the most robust since both univariate tests and multivariate tests show the same positive/negative impacts of *CEOchairman/JOBs Act* on all SEC review attributes at the same level of significance (1%). It also worth nothing among the factors affecting SEC S-1 review as identified in my study, the JOBs Act in 2012 have the most powerful impact on all three SEC review attributes as indicated by the largest value of coefficients in the multivariate regressions on *JOBs Act* and *Duration, Letters* and *Comments* (Table 11, Models 2).

1. **Additional tests**

In this section, I conduct two additional examinations in order to further explore the significantly negative impact of the enactment of JOBs Act on the degree of the SEC review. Particularly, the first examination investigates whether the number of specific types of issues and the number of comments of each type mentioned in the SEC comments letters on initial S-1 filings decreased after the enactment of JOBs Act. The second examination investigates whether the negative impact of the enactment of JOBs Act on the degree of the SEC S-1 review is less intense by the moderating effect of information uncertainty and adoption of disclosure exemption under the Act.

* 1. **Impact of JOBs Act on types of issues mentioned in SEC comment letters**

I conduct a univariate analysis in order to examine whether significant differences in the types of issues *(Issues)* and the number of comments in each type of issues (*Accounting comments, Offering comments, Business comments, Governance corporate comments, Disclosure comments)* mentioned in the SEC comments letters for the initial S-1 filings exist between pre- and post-JOBs Act period by applying both parametric t-test and nonparametric Wilcoxon signed-rank tests. The data used in this analysis are obtained from my coding on 259 SEC initial comment letters. My coding shows that there are totally five types of issues addressed by the SEC in their comment letters for the initial S-1 filings including; accounting issues, offering issues, business issues, governance corporate issues and disclosure issues.

Table 12 reveals that t-test of difference in mean value of *Issues, Accounting comments, Offering comments, Business comments, Governance corporate comments, Disclosure comments* between the period of pre- and post-JOBs Act are all strongly significant at 1% as the difference in median value of these variables based on Wilcoxon signed-rank test. Particularly, the mean and median of these variablesin the post-JOBs Act period are lower than those in pre-JOBs Act period. Overall, both parametric and non-parametric results indicate that after the enactment of JOBs Act, the SEC address fewer types of issues as well as fewer comments in each type of issues including; accounting issues, offering issues, business issues, governance corporate issues and disclosure issues, in their comment letters for the initial S-1 filings. This result supports the main finding of my study as discussed in Section 10.2, which reveal that the SEC s issue fewer comments on the initial S-1 filings in the period after the enactments of JOBs Act. This result is in line with the key target of JOBs Act, which is relieving some SEC regulation on the emerging growth companies to revitalize the IPO market (SEC, 2012; Gao et al. 2013).

**[Insert Table 12 about here]**

* 1. **Moderating effect of information uncertainty and adoption of disclosure exemptions on impact of JOBs Act on SEC review**

The JOBs Act aims to revitalize the IPO market by lessening the mandatory reports and compliance duties during the IPO process (Gao et al., 2013). However, a disadvantage of the JOBs Act to investors is that cutting down the required reports could potentially cause less transparency or higher degree of information uncertainty (Chaplinsky et al., 2017). Supporting Chaplinsky et al. (2017)’s conjecture, Barth et al., (2017) identify that increase in post-IPO volatility and bid-ask spreads are related to greater information uncertainty after the Act. Agarwal et al. (2017) also provide evidence of higher underpricing for emerging growth companies after the Act. Chaplinsky et al. (2017) also observe that underpricing is greater for non-smaller-reporting-companies EGCs compared with other IPO companies after the enactment of the JOBs Act.

However, despite the fact that the JOBs Act allows regulatory relief, the IPO firms have rights to decide which disclosure exemptions under the Act they would adopt. As a result, when adopting more disclosure exemptions, IPO firms always confront a difficult trade-off between enhancing the confidentiality of important information and increasing in underpricing (Chaplinsky et al., 2017). IPO firms, who pay attention to the problem of underpricing, may decline the exemptions and provide more disclosure than is sanctioned by the Act. Chaplinsky et al. (2017) suggest that biotech and pharmaceutical EGCs could experience less level of underpricing when they take less disclosure exemption.

In addition, as stated in section 4, previous literature identifies that when information uncertainty increases, the SEC could conduct their review in more conservative way in order to protect investors from possible misstatements in IPO firms’ disclosure. Ertimur & Nondorf (2006), Chen & Johnston, (2010) and Colaco et al. (2018) support the evidence that the SEC scrutiny could be more intense when the level of information uncertainty is high.

Basing on the arguments about information uncertainty under JOBs Act which could lead to more IPO’s attention to the underpricing problem by using less disclosure exemptions as well as more conservative review conducted by the SEC to protect the investors as mentioned above, I conjecture that information uncertainty could weaken the negative link between *JOBs Act* and the SEC review attribute including; *Duration, Letters, Comments.* I employ *Firm age, Sales growth,* and *Herfindahl Index* as three proxies of the information uncertainty by basing on the arguments in previous literature. Particularly, firms with a long operating history are claimed to have more information available to the market (Barry & Brown, 1985; Zhang, 2006). According to Jiang et al. (2005), a possible explanation for the phenomena that firms with greater expected growth would earn lower future returns is that they are operating in a higher information uncertainty environment. Ali et al. (2014) demonstrate that due to proprietary costs of disclosure, firms operating in highly-concentrated markets exhibit greater dispersion in analysts’ earnings forecasts caused by higher information uncertainty. Particularly, I employ the negative binomial regressions on the SEC review attributes including; *Duration, Letters, Comments,* and *JOBs Act* (Model 2 in Panels A, B, C, Table 11) and then add three interactions between (1) *Sales growth* and *JOBs Act,* (2) *Firm age* and *JOBs Act* and (3) *Herfindahl Index* and *JOBs Act,* into these regressions as presented in Table 13.

Regarding *Sales growth,* in Table 13, Panel A, I observe two positive and strongly significant coefficients on the interaction *Sales growth\*JOBs Act* in the models in which the dependent variable are *Duration* and *Letters*. These results indicate that the negative effect of *JOBs Act* on *Duration* and *Letters* are less powerful for firms with higher growth rates, who have higher information uncertainty (Jiang et al., 2005), after the Act. In other words, information uncertainty after the Act, which is indicated by the interaction *Sales growth\*JOBs Act*, weakens the negative relationship between *JOBs Act* and all SEC review attributes.These findings in line with the information uncertainty hypothesis and the argument that the JOBs Act could increase the information uncertainty (Chaplinsky et al., 2017), which could lead the SEC to be conservative and increase extensiveness of their review to protect investors (Ertimur & Nondorf, 2006; Chen & Johnston, 2010 and Colaco et al., 2018).

Likewise, regarding *Herfindahl Index,* in Table 13, Panel B, I identify three positive and significant coefficients on the interaction *Herfindahl Index\*JOBs Act* in the models in which the dependent variables are *Duration, Letters* and *Comments*. These results imply that the negative effect of *JOBs Act* on all SEC review attributes are less powerful in markets with higher concentration, where experience higher information uncertainty due to proprietary costs of disclosure (Ali et al., 2014), after the Act. In other words, the information uncertainty after the Act, which is indicated by the interaction *Herfindahl Index\*JOBs Act*, weaken the negative relationship between *JOBs Act* and all SEC review attributes. These findings are in line with information uncertainty hypothesis and the arguments that JOBs Act could increase the information uncertainty (Chaplinsky et al., 2017), which could lead the SEC to be conservative and increase extensiveness of their review to protect investors (Ertimur & Nondorf, 2006; Chen & Johnston, 2010 and Colaco et al., 2018).

However, regarding *Firm age,* Table 13, in Panel A, I observe three positive and significant coefficients on the interaction *Firm age\*JOBs Act* in the models in which the dependent variables are *Duration, Letters* and *Comments.* These results indicate that the negative effect of *JOBs Act* on all SEC review attributes are more powerful for younger firms, who have more information uncertainty (Barry & Brown, 1985; Zhang, 2006), after the Act. This result is not consistent with the information uncertainty hypothesis. Nevertheless, the interpretation for the moderating effect of *Firm age* on the sensitivity of the SEC review attributes to *JOBs Act* could be that the key purpose of JOBs Act is reopening the capital markets to EGCs by allaying restrictions on EGCs, who are younger than other IPO firms as described by Chaplinsky et al. (2017). Furthermore, Chaplinsky et al. (2017) identify that the younger firms are more likely to adapt more disclosure exemptions under the Act over time. Therefore, the ease in the SEC review after the Act could be more pronounced for younger IPO firms.

**[Insert Table 13 about here]**

1. **Conclusion**

This study investigates the factors that affect the degree of the SEC review on S-1 filings which is indicated by the duration of the IPOs process, the number of letters issued by the SEC for each S-1 filing and the number of comments issued by the SEC for each initial S-1 filings.

This study contributes to previous literature by coming up with the new and broad evidence about the determinants of the SEC S-1 review process including; the IPO firms’ characteristics, the special event of regulatory changes, the industry/market characteristics and the SEC’s characteristics. Specially, for sample of 909 IPO firms in period of 12th May, 2005 to 31st December, 2017, regarding the impact of the IPO firms’ characteristics on the SEC review, my results reveal that when the SEC will spend more time for the S-1 review, issue more comment letters and more comments in the letters for the initial S-1 filings prepared by the IPO firms having higher sales growth, making-profit firms and firms having CEO who is also a chairman of board of directors. I also explore that the SEC spend less time for the S-1 review of bigger firms and more time on firms conducting M&A activities and issue more comments on initial S-1 filings prepared by the firms having more business segments.

Regarding the impact of the incidences on the SEC review, I observe that the SEC spend less time for the S-1 review, issue fewer comment letters and fewer comments on initial S-1 filings after the enactment of JOBs Act. I also identify that the SEC will spend more time for the S-1 review, issue more comment letters after the enactment of Dodd-Frank 2010 (not including the period of post-JOBs Act).

Concerning the impact of the industry/market characteristics on the SEC review, I find that the SEC will spend less time for the S-1 review, issue fewer comment letters and fewer comments in the letters for the initial S-1 filings when the markets have higher volume of IPO firms which is consistent with findings of Colaco et al. (2018). In addition, the SEC will spend less time for the S-1 review on the firms operating in the regulated industries. Furthermore, the results also reveal that the SEC spend more review time on the firms operating in technology industries which is in agreement with findings of Colaco et al. (2018).

In terms of the impact of the SEC’s characteristics, I observe that SEC reviewers who are accountant will less time for the S-1 review, issue fewer comment letters and fewer comments in the letters for the initial S-1 filings. My results also show that the SEC reviewers who are holding the job position of director or chief will spend less time for the S-1 review.

I also conduct the additional examinations on the impact of JOBs Act on the SEC review. My results reveal that after the enactment of JOBs Act, the SEC address fewer types of issues as well as fewer comments in each type of issues including; accounting issues, offering issues, business issues, governance corporate issues and disclosure issues, in their comment letters for the initial S-1 filings. In addition, I also that the information uncertainty, which is indicated by the firm’s growth rate and the market concentration, could lessen the sensitivity that the SEC review is less intense after the Act. I also find that this sensitivity could increase for the younger firm who are more likely to adapt more disclosure exemptions under the Act. Overall, our results highlight that the SEC review on S-1 filings could be sensitive to the IPO firms characteristics, the incidences of regulatory changes, the industry/markets characteristics and the SEC characteristics.

The results of my study, therefore, the first inform IPO market participants regarding the sensitivity of SEC review on S-1 filings to (1) IPO firms characteristics including; size, sales growth, profitability, dual CEO and chairman, M&A engagement and number of segments, (2) enactment of JOBs Act in 2012 and Dodd-Frank Act in 2010, (3) regulated industries and volume of IPOs by industry and (4) SEC reviewer’s job position and job classification. My findings would provide would be useful to issuers and stakeholders in providing a better understanding of the SEC’s S-1 review process. Also, my findings should be attractive to the investors, auditors and regulators, who employ the SEC S-1 comment letters to evaluate the quality of S-1 filings as well as the IPO firms’ reporting compliance. My study also contributes a coding scheme which is a useful tool for future research on the issues occurred in S-1 filings.

While my study provides evidence on the determinants of the SEC review on the S-1 filings, I do not explore whether the SEC review is effective in addressing the deficiencies of the information quality of S-1 filings. Future research on the sensitivity of the SEC review to the information quality of S-1 filings should be informative. Finally, the attention should be given to the *Duration* indicated for the intensity of the SEC review. This proxy could cover more than just the SEC review period, especially, the time lag between the date the SEC complete their review and the date of publishing their comment letters. Therefore, the results on the determinants of *Duration* should be explained in caution.

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**Table 1. Sample selection**

|  |  |
| --- | --- |
|  | **Number of IPOs** |
| **U.S. IPOs (on NASDAQ,  NYSE, AMEX) from 12/05/2005 to 31/12/2017 collected from Thomson Eikon** | **3525** |
| *Less: IPOs with offering price less than 5$ per share (data from Thomson Eikon)* | (1,202) |
| *Less: Simultaneous offerings (data from Thomson Eikon)* | (56) |
| *Less: Unit offerings (data from Thomson Eikon)* | 0 |
| *Less: American Depository Receipts and other financial firms (data from Thomson Eikon)* | (733) |
| *Less: IPOs do not offer common shares (data from Thomson Eikon)* | (532) |
| *Less: IPOs do not file S-1 (data manually collected from EDGAR)* | (93) |
| **Final sample** | **909** |

**Table 2. Expectations of impacts of determinants on SEC S-1 review**

|  |  |  |  |
| --- | --- | --- | --- |
| **Variables** | **Expectation development** | | **Expected sign** |
| **Theory** | **Institutional backgrounds and empirical findings** |
| 1. **IPO firms characteristics** | | | | |
| *Size* | Public interest theory | Company complexity is higher for the bigger firm, who may have lower reporting quality and hence attract more SEC scrutiny (Cassell et al., 2013; Heese et al., 2017) | +/- |
| Financial reporting quality is lower for smaller firms (Singhvi & Desai, 1971; Lang & Lundholm, 1993 and Doyle et al., 2007), suggesting a lower degree of the SEC review |
| *Firm age* | Public interest theory | Company complexity is higher for the older firm, who may have lower reporting quality and hence attract more SEC scrutiny (Cassell et al., 2013; Heese et al., 2017) | +/- |
| Older firms may have less information uncertainty (Barry & Brown, 1985; Zhang, 2006), who could attract less SEC scrutiny ( Ertimur & Nondorf, 2006; Chen & Johnston, 2010; Colaco et al., 2018) |
| *Segments* | Public interest theory | Company complexity is higher for firms with more segments in their business, who may have lower reporting quality and hence attract more SEC scrutiny (Cassell et al., 2013) | + |
| *Restructuring* | Public interest theory | Company complexity is higher for firms conducting restructuring activities, who may have lower reporting quality and hence attract more SEC scrutiny (Cassell et al., 2013; Heese et al., 2017) | + |
| *M&A* | Public interest theory | Company complexity is higher for firms conducting M&A activities, who may have lower reporting quality and hence attract more SEC scrutiny (Cassell et al., 2013; Heese et al., 2017) | + |
| *Sales growth* | Public interest theory | * Higher growth rate of sales indicate that firms have higher growth expectation (Jiang et al., 2005), who are often targeted by the SEC for the review (Heese et al., 2017) * Firms with greater expected growth are likely to be operating in higher information uncertainty environment (Jiang et al., 2005), and may therefore attract more SEC scrutiny ( Ertimur & Nondorf, 2006; Chen & Johnston, 2010; Colaco et al., 2018) | + |
| *BM* | Public interest theory | * Firms having lower book-to-market ratio, in other words, higher growth expectation, are often targeted by the SEC for the review (Heese et al., 2017), * Firms having lower book-to-market ration, are likely to be operating in higher information uncertainty environment (Jiang et al., 2005), and hence, could attract more the SEC scrutiny ( Ertimur & Nondorf, 2006; Chen & Johnston, 2010; Colaco et al., 2018) | - |
| *Leverage* | Public interest theory | Firms with higher leverage, who have higher debt level, are more likely to receive the SEC comment letters (Duro et al., 2017) | + |
| *Zscore* | Public interest theory | Firms with financial distress are more likely to be noncompliant with GAAP ( Dechow et al., 1996; Brazel et al., 2009), hence, the SEC review could be more intense for these firms (Heese et al., 2017) | - |
| *Positive earnings* | Public interest theory | Firm may mislead the accounting information by reporting positive earnings to attract investors in the IPO year (Teoh et al., 1998), suggesting that the SEC review could be more intense for these firms | +/- |
| Loss-making firms are more likely to receive the SEC comment letters (Heese et al., 2017) |
| *External financing* | Public interest theory | Disclosure quality and reporting compliance are higher when firms previously issued debt or equity securities (Ettredge et al., 2011), suggesting less SEC scrutiny on these firms (Heese et al., 2017) | - |
| *Big 4* | Public interest theory | Firms audited by Big 4 auditors may have more standard reports which could attract less SEC scrutiny (Johnston & Petacchi, 2017) | - |
| *CEOchairman* | Public interest theory | When the board is led by a member of management, the board’s monitoring effectiveness may be weaker (Ertimur & Nondorf, 2006)and hence, the degree of SEC review may be more intense for these firms ( Ertimur & Nondorf, 2006; Ettredge et al., 2011; Robinson et al., 2011; Cassell et al., 2013) | + |
| 1. **Incidences of regulatory changes and crises** | | | | |
| *JOBs Act* | Capture theory | * JOBs Act aims to eliminate restrictions and SEC disclosure regulation on EGCs going public * Agarwal et al. (2017) observe that SEC adjust their styles in reviewing IPO prospectuses prepared by of ECGs after the enactment of JOBs Act. * Chaplinsky et al. (2017) state that Title I of JOBs Act decreases ability of regulators to address and prosecute fraud. | - |
| *Dodd-Frank* | Public interest theory | * Dodd-Frank Act enhances the oversight of particular organizations to provide protection for the economy and American consumers, investors and businesses (WilmerHale, 2011) * Balasubramnian & Cyree (2014) observe that due to government intervention, market discipline is improved after the enactment of Dodd-Frank Act | + |
| *Financial crisis* | Public interest theory | * IPO firms’ waiting periods, which include SEC review periods, are longer during the period of financial crisis 2008-2009 (Colaco et al., 2018) * More SEC oversight over corporate disclosures exists in the financial crisis 2008 (Blackburne, 2014) | + |
| 1. **Industry/market characteristics** | | | | |
| *Regulated* | Public interest theory | Regulated firms have specific external reporting duties and thus the quality of the regulated firms' S-1 filings could be more standard than other firms (Ertimur & Nondorf, 2006), suggesting less SEC scrutiny. | - |
| *Technology* | Economic interest group theory | Waiting periods of firms operating in the technology industries are shorter than other firms (Colaco et al., 2018) since technology firms confront serious competition in their industry and quickly becoming effective IPOs would be in their best interest. | +/- |
| Public interest theory | Technology industries may have more information uncertainty (Chahine et al., 2015; Colaco et al.; 2018), who could attract more SEC scrutiny ( Ertimur & Nondorf, 2006; Chen & Johnston, 2010; Colaco et al., 2018) |
| *IPOs by industry* | Behavioural effects regarding extensive workloads | Colaco et al. (2018) provide evidence about the decrease in waiting period in the hot IPO market where moving average of the volume of IPOs in each quarter is 50% higher than the historical average. | - |
| *Herfindahl index* | Public interest theory | Due to proprietary costs of disclosure,in high-concentrated or low-competitive markets, information uncertainty, which is measured by dispersion in analysts’ earnings forecasts, is higher (Ali et al., 2014), suggesting more SEC scrutiny ( Ertimur & Nondorf, 2006; Chen & Johnston, 2010; Colaco et al., 2018) | + |
| 1. **SEC characteristics** | | | | |
| *Directors/Chiefs* | Upper echelons theory | Reviewer with a higher job position could have more experience, and hence, spend less time conducting the review (Baugh et al., 2017) | *Duration:* - |
| Assistant Directors tend to address more issues in initial comment letters (Baugh et al., 2017) | *Letters/Comments:* + |
| *Accountant* | Upper echelons theory | * Accountant reviewers may focus more on accounting information and hence address more issues in the review of annual filings since accounting information dominate annual filings (Baugh et al., 2017) * S-1 filings contain a lower proportion of accounting information in S-1 filings. | - |

**Table 3. Sample distribution**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| **Panel A. Time distribution** | | | | | | | | | | | | | | | | |  | | | |
| **Filing year of S-1** |  | **Number of IPOs** | | | | |  | **Number of IPOs receiving initial comment letters** | | | |  | **Proportion of IPOs receiving initial comment letters (%)** | | |  | |  | | | |
|  |  | **N** | | | **%** | |  | **N** | | | **%** |  |  | | |  | |  | | | |
| 2005 |  | 57 | | | 6.27 | |  | 48 | | | 6.76 |  | 84.21 | | |  | |  | | | |
| 2006 |  | 103 | | | 11.33 | |  | 93 | | | 13.10 |  | 90.29 | | |  | |  | | | |
| 2007 |  | 94 | | | 10.34 | |  | 83 | | | 11.69 |  | 88.30 | | |  | |  | | | |
| 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 | | | 9.30 |  | 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 | | | 6.90 |  | 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 | | |  | |  | | | |
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| **Panel B. Industry distribution** | | | | | | | | | | | | | | | | | | | |
| **Industry** |  |  | **Number of IPOs** | | |  | | | **Number of IPOs receiving initial comment letters** | | | | |  | **Proportion of IPOs receiving initial comment letters (%)** | | | |
|  |  |  | **N** | **%** | |  | | | **N** | **%** | | | |  |  | | | |
| Oil and Gas |  |  | 39 | 4.29 | |  | | | 34 | 4.79 | | | |  | 87.18 | | | |
| Food products |  |  | 8 | 0.88 | |  | | | 8 | 1.13 | | | |  | 100.00 | | | |
| Paper and paper products |  |  | 10 | 1.10 | |  | | | 10 | 1.41 | | | |  | 100.00 | | | |
| Chemical products |  |  | 265 | 29.15 | |  | | | 175 | 24.65 | | | |  | 66.04 | | | |
| Manufacturing |  |  | 23 | 2.53 | |  | | | 19 | 2.68 | | | |  | 82.61 | | | |
| Computer equipment & services |  |  | 225 | 24.75 | |  | | | 173 | 24.37 | | | |  | 76.89 | | | |
| Electronic equipment |  |  | 63 | 6.93 | |  | | | 53 | 7.46 | | | |  | 84.13 | | | |
| Transportation & public utilities |  |  | 47 | 5.17 | |  | | | 42 | 5.92 | | | |  | 89.36 | | | |
| Scientific instruments |  |  | 64 | 7.04 | |  | | | 48 | 6.76 | | | |  | 75.00 | | | |
| Wholesale trade |  |  | 20 | 2.20 | |  | | | 19 | 2.68 | | | |  | 95.00 | | | |
| Retail trade |  |  | 57 | 6.27 | |  | | | 50 | 7.04 | | | |  | 87.72 | | | |
| Entertainment services |  |  | 14 | 1.54 | |  | | | 12 | 1.69 | | | |  | 85.71 | | | |
| Health services |  |  | 22 | 2.42 | |  | | | 18 | 2.54 | | | |  | 81.82 | | | |
| Engineering & Management Services | |  | 11 | 1.21 | |  | | | 11 | 1.55 | | | |  | 100.00 | | | |
| All others |  |  | 41 | 4.51 | |  | | | 38 | 5.35 | | | |  | 92.68 | | | |
| Total |  |  | 909 | 100 | |  | | | 710 | 100 | | | |  | 78.11 | | | |
| This table presents the distribution of our 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. | | | | | | | | | | | | | | | | | | | | |

**Table 4. Descriptive statistics of SEC review attributes**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Panel A. Summary descriptive statistics of the SEC review attributes** | | | | | | | |
|  | **N** | **Mean** | **p1** | **p50** | **p99** | **S.D.** |
| 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 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Panel B. Descriptive statistics of SEC review attributes by year** | | | | | | | | | | | | | | | | |
| **Year** | |  | **N** |  | **Duration** | |  | **Letters** | | |  | | **Comments** | | | |
|  |  |  |  |  | **Mean** | **Median** |  | **Totals** | **Mean** | **Median** | |  | | **Totals** | **Mean** | **Median** |
| 2005 | |  | 57 |  | 129.04 | 108.00 |  | 152 | 2.67 | 3.00 | |  | | 2526 | 44.32 | 50.00 |
| 2006 | |  | 103 |  | 130.09 | 107.00 |  | 353 | 3.43 | 3.00 | |  | | 5015 | 48.69 | 52.00 |
| 2007 | |  | 94 |  | 149.90 | 100.00 |  | 325 | 3.46 | 3.00 | |  | | 3963 | 42.16 | 44.50 |
| 2008 | |  | 19 |  | 426.00 | 427.00 |  | 93 | 4.89 | 5.00 | |  | | 846 | 44.53 | 42.00 |
| 2009 | |  | 41 |  | 144.85 | 105.00 |  | 165 | 4.02 | 4.00 | |  | | 1644 | 40.10 | 37.00 |
| 2010 | |  | 66 |  | 217.08 | 124.50 |  | 284 | 4.30 | 4.00 | |  | | 2855 | 43.26 | 44.00 |
| 2011 | |  | 68 |  | 188.47 | 144.50 |  | 305 | 4.49 | 4.00 | |  | | 2994 | 44.03 | 43.00 |
| 2012 | |  | 41 |  | 131.41 | 108.00 |  | 141 | 3.44 | 3.00 | |  | | 1269 | 30.95 | 37.00 |
| 2013 | |  | 114 |  | 63.58 | 44.50 |  | 240 | 2.11 | 2.00 | |  | | 1274 | 11.18 | 4.00 |
| 2014 | |  | 123 |  | 73.46 | 42.00 |  | 203 | 1.65 | 1.00 | |  | | 990 | 8.05 | 2.00 |
| 2015 | |  | 78 |  | 73.14 | 37.00 |  | 134 | 1.72 | 1.00 | |  | | 311 | 3.99 | 1.00 |
| 2016 | |  | 58 |  | 69.90 | 36.00 |  | 82 | 1.41 | 1.00 | |  | | 379 | 6.53 | 2.00 |
| 2017 | |  | 47 |  | 36.79 | 27.00 |  | 41 | 0.87 | 0.00 | |  | | 139 | 2.96 | 0.00 |
| *Totals* | |  | *909* |  | *120.11* | *90.00* |  | *2518* | *2.77* | *3.00* | |  | | *24205* | *26.63* | *22.00* |
|  | |  |  |  |  |  |  |  |  |  | |  | |  |  |  |
|  | |  |  |  |  |  |  |  |  |  | |  | |  |  |  |
|  | |  |  |  |  |  |  |  |  |  | |  | |  |  |  |
|  | |  |  |  |  |  |  |  |  |  | |  | |  |  |  |
|  | |  |  |  |  |  |  |  |  |  | |  | |  |  |  |
| **Panel C. Descriptive statistics of SEC review attributes by industry** | | | | | | | | | | | | | | | | |
| **Industry** | |  | **N** |  | **Duration** | |  | **Letters** | | |  | | **Comments** | | | |
|  |  |  |  |  | **Mean** | **Median** |  | **Totals** | **Mean** | **Median** | |  | | **Totals** | **Mean** | **Median** |
| Oil and Gas | |  | 39 |  | 114.69 | 104.00 |  | 113 | 2.90 | 3.00 | |  | | 1239 | 31.77 | 37.00 |
| Food products | |  | 8 |  | 108.63 | 96.00 |  | 26 | 3.25 | 2.50 | |  | | 207 | 25.88 | 28.00 |
| Paper and paper products | |  | 10 |  | 263.40 | 131.50 |  | 43 | 4.30 | 4.00 | |  | | 452 | 45.20 | 43.00 |
| Chemical products | |  | 265 |  | 94.79 | 53.00 |  | 548 | 2.07 | 2.00 | |  | | 3904 | 14.73 | 3.00 |
| Manufacturing | |  | 23 |  | 163.52 | 109.00 |  | 88 | 3.83 | 4.00 | |  | | 952 | 41.39 | 48.00 |
| Computer equipment & services | |  | 225 |  | 113.74 | 91.00 |  | 600 | 2.67 | 3.00 | |  | | 5908 | 25.80 | 21.00 |
| Electronic equipment | |  | 63 |  | 136.57 | 111.00 |  | 204 | 3.24 | 3.00 | |  | | 1975 | 31.35 | 32.00 |
| Transportation & public utilities | |  | 47 |  | 169.55 | 107.00 |  | 152 | 3.23 | 3.00 | |  | | 1779 | 37.85 | 41.00 |
| Scientific instruments | |  | 64 |  | 103.05 | 84.50 |  | 171 | 2.67 | 2.00 | |  | | 1824 | 28.50 | 28.00 |
| Wholesale trade | |  | 20 |  | 247.70 | 107.50 |  | 78 | 3.90 | 3.00 | |  | | 735 | 36.75 | 35.00 |
| Retail trade | |  | 57 |  | 122.68 | 92.00 |  | 80 | 3.46 | 3.00 | |  | | 2200 | 38.60 | 42.00 |
| Entertainment services | |  | 14 |  | 97.29 | 82.50 |  | 46 | 3.29 | 3.00 | |  | | 494 | 35.29 | 36.00 |
| Health services | |  | 22 |  | 144.50 | 90.50 |  | 75 | 3.41 | 3.00 | |  | | 729 | 33.14 | 24.50 |
| Engineering & Management Services | |  | 11 |  | 138.18 | 103.00 |  | 33 | 3.00 | 3.00 | |  | | 438 | 39.82 | 42.00 |
| All others | |  | 41 |  | 135.56 | 104.00 |  | 261 | 3.51 | 4.00 | |  | | 1369 | 33.39 | 33.00 |
| *Totals* | |  | *909* |  | *120.11* | *90.00* |  | *2518* | *2.77* | *3.00* | |  | | *24205* | *26.63* | *22.00* |
| **Panel D. Descriptive statistics of SEC review attributes by exchange listings** | | | | | | | | | | | | | | | | |
| **Stock exchange** | |  | **N** |  | **Duration** | |  | **Letters** | | |  | | **Comments** | | | |
|  |  |  |  |  | **Mean** | **Median** |  | **Totals** | **Mean** | **Median** | |  | | **Totals** | **Mean** | **Median** |
| NYSE & AMEX | |  | 272 |  | 133.96 | 93.00 |  | 840 | 3.09 | 3.00 | |  | | 8250 | 30.33 | 30.50 |
| NASDAQ | |  | 673 |  | 114.20 | 88.00 |  | 1678 | 2.63 | 2.00 | |  | | 15955 | 24.05 | 14.00 |
| *Totals* | |  | *909* |  | *120.11* | *90.00* |  | *2518* | *2.77* | *3.00* | |  | | *24205* | *26.63* | *22.00* |
| **Panel E. Summary descriptive statistics of SEC review attributes by reviewers** | | | | | | | | | | | | | | | | |
|  | | **No.IPOs** |  | **No. reviewers** |  | **Mean** |  | **STD** |  | **p1** | |  | | **Median** |  | **p99** |
| Duration | | 710 |  | 56 |  | 149.23 |  | 123.77 |  | 27 | |  | | 125.44 |  | 699 |
| Letters | | 710 |  | 56 |  | 3.50 |  | 1.64 |  | 1 | |  | | 3.32 |  | 10 |
| Comments | | 710 |  | 56 |  | 36.18 |  | 18.90 |  | 1 | |  | | 37.00 |  | 81 |
| **Panel F. Descriptive statistics of SEC review attributes by offices of Division of Corporation Finance** | | | | | | | | | | | | | | | | |
| **Office** | |  | **N** |  | **Duration** | |  | **Letters** | | |  | | **Comments** | | | |
|  |  |  |  |  | **Mean** | **Median** |  | **Totals** | **Mean** | **Median** | |  | | **Totals** | **Mean** | **Median** |
| Office of Real Estate and Commodities | |  | 9 |  | 103.22 | 94 |  | 29 | 3.22 | 3 | |  | | 366 | 40.67 | 35 |
| Office of Healthcare and Insurance | |  | 252 |  | 94.57 | 49.5 |  | 498 | 1.98 | 2 | |  | | 3375 | 13.39 | 2 |
| Office of Information Technologies and Services | |  | 189 |  | 113.11 | 92 |  | 490 | 2.59 | 3 | |  | | 4683 | 24.78 | 21 |
| Office of Beverages, Apparel and Mining | |  | 44 |  | 133.48 | 96.5 |  | 162 | 3.68 | 3 | |  | | 1467 | 33.34 | 35.5 |
| Office of Natural Resources | |  | 55 |  | 119.84 | 103 |  | 163 | 2.96 | 3 | |  | | 1679 | 30.53 | 29 |
| Office of Electronics and Machinery | |  | 122 |  | 116.58 | 89.5 |  | 361 | 2.96 | 3 | |  | | 3589 | 29.42 | 30 |
| Office of Telecommunications | |  | 57 |  | 138.37 | 106 |  | 168 | 2.95 | 3 | |  | | 2007 | 35.21 | 37 |
| Office of Manufacturing and Construction | |  | 74 |  | 159.62 | 104 |  | 287 | 3.88 | 4 | |  | | 3129 | 42.28 | 46.5 |
| Office of Consumer Products | |  | 40 |  | 137.55 | 96.5 |  | 125 | 3.13 | 3 | |  | | 1400 | 35 | 38 |
| Office of Transportation and Leisure | |  | 67 |  | 166.49 | 91 |  | 235 | 3.51 | 3 | |  | | 2510 | 37.46 | 39 |
| *Totals* | |  | *909* |  | *120.11* | *90.00* |  | *2518* | *2.77* | *3.00* | |  | | *24205* | *26.63* | *22.00* |
| This table presents the descriptive statistics of three SEC review attributes including *duration*, *letters* and *comments*, for our 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-RQUG8p91Jz4wpn7EEBF13Ak4U2NSW_CC8hPo>) and name of the offices from SEC (<https://www.sec.gov/divisions/corpfin/ad-lookup.shtm>). | | | | | | | | | | | | | | | | |

**Table 5. Descriptive statistics of determinants of the SEC review**



**Table 6. Pearson correlation matrix of SEC review attributes and their determinants**



**Table 7. Impact of IPO firms’ characteristics on the SEC review attribute**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Panel A. Descriptive statistics of SEC review attributes by restructuring activities** | | | | | | | | | | | | | | | | |
|  |  |  |  | **N** |  | **Duration** | |  | **Letters** | | |  | **Comments** | | | |
|  |  |  |  |  |  | **Mean** | **Median** |  | **Mean** | **Median** | |  | **Mean** | **Median** | | |
| Restructuring = 0 | | |  | 813 |  | 118 | 90 |  | 2.71 | 3 | |  | 26.22 | 21 | | |
| Restructuring = 1 | | |  | 96 |  | 138.4 | 91 |  | 3.28 | 3 | |  | 30.03 | 28.5 | | |
| t test (mean)/ Wilcoxon rank-sum test (median) | | |  |  |  | 0.16 | 0.45 |  | 0.01 | 0.01 | |  | 0.18 | 0.16 | | |
| Total | | |  | 909 |  | 120.1 | 90 |  | 2.77 | 3 | |  | 26.63 | 22 | | |
|  | | |  |  |  |  |  |  |  |  | |  |  |  | | |
| **Panel B. Descriptive statistics of SEC review attributes by M&A activities** | | | | | | | | | | | | | | | | |
|  |  |  |  | **N** |  | **Duration** | |  | **Letters** | | |  | **Comments** | | | |
|  |  |  |  |  |  | **Mean** | **Median** |  | **Mean** | **Median** | |  | **Mean** | **Median** | | |
| M&A = 0 | | |  | 781 |  | 123.8 | 91 |  | 2.78 | 3 | |  | 27.61 | 24 | | |
| M&A =1 | | |  | 128 |  | 97.37 | 82 |  | 2.7 | 2 | |  | 20.61 | 11.5 | | |
| t test (mean)/ Wilcoxon rank-sum test (median) | | |  |  |  | 0.04 | 0.05 |  | 0.66 | 0.71 | |  | 0.01 | 0.06 | | |
| Total | | |  | 909 |  | 120.11 | 90 |  | 2.77 | 3 | |  | 26.63 | 22 | | |
| **Panel C. Descriptive statistics of SEC review attributes by Big 4 auditor** | | | | | | | | | | | | | | | | |
|  |  |  |  | **N** |  | **Duration** | |  | **Letters** | | |  | **Comments** | | | |
|  |  |  |  |  |  | **Mean** | **Median** |  | **Mean** | **Median** | |  | **Mean** | **Median** | | |
| Big 4 = 0 | | |  | 175 |  | 118.5 | 94 |  | 2.86 | 3 | |  | 27.03 | 13 | | |
| Big 4 = 1 | | |  | 723 |  | 117.00 | 87 |  | 2.73 | 3 | |  | 26.44 | 22 | | |
| t test (mean)/ Wilcoxon rank-sum test (median) | | |  |  |  | 0.89 | 0.1 |  | 0.48 | 0.4 | |  | 0.79 | 0.93 | | |
| Total | | |  | 898 |  | 117.3 | 90 |  | 2.76 | 3 | |  | 26.55 | 22 | | |
|  | | |  |  |  |  |  |  |  |  | |  |  |  | | |
| **Panel D. Descriptive statistics of SEC review attributes by earnings of IPO firms** | | | | | | | | |  |  |  |  |  |  |  |  |
|  |  |  |  | **N** |  | **Duration** | |  | **Letters** | | |  | **Comments** | | | |
|  |  |  |  |  |  | **Mean** | **Median** |  | **Mean** | **Median** | |  | **Mean** | **Median** | | |
| positive-earnings = 0 | | |  | 546 |  | 104.00 | 76 |  | 2.41 | 2 | |  | 21.44 | 6 | | |
| positive-earnings = 1 | | |  | 363 |  | 144.4 | 103 |  | 3.31 | 3 | |  | 34.42 | 36 | | |
| t test (mean)/ Wilcoxon rank-sum test (median) | | |  |  |  | 0 | 0 |  | 0 | 0 | |  | 0 | 0 | | |
| Total | | |  | 909 |  | 120.1 | 90 |  | 2.77 | 3 | |  | 26.63 | 22 | | |
| **Panel E. Descriptive statistics of SEC review attributes by CEO-chairman of board member** | | | | | | | | | | | | | | | | |
|  |  |  |  | **N** |  | **Duration** | |  | **Letters** | | |  | **Comments** | | | |
|  |  |  |  |  |  | **Mean** | **Median** |  | **Mean** | **Median** | |  | **Mean** | **Median** | | |
| CEO-chairman = 0 | | |  | 439 |  | 78.59 | 43 |  | 1.95 | 2 | |  | 10.8 | 3 | | |
| CEO-chairman = 1 | | |  | 470 |  | 158.9 | 109 |  | 3.54 | 3 | |  | 41.41 | 44 | | |
| t test (mean)/ Wilcoxon rank-sum test (median) | | |  |  |  | 0 | 0 |  | 0 | 0 | |  | 0 | 0 | | |
| Totals | | |  | 909 |  | 120.1 | 90 |  | 2.77 | 3 | |  | 26.63 | 22 | | |



**Table 8. Impact of incidences on the SEC review attributes**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Panel A. Impact of JOBs Act 2012** | | | | | | | | | | | | | | | |
|  |  | **N** |  | **Number of EGC** |  | **Proportion of EGC** |  | **Duration** | |  | **Letters** | |  | **Comments** | |
|  |  |  |  |  |  |  |  | **Mean** | **Median** |  | **Mean** | **Median** |  | **Mean** | **Median** |
| Pre-JOBS Act (2005-2011) |  | 448 |  | 392 |  | 87.5 |  | 169.69 | 112 |  | 3.74 | 4 |  | 44.29 | 46 |
| Post-JOBS Act (2012-2017) |  | 461 |  | 392 |  | 85.03 |  | 71.93 | 41 |  | 1.82 | 1 |  | 9.46 | 2 |
| t test (mean)/ Wilcoxon rank-sum test (median) |  |  |  |  |  |  |  | 0.00 | 0.00 |  | 0.00 | 0.00 |  | 0.00 | 0.00 |
| Totals |  | 909 |  | 764 |  | 84.05 |  | 120.11 | 90 |  | 2.77 | 3 |  | 26.63 | 22 |
| **Panel B. Impact of Dodd-Frank Wall Street Reform and Consumer Protection Act 2010** | | | | | | | | | | | | | | | |
|  |  | **N** | | | |  |  | **Duration** | |  | **Letters** | |  | **Comments** | |
|  |  |  |  |  |  |  |  | **Mean** | **Median** |  | **Mean** | **Median** |  | **Mean** | **Median** |
| Pre-Dodd Frank (2005-2009) |  | 314 | | | |  |  | 155.66 | 107.5 |  | 3.46 | 3 |  | 44.57 | 48 |
| Post-Dodd Frank & Pre-JOBs Act (2010-2011) |  | 134 | | | |  |  | 202.56 | 130.5 |  | 4.4 | 4 |  | 43.65 | 43 |
| t test (mean)/ Wilcoxon rank-sum test (median) |  |  |  |  |  |  |  | 0.01 | 0.00 |  | 0.00 | 0.00 |  | 0.69 | 0.30 |
| Totals |  | 448 | | | |  |  | 169.69 | 112 |  | 3.74 | 4 |  | 44.29 | 46 |
| **Panel C. Impact of financial crisis in 2008, 2009** | | | | | | | | | | | | | | | |
| **Filing year** |  | **N** | | | |  |  | **Duration** | |  | **Letters** | |  | **Comments** | |
|  |  |  |  |  |  |  |  | **Mean** | **Median** |  | **Mean** | **Median** |  | **Mean** | **Median** |
| Financial crisis = 0 |  | 338 | | | |  |  | 159.76 | 111 |  | 3.66 | 3 |  | 44.72 | 47 |
| Financial crisis = 1 |  | 60 | | | |  |  | 233.88 | 124 |  | 4.30 | 4 |  | 41.50 | 39 |
| t test (mean)/ Wilcoxon rank-sum test (median) |  |  | | | |  |  | 0.00 | 0.08 |  | 0.02 | 0.06 |  | 0.31 | 0.07 |
| Totals |  | 448 | | | |  |  | 169.69 | 112 |  | 3.74 | 4 |  | 44.29 | 46 |
| This table presents analyses of difference in the SEC review attributes among period of pre-, post- and within a special events (regulatory events and crises). SEC review attributes include *Duration, Letters, Comments.* Special events include *JOBs Act, Dodd-Frank* and *Financial crisis.* All variables are defined in Appendix 1. Panel A presents analysis of difference in the SEC review attributes between period pre- and post-JOBs Act 2012. ECG is Emerging Growth Company who has revenue lower than $1 billion. Panel B presents analysis of difference in the SEC review attributes between period pre- and post-Dodd Frank Wall Street Reform and Consumer Protection Act 2010 (excluding the period of post-JOBs Act 2012 which is from 2012 to 2017). Panel C presents analysis of difference in the SEC review attributes among years of financial crisis 2008-2009 and other years (excluding the period of post-JOBs Act 2012, which is from 2012-2017) I perform analyses of differences using two-sample t-tests, and nonparametric Wilcoxon rank-sum tests. Results (p-value) from these tests are presented in the fifth row in each panel. | | | | | | | | | | | | | | | |

**Table 9. Impact of industry characteristics on the SEC review attributes**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Panel A. Descriptive statistics of SEC review attributes by regulated industries** | | | | | | | | | | | |
| **Industry** |  | **N** |  | **Duration** | |  | **Letters** | |  | **Comments** | |
|  |  |  |  | **Mean** | **Median** |  | **Mean** | **Median** |  | **Mean** | **Median** |
| Regulated = 0 |  | 896 |  | 119.97 | 90 |  | 2.77 | 3 |  | 26.51 | 22 |
| Regulated =1 |  | 13 |  | 129.69 | 79 |  | 2.85 | 3 |  | 35.00 | 40 |
| *t test (mean)/ Wilcoxon rank-sum test (median)* |  |  |  | *0.79* | *0.85* |  | *0.89* | *0.80* |  | *0.25* | *0.16* |
| Total |  | 909 |  | 120.11 | 90 |  | 2.77 | 3 |  | 26.36 | 22 |
| **Panel B. Descriptive statistics of SEC review attributes by technology industries** | | | | | | | | | | | |
| **Industry** |  | **N** |  | **Duration** | |  | **Letters** | |  | **Comments** | |
|  |  |  |  | **Mean** | **Median** |  | **Mean** | **Median** |  | **Mean** | **Median** |
| Technology = 0 |  | 725 |  | 118.11 | 84 |  | 2.71 | 3 |  | 25.17 | 13 |
| Technology = 1 |  | 184 |  | 127.98 | 104 |  | 3.02 | 3 |  | 32.38 | 36 |
| *t test (mean)/ Wilcoxon rank-sum test (median)* |  |  |  | *0.38* | *0.00* |  | *0.06* | *0.04* |  | *0.00* | *0.00* |
| Total |  | 909 |  | 120.11 | 90 |  | 2.77 | 3 |  | 26.36 | 22 |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Panel C. Univariate analysis of the SEC review attributes and other IPO firms' characteristics** | | | | | | | | |
| **Dependent variable** |  | **Independent variable** |  | **Coefficient** |  | **N** | **Wald chi2** | **Pseudo R2** |
| Duration |  | IPOs by industry |  | -0.0015\*\*\* (-4.15) |  | 909 | 17.25 | 0.003 |
|  | Herfindahl Index |  | 0.4730\*\*\* (2.65) |  | 909 | 34.91 | 0.005 |
| Letters |  | IPOs by industry |  | -0.0018\*\*\* (-7.82) |  | 909 | 61.16 | 0.016 |
|  | Herfindahl Index |  | 0.5387\*\*\* (5.89) |  | 909 | 34.69 | 0.006 |
| Comments |  | IPOs by industry |  | -0.0032\*\*\* (-9.10) |  | 909 | 82.75 | 0.006 |
|  | Herfindahl Index |  | 0.7791\*\*\* (5.29) |  | 909 | 28.03 | 0.001 |
| This table presents the results for the analysis of the impact of industry/market’s characteristics on the SEC review attributes for our full sample of 909 IPOs between 2005 and 2017. SEC review attributes include Duration*, Letters, Comments.* Industry/market characteristics include Regulated *and* Technology*. All* variables are defined in Appendix 1. Panel A presents analysis of difference in each SEC review attribute between regulated firms and non-regulated firms. Panel B presents analysis of difference in each SEC review attribute between technology firms and non-technology firms. We perform analyses of differences using two-sample t-tests, and nonparametric Wilcoxon rank-sum tests. Results (p-value) from these tests are presented in the fifth row in each panel A and B.   Panel C presents the results of the univariate analysis of the impact of other industry's characteristics on the SEC review for our full sample of 909 IPOs between 2005 and 2017. Negative binomial regression is employed in this analysis. The dependent variables are SEC review reviews including Duration, *Letters and Comments*. *The* independent variables are other industry's characteristics including, IPOs by *industry and Herfindahl* Index. Results from Z-statistics are presented in parentheses below coefficient estimates, and are based on robust standard errors clustered at the firm level. \*, \*\*, and \*\*\* denote significance at the 10%, 5%, and 1% levels, respectively, based on a two-tailed test. All variables are defined in Appendix 1. | | | | | | | | |

**Table 10. Impact of SEC’s characteristics on the SEC review attributes**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Panel A. Descriptive statistics of SEC review attributes by job position of reviewers** | | | | | | | | | | | | | | | | | |
| **Job position** | |  | **N** |  | **Duration** | |  | **Letters** | |  | **Comments** | | |  |
|  |  |  |  |  | **Mean** | **Median** |  | **Mean** | **Median** |  | **Mean** | **Median** |  | |
| Director/Chief = 0 | |  | 50 |  | 173.92 | 92.5 |  | 3.7 | 3 |  | 36.62 | 39 |  | |
| Director/Chief = 1 | |  | 656 |  | 128.25 | 97 |  | 3.32 | 3 |  | 34.05 | 36 |  | |
| t test (mean)/ Wilcoxon rank-sum test (median) | |  |  |  | 0.03 | 0.88 |  | 0.17 | 0.91 |  | 0.484 | 0.38 |  | |
| Total | |  | 706 |  | 131.49 | 97 |  | 3.35 | 3 |  | 34.23 | 36 |  | |
| **Panel B. Descriptive statistics of SEC attributes by job classification of reviewers** | | | | | | | | | | | | | | | |
| **Job classification** | |  | **N** |  | **Duration** | |  | **Letters** | |  | **Comments** | | |  |
|  |  |  |  |  | **Mean** | **Median** |  | **Mean** | **Median** |  | **Mean** | **Median** |  | |
| Accountant = 0 | |  | 487 |  | 129.7 | 97 |  | 3.44 | 3 |  | 35.74 | 37 |  | |
| Accountant = 1 | |  | 219 |  | 135.46 | 93 |  | 3.15 | 3 |  | 30.88 | 31 |  | |
| t test (mean)/ Wilcoxon rank-sum test (median)) | |  |  |  | 0.62 | 0.73 |  | 0.05 | 0.04 |  | 0.02 | 0.02 |  | |
| Total | |  | 706 |  | 131.49 | 97 |  | 3.35 | 3 |  | 34.23 | 36 |  | |
| This table presents the results for the analysis of the SEC’s characteristics on the SEC review attributes for our full sample of 909 IPOs between 2005 and 2017. SEC review attributes include *Duration, Letters, Comments.* The SEC characteristics include *Directors/Chiefs* and *Accountant.* All variables are defined in Appendix 1. Panel C presents analysis of difference in each SEC review attribute and annual salary between the reviewers Director/Chief and the reviewers with lower job position, who are not Directors/Chiefs. Directors/Chief include Assistant Director, Senior Assistant Chief Accountant, Legal Branch Chief and Accounting Branch Chief. Panel D presents analysis of difference in each SEC review attribute and percentage of accounting comments between Accountant reviewers and non-Accountant reviewer. We perform analyses of differences using two-sample t-tests, and nonparametric Wilcoxon rank-sum tests. Results (p-value) from these tests are presented in the fifth row in each panel C and D. | | | | | | | | | | | | | | | | |

**Table 11. Multivariate analysis**







**Table 12. Impact of JOBs Act on the types of issues mentioned in the SEC comment letters**

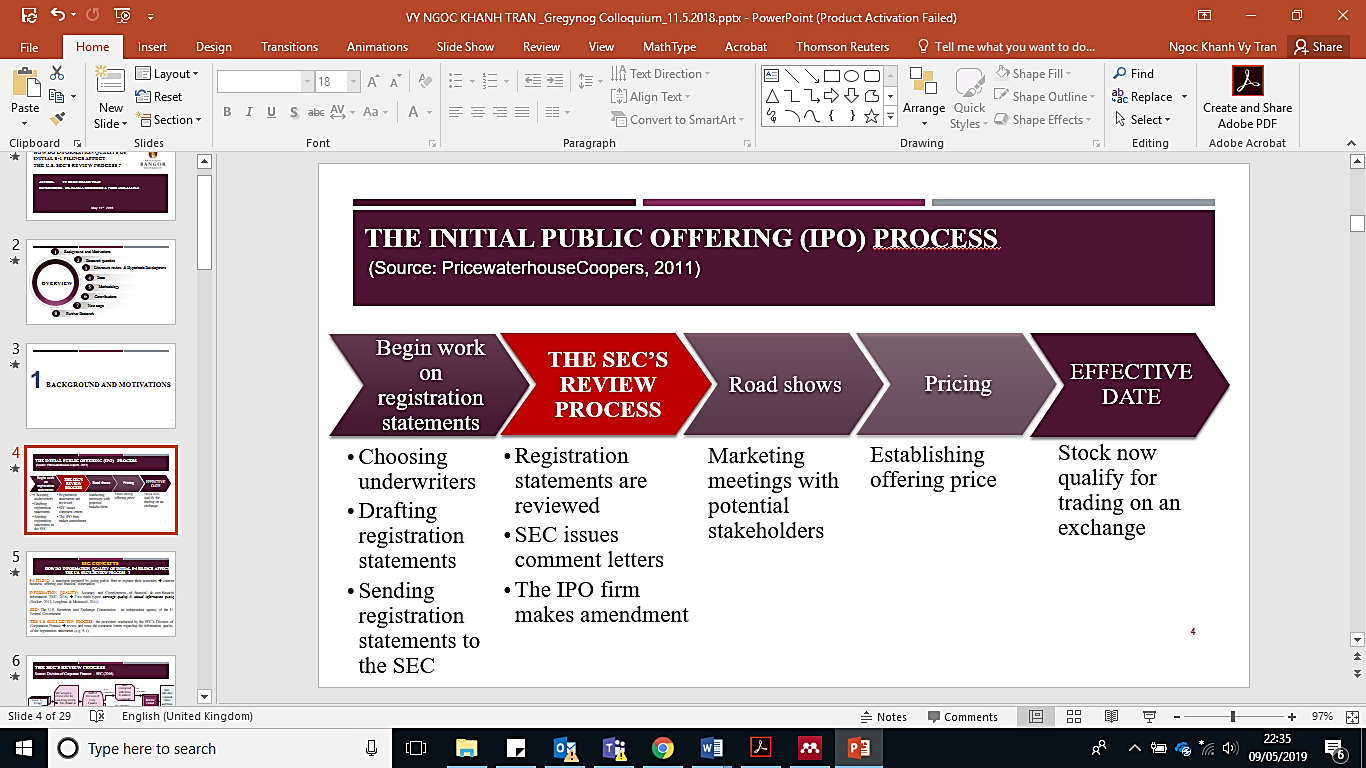


**Table 13. Moderating effects of the IPO firm's characteristics and Herfindahl index on the impact of JOBs Act on the SEC review**



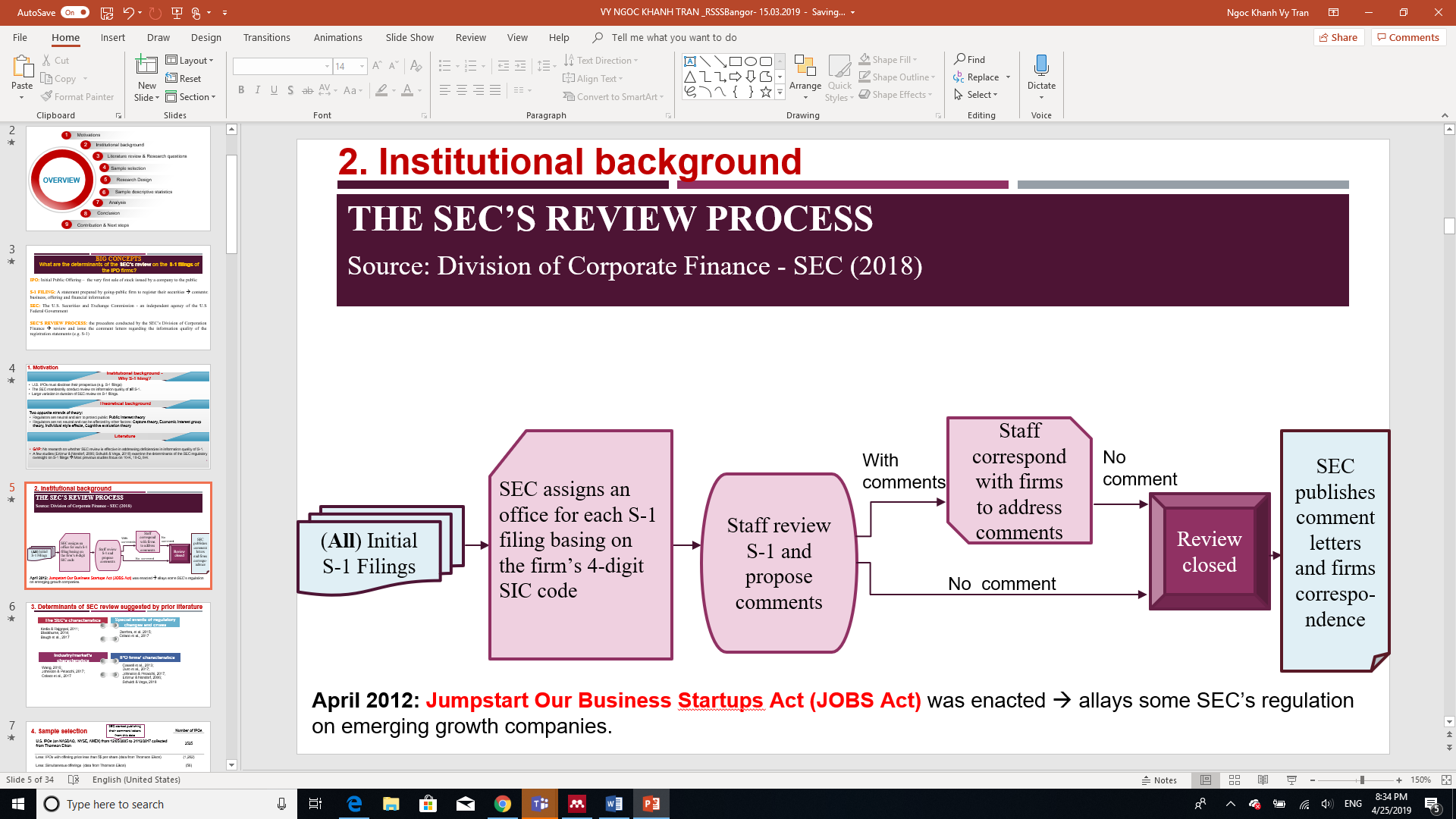


**Figure 1. IPO process**



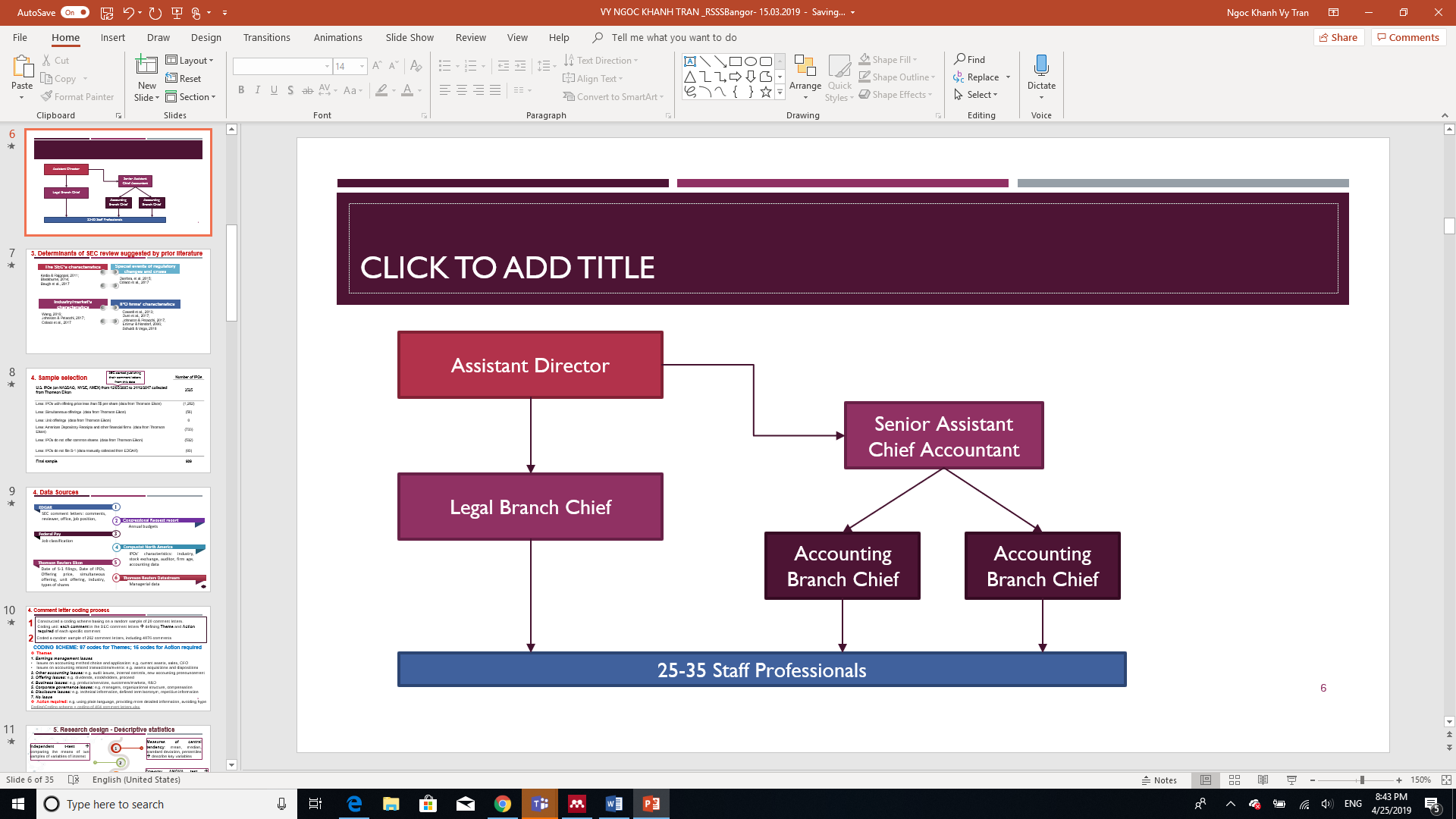
Source: PricewaterhouseCoopers, 2011

**Figure 2. The SEC review process**



Source: Division of Corporation Finance - SEC (2018)

**Figure 3. Organizational hierarchy of an office in Corporation Finance Division**



Source: Division of Corporation Finance - SEC (2018)

**Figure 4. Time distribution of sample**

**Figure 5. Duration**

**Figure 6. Number of comment letters**

**Figure 7. Number of comments initial comment letters**

# **APPENDIX 1**

**Variables and definition**

|  |  |
| --- | --- |
| Variable | Definition |
| *Panel A. SEC review attributes* | |
| Duration | The number of days from the date of initial S-1 filings to the date of IPOs (Ertimur & Nondorf, 2006) (Source: Thomson Reuters Eikon) |
| Letters | The number of comment letters that the SEC issues to firm i during the SEC’s review process (Li & Liu, 2017a) (Source: EDGAR and manual data) |
| Comments | The number of comments in the initial comment letters that the SEC issues to firm i during the SEC’s review process (Duro et al., 2017) (Source: EDGAR and manual data) |
| Issues | The number of issues in the initial comment letters that the SEC issues to firm I during the SEC review process (Ertimur & Nondorf, 2006) (Source: manual coding) |
| Accounting comments | The number of comments mentioned in the SEC initial comment letters about the accounting issues in the initial S-1 filings prepared by firm i (Cassell et al., 2013) (Source: manual coding) |
| Offering comments | The number of comments mentioned in the SEC initial comment letters about the offering issues in the initial S-1 filings prepared by firm i (Cassell et al., 2013) (Source: manual coding) |
| Business comments | The number of comments mentioned in the SEC initial comment letters about the business issues in the initial S-1 filings prepared by firm i (Cassell et al., 2013) (Source: manual coding) |
| Corporate governance comments | The number of comments mentioned in the SEC initial comment letters about the corporate governance issues in the initial S-1 filings prepared by firm i (Cassell et al., 2013) (Source: manual coding) |
| Disclosure comments | The number of comments mentioned in the SEC initial comment letters about the disclosure issues in the initial S-1 filings prepared by firm i (Cassell et al., 2013) (Source: manual coding) |
|  |  |
| *Panel B. SEC’s characteristics* | |
| Directors/Chiefs | An indicator variable equals to 1 if job position of the reviewer, who signs in the comment letter of the initial S-1 filings, is Assistant Director, Senior Assistant Chief Accountant, Legal Branch Chief or Accounting Branch Chief, and 0 otherwise (Baugh et al., 2017) |
|  |  |
| Accountant | An indicator variable equals to 1 if the job classification of the reviewer, who signs in the comment letter of the initial S-1 filings of firm i is Accountant, and 0 otherwise (Baugh et al., 2017). (Source: <https://www.federalpay.org/employees/securities-and-exchange-commission>) |
|  |  |
| *Panel C. Incidences (regulatory events and crises)* | |
| JOBs Act | An indicator variable equals to 1 if the filing year of firm i is from 2012, when Jumpstart Our Business Startups Act (JOBs Act) was enacted, to 2017, and 0 otherwise. |
| Dodd-Frank | An indicator variable equals to 1 if the filing year of firm i is from 2010, when Dodd–Frank Wall Street Reform and Consumer Protection Act was enacted, to 2011, and 0 if the filing year of firm i is from 2005 to 2009. |
| Financial crisis | An indicator variable equals to 1 if filing year of firm i is in 2008 or 2009, when financial crisis occurred, and 0 if the filing year if from 2005 to 2007 or from 2010 to 2011 (Colaco et al., 2018) |
| *Panel D. Industry and market* | |
| Regulated | An indicator variable equals to 1 if the IPO firm’s industry as classified by SIC codes is 4900–4939 (electric and gas), 1300 (oil and gas extraction), 4000–4700 (transportation), 4800 (telecommunications) or 4950–4959 (sanitary services) (Ertimur & Nondorf, 2006) |
| Technology | An indicator variable equals to 1 if the IPO firm’s industry as classified by SIC codes is 3571, 3572, 3575, 3577, 3578 (i.e. computer hardware); 3661, 3663, 3669 (i.e. communications equipment); 3671, 3672, 3674, 3675, 3677, 3678, 3679 (i.e. electronics); 3812 (i.e. navigation equipment); 3823, 3825, 3826, 3827, 3829 (i.e. measuring and controlling devices); 3841, 3845 (i.e. medical instruments); 4812, 4813 (i.e. telephone equipment); 4899 (i.e. communications services) or 7371, 7372, 7373, 7374, 7375, 7378,7379 (i.e. software) (Colaco et al., 2018) |
| IPOs by industry | The number of IPOs in the same industry of the initial S-1 filing of firm i (Colaco et al., 2018) |
| Herfindahl Index | where is firm i’s sales in industry j, as defined by two-digit SIC codes, is the sum of sales for all firms in industry j (Wang, 2016) |
| *Panel E. IPO firms’ characteristics* | |
| Size | Firm size is calculated as natural logarithm of shares outstanding at fiscal year-end times the share price in year t (Duro et al., 2017). (Source: Compustat) |
| Big 4 | An indicator variable equals to 1 if firm i is audited by Big 4 Auditors including Ernst & Young, Deloitte & Touche, KPMG, PricewaterhouseCoopers (Johnston & Petacchi, 2017), and 0 otherwise. (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) |
| Positive-earnings | An indicator variable equals to 1 if firm i has net income in year t equal or higher than zero (Hesse et al., 2017). (Source: Compustat) |
| CEOchairman | An indicator variable equals to 1 if firm i has CEO also working as a chairman of board member of in year t (Hesse et al., 2017). (Source: Thomson Reuters Datastream) |
| Sales growth | The change in annual sales from year t-1 to year t (Hesse et al., 2017). (Source: Compustat) |
| Leverage | The ratio of total liabilities to total equity in year t (Duro et al., 2017). (Source: Compustat) |
| BM | The ratio of the book value of equity to the market value of equity in year t (Duro et al., 2017). (Source: Compustat) |
| External financing | The sum of equity financing and debt financing scaled by total assets in year t. Equity financing equals the sales of common and preferred stock minus the purchases of common and preferred stock minus dividends. Debt financing equals long-term debt issued minus long-term debt reduction minus the change in current debt (Duro et al., 2017). (Source: Compustat). |
| Firm age | The number of years since the firm first appears in Compustat to the year of the initial S-1 filings (Hesse et al., 2017). (Source: Compustat). |
| Segments | The number of non-empty and unique segment industry codes in year t (Duro et al., 2017). (Source: Compustat). |
| Z score | Zscore is equal to 1.2 \* [net working capital/total assets] + 1.4 \* [retained earnings/total assets] + 3.3 \* [earnings before interest and taxes/total assets] + 0.6 \* [market value of equity/book value of liabilities] + 1.0 \* [sales/total assets] |

# **APPENDIX 2**

**SEC comment letters coding process**

In this study, I design a self-constructed coding scheme on the initial SEC comment letters for the initial S-1 filings in order to thoroughly capture the issues mentioned in the SEC comment letters which assists the additional examination of the impact of JOBs Act on the extent of SEC review. In order to construct the coding scheme of the initial SEC comment letters, I follow the standard coding procedure with 5 main stages as developed by Weber (1985). In the first stage, I define the recoding units as theme and action required in each specific comment in the initial SEC comment letters. In the initial SEC comment letters, each comment is presented in a paragraph started by a sequential number. In each comment, the theme is the information (a word or word phrase) about the issue relating to the information quality of initial S-1 filings as explored by the SEC, and the action required is the information (a word or word phrase) about the action which is required by the SEC to resolve the issue. In the second stage, I choose a random sample of 20 comment letters and define the theme and action required for each specific comment in each comment letter. The themes and actions required are identified through the keywords in each paragraph of comment. Particularly, I identify the keywords in each comment in the initial SEC comment letters and subsequently, sort these single keywords into the groups of keywords which have similar messages. Following that, the name of each key-word group is given and defined as the themes and action required. In the third stage, I summarize these themes and actions required and then provide the mutually exclusive definition and code for each. In the fourth stage, I group the themes into five categories including; Earnings management issues, Other accounting issues, Offering Issues, Business Issues, Corporate Governance Issues, Disclosure Issues and No issues, basing on the general context in which the themes are used as well as the list of main chapters and sections in S-1 filings as required by the SEC. Finally, this coding scheme is tested on another random sample of 20 initial SEC comment letters in order to identify whether further categories of comments are missed. The following table presents the coding scheme the self-constructed coding scheme on the initial SEC comment letters for the initial S-1 filings.

|  |  |  |
| --- | --- | --- |
| **Code** | **Themes** | **Descriptions** |
|  | **I. EARNINGS MANAGEMENT ISSUES** | **These items represent the SEC' comments regarding issuers' earning management activities including the comments mentioning issues on choice of accounting method, application of accounting method and issues on accounting-transactions/actions. All comments on section "Note to Financial Statements" about a specific transaction/event should be categorized into this item or the item of "Other accounting issues".** |
|  | **Panel A: Issues on accounting method choice and application** | |
|  | **Balance sheet** |  |
| A1 | Current assets | 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 receivables, inventories, cash or cash equivalents, marketable securities, trading securities or other current assets (including contra accounts) |
| A2 | Non-current assets | 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 property, plants and equipment or other non-current assets (including contra accounts), e.g. impairment methods of long-lived assets, valuation allowance, deferred tax assets, plan assets, long-term securities |
| A3 | Depreciation and amortization | 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 depreciation and amortization |
| A4 | Current liabilities | 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 payables, tax payables, current portion of long-term debt, accrued warranty or other current liabilities (including contra accounts) |
| A5 | Non-current liabilities | 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 non-current liabilities, e.g. PPE, long-term debt, deferred tax liabilities. |
| A6 | Equity | 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 (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) |
|  | **Income statement** |  |
| A7 | Sales | 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 (including contra account, e.g. sales returns and allowance) |
| A8 | Other 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 other income, e.g. interest income, deemed dividend, reimbursement |
| A9 | Cost of goods sold | 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 sold |
| A10 | R&D expense | 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 R&D expense |
| A11 | Advertising expense | 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) of advertising expense |
| A12 | Compensation expense | 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 compensation expense, e.g. valuation of stock option grant |
| A13 | Other expenses | 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 other expenses, e.g. , Selling, general and administration expense, Benefit expense, contribution margin, customer acquisition cost, income tax, provision for income tax; including contra-account (e.g. tax benefit) |
| A14 | Extraordinary items and discontinued operation | 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 Extraordinary items and discontinued operation |
| A15 | 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, or earning-related ratio, e.g. ROA, EPS |
|  | **Cash flow statement** |  |
| A16 | Cash flow from operations | 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 cash flow from operations |
| A17 | Cash flow from investing activities | 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 cash flow from investing activities |
| A18 | Cash flow from financing activities | 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 cash flow from financing activities |
| A19 | **Financial items in general** | 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. total assets, working capital, debts, total liabilities, securities, free cash flow or more than one financial items, e.g., whole financial statements, or other components of financial statement, e.g. segment reporting, reporting currency, fiscal year end |
|  | **Panel B: Issues on accounting-related transactions/events** | |
| A20 | Asset acquisitions and dispositions | Questions, critiques and requests regarding 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, including accounting treatments for subsequent events |
| A21 | Other accounting-related transactions/events | Questions, critiques and requests regarding 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 |
|  | **II. OTHER ACCOUNTING ISSUES** | **These items represent the SEC' comments relating to non-EM-related accounting issues including accounting method choice, accounting method application for specific items or related accounting transaction. All comments on section "Note to Financial Statements" about a specific transaction/event should be categorized into this item or the item of "Earnings management issue".** |
| 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 | Audit issues | A request for additional information regarding the firm’s relationship with its audit firm, including issues with auditor changes, issues with matters disclosed (or that should have been disclosed) in the audit report, and issues with the auditor’s consent letter for the offering; |
| B4 | Financial Statement Restatement | Questions about a restatement of the financial statements presented in the offering document; |
| B5 | 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 |
| B6 | 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 |
| B7 | Off-Balance Sheet Arrangements | Questions or comments relating to the understanding of off- balance sheet arrangements, including special purpose entities, and their material effects |
| B8 | New Accounting Pronouncements | Comments regarding a firm’s disclosures of the effects of newly- issued accounting pronouncements, particularly the firm’s consideration of any material impact that the pronouncements may have on the firm’s financial results |
|  | **III. OFFERING ISSUES** | **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** |
| C1 | **Characteristics of stocks** | Requests for information about type of stocks (including consideration, warrants ), number of stocks, stock price and stock value relating to issuers' initial public offering, including the symbol used to list on stock exchange |
| C2 | **Timing of offering** | Questions and comments about a point of time or duration of the issuer's initial public offering or other offering-related transactions |
| C3 | **Dividends** | Questions and requests regarding the dividends that the firm intend to pay in the future |
| C4 | **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. |
| C5 | **Actions effecting stock value** | Requests for information about conversion of stocks, split of stocks, redemption of stocks related to initial public offering |
|  | **Parties of offering** |  |
| C6 | Stockholders | Questions and requests regarding identifications of stockholders (principal or selling stockholders) related to initial public offering, their control (which is indicated by the number/percentage of stocks held), their consents, their tax status and their rights as well as their communication with the issuer |
| C7 | Underwriters | Requests regarding identification, obligation, compensation of underwriters in connection with the issuer's initial public offering as well as the underwriting procedures and the underwriters' agreements with the firm. |
| C8 | Other parties (offering) | Questions and requests regarding identification or obligation or transactions of other parties of the issuer's initial public offering, e.g. sponsor, consultant, NASDAQ representative |
| C9 | **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) |
| C10 | **Offering-related transactions/actions** | Requests for information regarding trading and exercise of the issuer's initial public offering or other transactions/actions related to the offering. For example, this item could include the listing, sale, transfer, or other disposition of stocks by the original firm's member to a third party (e.g. Exit Event). |
| C11 | **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 |
| C12 | **Offering-related regulation** | Question and requests regarding regulation the issuer followed to prepare and present the S-1 filings as well as conduct their initial offering (e.g. JOB Act) |
| C13 | **Offering fee** | Questions, critiques and requests regarding firm's registration fee or other offering-related fee |
| C14 | **Exhibits** | Questions and critiques regarding the use, style and content of exhibits as well as request to include additional exhibits |
| C15 | **Undertakings** | Questions and critiques regarding the use, style and content of undertakings |
| C16 | **Illustration** | Question, critiques and requests regarding the pictures, graphic and artworks used in S-1 filing |
| C17 | **Offering-related document** | Questions, critiques and requests regarding offering-related document, e.g. written communication with potential investors, research reports |
| C18 | **Consent letter** | Comments about the format and inclusion of consent letters as part of the filing document; |
| C19 | **Why filing** | Question, critiques and requests regarding why the firm is undergoing an initial public offering as well as why they are filing S-1 |
|  | **IV. BUSINESS ISSUES** | **These items represent the SEC's comments relating to the issuer's manufacturing, operating, R&D, marketing and selling activities** |
| D1 | Products/Services | Questions and requests regarding definition and volume of products/services which the issuers provided as well as their pricing strategy |
| D2 | Customers/Market | Request for information about identifications, behaviours, buying history of the issuer's current or potential customers (including website members) as well as market in which the issuers have been operating |
| D3 | Suppliers | Question, critiques and requests regarding identifications, behaviours and buying history of the issuer's current or potential suppliers |
| D4 | Holding company | Question, critiques and requests regarding identifications, control and effect of the issuer's holding company |
| D5 | Other parties (business) | Questions, critiques and requests regarding firm's other related parties, e.g. regulators, supporters, partners, vendors |
| D6 | R&D | Questions and requests regarding the issuer's R&D activities (not including timing of R&D activities) and members of R&D department, including press release about phase or results of product trials |
| D7 | Competition | Questions, critiques and requests regarding firm's competitive strength |
| D8 | Industry | Requests for information about characteristics or trends of industry in which the issuer has been operating, including Key Performance Indicators of the firm's industry |
| D9 | M&A | Question , critiques and requests regarding the issuers' M&A activities, their targets or acquirers, results and impacts of M&A. This item includes other restructuring activities conducted by the firm |
| D10 | Financing activities | Question , critiques and requests regarding the issuers' financing activities, including issues regarding historical/current stockholders, historical/current dividends, credit facility, partnership distribution, market capitalization, indebtedness |
| D11 | Investment activities | Question , critiques and requests regarding the issuers' investment activities (e.g. investment in stocks and bonds, purchase/sale of fixed assets) including capital expenditure |
| D12 | Operating activities | Question , critiques and requests regarding the issuers' operating activities, including manufacturing, distributing, marketing, and selling a product or service (e.g. terms of sale, backlog, reimbursement, warranty) and business strategy (not including R&D activities) |
| D13 | Material Agreements | Question, critiques and requests regarding material contracts/agreements (e.g. lease agreements, debt/credit agreement, debt covenants, contractual obligation) and their terms |
| D14 | Intellectual property | Question , critiques and requests regarding issuer’s terms of their intellectual property and any claims against their intellectual property |
| D15 | Technology | Questions, critiques and requests regarding firm's technology infrastructure |
| D16 | Segments | Question , critiques and requests regarding the identification of operating segments, aggregation or disaggregation of operating segments and information about geographic areas in which the firm operates, including issues on the firms' subsidiaries |
| D19 | 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 |
| D20 | 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 |
| D21 | 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 |
| D22 | Business-related regulation | Requests about information about regulation relating the issuer's business (e.g. environmental law, tax rate, legal proceedings) |
| D23 | Status | Questions, critiques and requests regarding firm's status e.g. limited liability company, Delaware corporation, emerging growth company |
| D24 | Going concern | Questions or comments regarding the firm’s ability to continue as a going concern as well as their capacity |
| D25 | Properties and Facilities | Questions or comments surrounding the description of the locations in which the firm operates |
|  | **V. CORPORATE GOVERNANCE ISSUES** | **These items represent the SEC's comments relating to the issuers' corporate governance mechanism** |
| 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 and obligation (e.g., issues on the firms' status as controlled company), including key performance measure applied to the managers and leadership structure |
| E2 | Related parties' transactions | Questions and requests regarding transactions of related parties |
| E3 | Ownership structure | Questions and requests regarding the issuers' 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 | Organizational structure | Comments to provide clarification about the firm’s organizational structure, both before and after the offering |
| E6 | Anti-Takeover Provisions | Questions, critiques and requests regarding anti- takeover provisions that are included in the firm’s by-laws |
| E7 | Signatures | Request to identify the individuals, particularly the chief accounting executive, who will be responsible for signing the firm’s financial statement certifications under Section 302 of the Sarbanes-Oxley Act |
| E8 | Employee | Questions, critiques and requests regarding employee-related matters, including salary, labour issues, employment contracts, pension and other employee benefit |
|  | **VI. DISCLOSURE ISSUES** | **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** |
| F1 | Technical information | Questions, critiques and requests regarding meaning and use of industry-specific terms or jargons in the S-1 filing |
| F2 | Abstract word | Questions, critiques and requests regarding use of abstract words |
| F3 | Defined term/acronym | Questions, critiques and requests regarding use of inappropriate or numerous defined terms or acronym in S-1 filing |
| F4 | Over-positive tone | Critiques and requests regarding hype or overstating information in S-1 filing |
| F5 | 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 risk s and downside of their business and operating environment |
| F6 | Uncertain tone | Critiques and requests regarding uncertain tone of information disclosed in S-1 filing |
| F7 | Completeness | Critiques and requests regarding lack of necessary or important information required by specific rules (e.g. Regulation S-K), information which is disclosed in other sections in S-1 filings or other document, requests for including additional statement. |
| F8 | General information | Questions, critiques and requests regarding general, unclear or unintelligible information in S-1 filing which often required to clarify by a specific rule, request for clarifying information which is clarified in other sections in S-1 filings or other document, requests for including more clear statement |
| F9 | 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 |
| F10 | Disclosure too outdated or generic | Critiques regarding the degree to which the information disclosed in S-1 filing are outdated and unique/specific to issuer |
| F11 | Relevance | Questions regarding information that conflict with other or methods of matching information in S-1 filing |
| F12 | References | Questions, critiques and requests regarding use, style of references as well as requests for adding references in S-1 filings |
| F13 | Format | Questions, critiques and requests regarding format (design or layout) of financial statements and other disclosure in S-1 filings which is inappropriate or difficult to follow |
| F14 | Unnoticeable disclosure | Questions, critiques and requests regarding visibility of a particular disclosure |
| F15 | Repetitive Disclosures | A comment that management has unnecessarily repeated information or disclosures throughout sections of the filing without providing additional substance |
| F16 | Forward-looking information | Comments or questions about the firm’s disclosure of forward-looking information |
| F17 | Too Detailed | Comments that certain portions of the filing documents, such as the summary sections, contained too much detail or lengthy information |
| G1 | **VII. NO ISSUES** | **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 the S-1 filing** |
|  |  |  |
|  |  |  |
| **PART 2. ACTION REQUIRED** | | |
| **Code** | **Action required** | **Descriptions** |
| 1 | No specific action required | The SEC did not request any action from the issuers regarding revising responding or amending in the S-1 filing, or the SEC just instructed the IPO firm how to respond their comments, or how to prepare the S-1 filings. |
| 2 | Responding only | Requests to confirm, explain, highlight and discuss in more detail with the SEC about unclear information in the S-1 filing or provide the SEC with additional information. No request for amending information on the S-1 filing. This action required is applied for the SEC comment containing "tell us..." or "please confirm our understanding..." |
| 3 | Avoiding hype | Requests to remove overly-positive information or use balancing language in S-1 filings |
| 4 | Revising uncertain information | Requests to avoid using uncertain tone in S-1 filing |
| 5 | Using plain language | Requests to define, simplify or remove the technique/abstract/defined information, or reduce the lengthy information, or generalize too detailed information in S-1 filings |
| 6 | Providing updated information | Requests to update current information in the S-1 filing |
| 7 | Providing specific information | Requests to provide information which is more specific to firm |
| 8 | Providing additional information | Requests to add new information or documents to S-1 filings which was not previously mentioned in the S-1 filing |
| 9 | Providing more detailed information | Requests to provide explanation, evidential information, or specific information to S-1 filings, as well as expand the current information, specify obfuscating information, quantify the qualitative information and highlight unnoticeable information in the S-1 filing. |
| 10 | Reconciling inconsistent information | Requests to reconcile/clarify the conflicting information in the S-1 filing |
| 11 | Revising inaccurate/inappropriate information | Requests to revise, move or eliminate the inappropriate/inaccurate information in the S-1 filing |
| 12 | Highlighting unnoticeable information | Requests to state prominently unnoticeable information |
| 13 | Avoiding selective disclosure | Requests to balance the disclosure of inverse information in S-1 filings |
| 14 | Avoiding repetition | Requests to avoid repetition in S-1 filing |
| 15 | Using appropriate format | Requests to change or correct inappropriate format in S-1 filing |

After constructing the coding scheme of the initial SEC comment letters, I do the coding for each letter. I coded 259 initial comment letters which contain 4873 comments in total. Following that, I transform these coding into suitable variables including the types of issues and the number of comments in each issue mentioned in the initial SEC comment letters. The following table provide the summary of the coding results.

|  |  |  |  |
| --- | --- | --- | --- |
| **PART 1: THEMES** | | | |
| **Code** | **Themes** | **Number of comments** | **%** |
|  | **I. EARNINGS MANAGEMENT ISSUES** | **847** | **16.76** |
|  | **Panel A: Issues on accounting method choice and application** |  |  |
|  | **Balance sheet** |  |  |
| A1 | Current assets | 32 | 0.63 |
| A2 | Non-current assets | 64 | 1.27 |
| A3 | Depreciation and amortization | 5 | 0.10 |
| A4 | Current liabilities | 11 | 0.22 |
| A5 | Non-current liabilities | 15 | 0.30 |
| A6 | Equity | 85 | 1.68 |
|  | **Income statement** |  | 0.00 |
| A7 | Sales | 106 | 2.10 |
| A8 | Other income | 8 | 0.16 |
| A9 | Cost of goods sold | 3 | 0.06 |
| A10 | R&D expense | 4 | 0.08 |
| A11 | Advertising expense | 1 | 0.02 |
| A12 | Compensation expense | 163 | 3.23 |
| A13 | Other expenses | 47 | 0.93 |
| A14 | Extraordinary items and discontinued operation | 5 | 0.10 |
| A15 | Earnings | 28 | 0.55 |
|  | **Cash flow statement** |  | 0.00 |
| A16 | Cash flow from operations | 4 | 0.08 |
| A17 | Cash flow from investing activities | 1 | 0.02 |
| A18 | Cash flow from financing activities | 1 | 0.02 |
| A19 | **Financial items in general** | 60 | 1.19 |
|  | **Panel B: Issues on accounting-related transactions/events** |  |  |
| A20 | Asset acquisitions and dispositions | 53 | 1.05 |
| A21 | Other accounting-related transactions/events | 151 | 2.99 |
|  | **II. OTHER ACCOUNTING ISSUES** | **229** | **4.53** |
| B1 | Pro forma financial information | 119 | 2.36 |
| B2 | Non-GAAP measure | 48 | 0.95 |
| B3 | Audit issues | 9 | 0.18 |
| B4 | Financial Statement Restatement | 8 | 0.16 |
| B5 | Internal controls | 15 | 0.30 |
| B6 | Claims, Commitments and Contingencies | 24 | 0.47 |
| B7 | Off-Balance Sheet Arrangements | 3 | 0.06 |
| B8 | New Accounting Pronouncements | 3 | 0.06 |
|  | **III. OFFERING ISSUES** | **583** | **11.54** |
| C1 | **Characteristics of stocks** | 35 | 0.69 |
| C2 | **Timing of offering** | 1 | 0.02 |
| C3 | **Dividends** | 9 | 0.18 |
| C4 | **Proceed** | 75 | 1.48 |
| C5 | **Actions effecting stock’s value** | 15 | 0.30 |
|  | **Parties of offering** |  |  |
| C6 | Stockholders | 54 | 1.07 |
| C7 | Underwriters | 69 | 1.37 |
| C8 | Other parties (offering) | 11 | 0.22 |
| C9 | **Effect of offering** | 18 | 0.36 |
| C10 | **Offering-related transactions/actions** | 20 | 0.40 |
| C11 | **Risk factors (offering)** | 25 | 0.49 |
| C12 | **Offering-related regulation** | 11 | 0.22 |
| C13 | **Offering fee** | 3 | 0.06 |
| C14 | **Exhibits** | 143 | 2.83 |
| C15 | **Undertakings** | 2 | 0.04 |
| C16 | **Illustration** | 60 | 1.19 |
| C17 | **Offering-related document** | 10 | 0.20 |
| C18 | **Consent letter** | 15 | 0.30 |
| C19 | **Why filing** | 7 | 0.14 |
|  | **IV. BUSINESS ISSUES** | **1562** | **30.91** |
| D1 | Products/Services | 93 | 1.84 |
| D2 | Customers/Market | 102 | 2.02 |
| D3 | Suppliers | 13 | 0.26 |
| D4 | Holding company | 1 | 0.02 |
| D5 | Other parties (business) | 29 | 0.57 |
| D6 | R&D | 102 | 2.02 |
| D7 | Competition | 65 | 1.29 |
| D8 | Industry | 39 | 0.77 |
| D9 | M&A | 26 | 0.51 |
| D10 | Financing activities | 103 | 2.04 |
| D11 | Investment activities | 17 | 0.34 |
| D12 | Operating activities | 52 | 1.03 |
| D13 | Material Agreements | 156 | 3.09 |
| D14 | Intellectual property | 51 | 1.01 |
| D15 | Technology | 19 | 0.38 |
| D16 | Segments | 30 | 0.59 |
| D19 | Risk factors (business) | 248 | 4.91 |
| D20 | Results of operation | 276 | 5.46 |
| D21 | External reports | 63 | 1.25 |
| D22 | Business-related regulation | 12 | 0.24 |
| D23 | Status | 21 | 0.42 |
| D24 | Going concern | 4 | 0.08 |
| D25 | Properties and Facilities | 40 | 0.79 |
|  | **V. CORPORATE GOVERNANCE ISSUES** | **337** | **6.67** |
| E1 | Managers | 64 | 1.27 |
| E2 | Related parties' transactions | 57 | 1.13 |
| E3 | Ownership structure | 42 | 0.83 |
| E4 | Compensation | 154 | 3.05 |
| E5 | Organizational structure | 1 | 0.02 |
| E6 | Anti-Takeover Provisions | 2 | 0.04 |
| E7 | Signatures | 3 | 0.06 |
| E8 | Employee | 14 | 0.28 |
|  | **VI. DISCLOSURE ISSUES** | **1381** | **27.33** |
| F1 | Technical information | 28 | 0.55 |
| F2 | Abstract word | 68 | 1.35 |
| F3 | Defined term/acronym | 24 | 0.47 |
| F4 | Over-positive tone | 25 | 0.49 |
| F5 | Selective disclosure | 52 | 1.03 |
| F6 | Uncertain tone | 2 | 0.04 |
| F7 | Completeness | 480 | 9.50 |
| F8 | General information | 313 | 6.19 |
| F9 | Inaccurate/inappropriate disclosure | 159 | 3.15 |
| F10 | Disclosure too outdated or generic | 103 | 2.04 |
| F11 | Relevance | 50 | 0.99 |
| F12 | References | 14 | 0.28 |
| F13 | Format | 14 | 0.28 |
| F14 | Unnoticeable disclosure | 16 | 0.32 |
| F15 | Repetitive Disclosures | 23 | 0.46 |
| F16 | Forward-looking information | 2 | 0.04 |
| F17 | Too Detailed | 8 | 0.16 |
| G1 | **VII. NO ISSUES** | 114 | 2.26 |
| **Total** | | **5053** | **100.00** |
|  |  |  |  |
| **PART 2. ACTION REQUIRED** | |  |  |
| **Code** | **Action required** | **Number of comments** | **%** |
| 1 | No specific action required | 132 | 2.66 |
| 2 | Responding only | 865 | 17.45 |
| 3 | Avoiding hype | 25 | 0.50 |
| 4 | Revising uncertain information | 5 | 0.10 |
| 5 | Using plain language | 126 | 2.54 |
| 6 | Providing updated information | 88 | 1.78 |
| 7 | Providing specific information | 14 | 0.28 |
| 8 | Providing additional information | 1218 | 24.57 |
| 9 | Providing more detailed information | 1973 | 39.80 |
| 10 | Reconciling inconsistent information | 135 | 2.72 |
| 11 | Revising inaccurate/inappropriate information | 258 | 5.20 |
| 12 | Highlighting unnoticeable information | 15 | 0.30 |
| 13 | Avoiding selective disclosure | 62 | 1.25 |
| 14 | Avoiding repetition | 22 | 0.44 |
| 15 | Using appropriate format | 19 | 0.38 |
| **Total** | | **4957** | **100** |

# **APPENDIX 3**

**Descriptive statistics of SEC review attributes and reviewer's annual salary by reviewer's job position**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Reviewer** |  | **N** |  | **Duration** | |  | **Letters** | |  | **Comments** | |  | **Annual salary** | |
|  |  |  |  | **Mean** | **Median** |  | **Mean** | **Median** |  | **Mean** | **Median** |  | **Mean** | **Median** |
| Assistant Director |  | 512 |  | 123.46 | 92.5 |  | 3.2 | 3 |  | 32.22 | 35 |  | 203,508 | 207,893 |
| Senior Assistant Chief Accountant |  | 4 |  | 190.75 | 201.5 |  | 4 | 4 |  | 55.5 | 57 |  | 208,718 | 208,993 |
| Legal Branch Chief |  | 135 |  | 143.13 | 105 |  | 3.76 | 4 |  | 40.4 | 40 |  | 168,897 | 163,735 |
| Accounting Branch Chief |  | 5 |  | 167.2 | 90 |  | 3.4 | 3 |  | 32.2 | 29 |  | 159,245 | 159,628 |
| *Total of Director/Chief (1)* |  | *656* |  | *128.253* | *97* |  | *3.32* | *3* |  | *34.05* | *36* |  | *196,080* | *199,176* |
| Senior Attorney |  | 4 |  | 159.5 | 170.5 |  | 4.25 | 4.5 |  | 45.5 | 45.5 |  | 147,879 | 146,730 |
| Staff Attorney |  | 3 |  | 64 | 64 |  | 3.33 | 3 |  | 12.67 | 10 |  | 148,349 | 148,028 |
| Special Counsel |  | 22 |  | 136.27 | 85.5 |  | 3.41 | 3 |  | 36.68 | 41.5 |  | 148,845 | 152,474 |
| Attorney Advisor |  | 19 |  | 245.84 | 111 |  | 4.21 | 3 |  | 39.42 | 48 |  | 149,665 | 152,417 |
| Senior Financial Analyst |  | 1 |  | 140 | 140 |  | 1 | 1 |  | 51 | 51 |  | 153,154 | 153,154 |
| Senior Counsel |  | 1 |  | 57 | 57 |  | 2 | 2 |  | 4 | 4 |  | 167,297 | 167,297 |
| *Total of Professionals (2)* |  | *50* |  | *173.92* | *92.5* |  | *3.7* | *3* |  | *36.62* | *39* |  | *149,505* | *152,417* |
| *t test (mean)/* *Wilcoxon rank-sum test (median) of (1) and (2)* |  |  |  | *0.03* | *0.88* |  | *0.17* | *0.91* |  | *0.484* | 0.38 |  | *0* | *0.00* |
| *Total* |  | *706* |  | *131.49* | *97* |  | *3.35* | *3* |  | *34.23* | *36* |  | *192,781* | *193,713* |
| This table presents analysis of difference in each SEC review attribute and annual salary between the reviewers with higher job position, who are Director/Chief and the reviewers with lower job position, who are Professionals. Directors/Chief include Assistant Director, Senior Assistant Chief Accountant, Legal Branch Chief and Accounting Branch Chief. Professionals include Senior Attorney, Staff Attorney, Special Counsel, Attorney Advisor, Senior Financial Analyst, Senior Counsel. r. We perform analyses of differences using two-sample t-tests, and nonparametric Wilcoxon rank-sum tests. Results (p-value) from these tests are presented in the penultimate row in the table | | | | | | | | | | | | | | |

# **APPENDIX 4**

**Descriptive statistics of SEC review attributes and Herfindahl index by industry**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Two-digits SIC code** |  | **N** |  | **Herfindahl index** |  | **Duration** | |  | **Letters** | |  | **Comments** | |
|  |  |  |  |  |  | mean | median |  | mean | median |  | mean | median |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1 |  | 2 |  | 1.00 |  | 171.50 | 171.5 |  | 6.50 | 6.5 |  | 49.00 | 49.00 |
| 2 |  | 1 |  | 1.00 |  | 125.00 | 125 |  | 1.00 | 1 |  | 3.00 | 3.00 |
| 12 |  | 2 |  | 0.99 |  | 67.00 | 67 |  | 2.50 | 2.5 |  | 6.00 | 6.00 |
| 13 |  | 39 |  | 0.06 |  | 114.69 | 104 |  | 2.90 | 3 |  | 31.77 | 37.00 |
| 14 |  | 4 |  | 0.53 |  | 102.25 | 85.5 |  | 2.75 | 2.5 |  | 24.25 | 24.50 |
| 15 |  | 5 |  | 0.41 |  | 112.40 | 61 |  | 3.80 | 4 |  | 15.40 | 7.00 |
| 16 |  | 1 |  | 1.00 |  | 215.00 | 215 |  | 6.00 | 6 |  | 100.00 | 100.00 |
| 17 |  | 1 |  | 1.00 |  | 34.00 | 34 |  | 1.00 | 1 |  | 7.00 | 7.00 |
| 20 |  | 8 |  | 0.32 |  | 108.63 | 96 |  | 3.25 | 2.5 |  | 25.88 | 28.00 |
| 21 |  | 1 |  | 1.00 |  | 187.00 | 187 |  | 3.00 | 3 |  | 5.00 | 5.00 |
| 23 |  | 1 |  | 1.00 |  | 87.00 | 87 |  | 5.00 | 5 |  | 29.00 | 29.00 |
| 24 |  | 3 |  | 0.84 |  | 453.00 | 239 |  | 4.67 | 4 |  | 29.00 | 41.00 |
| 25 |  | 1 |  | 1.00 |  | 280.00 | 280 |  | 4.00 | 4 |  | 88.00 | 88.00 |
| 26 |  | 4 |  | 0.29 |  | 202.25 | 131.5 |  | 4.50 | 4.5 |  | 36.25 | 30.50 |
| 27 |  | 2 |  | 0.60 |  | 93.00 | 93 |  | 3.50 | 3.5 |  | 66.00 | 66.00 |
| 28 |  | 265 |  | 0.10 |  | 94.79 | 53 |  | 2.07 | 2 |  | 14.73 | 3.00 |
| 29 |  | 5 |  | 0.29 |  | 169.60 | 113 |  | 4.00 | 6 |  | 43.80 | 42.00 |
| 30 |  | 6 |  | 0.38 |  | 131.67 | 144.5 |  | 3.50 | 3.5 |  | 38.17 | 41.50 |
| 31 |  | 3 |  | 0.35 |  | 111.67 | 111 |  | 4.67 | 6 |  | 27.67 | 30.00 |
| 32 |  | 2 |  | 0.65 |  | 72.50 | 72.5 |  | 3.00 | 3 |  | 26.50 | 26.50 |
| 33 |  | 7 |  | 0.23 |  | 259.86 | 118 |  | 3.29 | 4 |  | 39.57 | 52.00 |
| 34 |  | 5 |  | 0.23 |  | 134.40 | 103 |  | 4.80 | 5 |  | 62.00 | 60.00 |
| 35 |  | 38 |  | 0.08 |  | 88.89 | 84.5 |  | 2.74 | 3 |  | 29.55 | 36.00 |
| 36 |  | 63 |  | 0.11 |  | 136.57 | 111 |  | 3.24 | 3 |  | 31.35 | 32.00 |
| 37 |  | 10 |  | 0.91 |  | 146.00 | 101 |  | 3.40 | 3.5 |  | 40.60 | 48.00 |
| 38 |  | 64 |  | 0.09 |  | 103.05 | 84.5 |  | 2.67 | 2 |  | 28.50 | 28.00 |
| 39 |  | 6 |  | 0.48 |  | 110.17 | 109 |  | 3.33 | 4 |  | 49.67 | 55.50 |
| 40 |  | 1 |  | 1.00 |  | 76.00 | 76 |  | 2.00 | 2 |  | 43.00 | 43.00 |
| 44 |  | 4 |  | 0.49 |  | 202.50 | 112.5 |  | 1.50 | 1 |  | 21.00 | 20.00 |
| 45 |  | 3 |  | 0.52 |  | 150.33 | 108 |  | 5.00 | 6 |  | 54.33 | 54.00 |
| 47 |  | 3 |  | 0.42 |  | 415.33 | 519 |  | 3.33 | 2 |  | 33.00 | 38.00 |
| 48 |  | 17 |  | 0.19 |  | 162.41 | 109 |  | 3.41 | 3 |  | 39.88 | 46.00 |
| 49 |  | 9 |  | 0.35 |  | 129.44 | 88 |  | 3.00 | 3 |  | 34.00 | 37.00 |
| 50 |  | 14 |  | 0.14 |  | 265.93 | 97.5 |  | 3.64 | 2 |  | 30.36 | 31.00 |
| 51 |  | 6 |  | 0.36 |  | 205.17 | 138 |  | 4.50 | 4.5 |  | 51.67 | 54.00 |
| 52 |  | 2 |  | 0.62 |  | 127.00 | 127 |  | 4.00 | 4 |  | 20.50 | 20.50 |
| 53 |  | 3 |  | 0.85 |  | 68.33 | 84 |  | 3.33 | 3 |  | 36.00 | 40.00 |
| 54 |  | 6 |  | 0.27 |  | 92.17 | 86.5 |  | 2.67 | 3 |  | 34.00 | 36.00 |
| 55 |  | 3 |  | 0.74 |  | 177.00 | 159 |  | 4.00 | 4 |  | 47.00 | 63.00 |
| 56 |  | 7 |  | 0.25 |  | 111.57 | 94 |  | 4.86 | 5 |  | 50.43 | 59.00 |
| 57 |  | 5 |  | 0.29 |  | 155.80 | 160 |  | 4.40 | 5 |  | 32.40 | 40.00 |
| 58 |  | 19 |  | 0.37 |  | 98.05 | 71 |  | 3.21 | 3 |  | 39.00 | 51.00 |
| 59 |  | 12 |  | 0.25 |  | 168.92 | 98.5 |  | 2.83 | 3 |  | 37.50 | 41.50 |
| 70 |  | 4 |  | 0.83 |  | 72.50 | 73.5 |  | 2.50 | 2.5 |  | 29.75 | 19.50 |
| 73 |  | 187 |  | 0.04 |  | 118.79 | 93 |  | 2.65 | 3 |  | 25.59 | 21.00 |
| 75 |  | 1 |  | 1.00 |  | 316.00 | 316 |  | 7.00 | 7 |  | 76.00 | 76.00 |
| 78 |  | 3 |  | 0.71 |  | 181.33 | 186 |  | 4.00 | 4 |  | 55.67 | 55.00 |
| 79 |  | 7 |  | 0.57 |  | 75.43 | 79 |  | 3.43 | 3 |  | 29.71 | 29.00 |
| 80 |  | 22 |  | 0.45 |  | 144.50 | 90.5 |  | 3.41 | 3 |  | 33.14 | 24.50 |
| 82 |  | 5 |  | 0.33 |  | 224.60 | 113 |  | 3.40 | 3 |  | 40.40 | 39.00 |
| 83 |  | 1 |  | 1.00 |  | 92.00 | 92 |  | 3.00 | 3 |  | 1.00 | 1.00 |
| 87 |  | 11 |  | 0.24 |  | 138.18 | 103 |  | 3.00 | 3 |  | 39.82 | 42.00 |
| 99 |  | 5 |  | 0.67 |  | 84.40 | 82 |  | 2.60 | 3 |  | 29.00 | 29.00 |
| Total |  | 909 |  | 0.18 |  | 120.11 | 90 |  | 2.77 | 3 |  | 26.63 | 22 |
| This table presents the descriptive statistics of SEC review attributes and Herfindahl index by 2-digits-SIC-code industry for our full sample of 909 IPOs between 2005 and 2017. SEC review attributes include *Duration, Number of comment letters, Number of comments in initial comment letter.* The SEC characteristics include *Annual Budgets, Job position.* | | | | | | | | | | | | | |

1. The market is considered as ‘hot’ by contrasting the moving average MA(4) of the volume of IPOs in each quarter with the historic average of volume of IPOs in all prior quarters from 1975 (Colaco et al.; 2017) . If this moving average is 50% higher than above the historical average, the market is categorized as hot. [↑](#footnote-ref-2)
2. After the dot-come bubble collapse in 2000, Sarbanes- Oxley and other regulations have introduced which leads to prohibitive compliance costs on emerging growth companies going public regarding money and time wasted (Keating, 2012) [↑](#footnote-ref-3)
3. The market is considered as ‘hot’ by contrasting the moving average MA(4) of the volume of IPOs in each quarter with the historic average of volume of IPOs in all prior quarters from 1975 (Colaco et al.; 2017) . If this moving average is 50% higher than above the historical average, the market is categorized as hot. [↑](#footnote-ref-4)
4. The SEC started publishing the IPO firms’ filings and the SEC comment letters from 12 May, 2005 [↑](#footnote-ref-5)
5. 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. [↑](#footnote-ref-6)
6. See <https://www.federalpay.org/employees/securities-and-exchange-commission> [↑](#footnote-ref-7)
7. I examine 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. I identify a similarity rate of 99.2% with the data collected from Thomson Reuters Eikon. [↑](#footnote-ref-8)
8. The SEC designates form type as “UPLOAD” for SEC-originated letters

   (See <https://www.sec.gov/answers/edgarletters.htm> ) [↑](#footnote-ref-9)
9. In our sample, we have one SEC comment letter not addressing detailed comments due to numerous material relating to compliance with the SEC regulations. [↑](#footnote-ref-10)
10. ,9 The period of 2012-2017 is not included in the measure of these variables to mitigate the impact of JOBs Act [↑](#footnote-ref-11)
11. [↑](#footnote-ref-12)
12. The market is considered as ‘hot’ by contrasting the moving average MA(4) of the volume of IPOs in each quarter with the historic average of volume of IPOs in all prior quarters from 1975 (Colaco et al.; 2017) . If this moving average is 50% higher than above the historical average, the market is categorized as hot. [↑](#footnote-ref-13)
13. My sample do not include Office of Financial Services since I exclude IPO firms operating in financial industries as classified by two-digit SIC codes. [↑](#footnote-ref-14)
14. As for the continuous or discrete variables (including *Size, Sales growth, Leverage, BM, External financing, Firm age, Segments, Zscore, IPOs by industry, Herfindahl index)*, I use median value rather than mean value to discuss the results in order to eliminate statistical noise caused by outliers. As for the binary variable (including *Restructuring, M&A firms, Positive earnings, CEOchairman, JOBs Act, Dodd Frank, Financial crisis, Regulated, Technology, Directors/Chief, Accountant),* I use mean value to discuss the results. [↑](#footnote-ref-15)
15. I follow classification used by Compustat to form small-cap portfolios for U.S stocks. Particularly, the U.S stocks are classified as small-cap companies when they have the market capitalization between $300 million to $2 billion. Investiopia.com (2018) also suggest the same classification of the U.S small-cap stocks [↑](#footnote-ref-16)
16. However, it is also worth noting that univariate regressions reveal negative effects of *External financing* on all three SEC review attributes which support arguments that disclosure quality and reporting compliance are higher when companies previously issued debt or equity securities (Ettredge et al., 2011), hence, the degree of SEC review could be less intense for these firms. [↑](#footnote-ref-17)
17. Nevertheless, it is worth noting that univariate regressions reveal positive effects of *Firm age* on all SEC review attributes, which is consistent with the expectation that Company complexity is higher for the older firm, who may have lower reporting quality and hence attract more SEC scrutiny (Cassell et al., 2013; Heese et al., 2017) [↑](#footnote-ref-18)
18. Univariate regressions reveal negative effects of *Zscore* on *Duration* and *Letters* which is in agreement with expectation that financial-distressed firms are more likely to be noncompliant with GAAP (Dechow et al. 1996; Brazel et al. 2009), hence, the degree of SEC review could be more intense for these firms Hesse et al. (2017). [↑](#footnote-ref-19)
19. Non-parametric univariate analysis reveals negative effect of *Big 4* on *Duration,* which is in line with the argument that larger auditors provide higher quality audits which increase the reporting quality ( DeAngelo, 1981; Becker et al.,1998; Boone et al. , 2010), suggesting a lower degree of the SEC review (Johnston & Petacchi, 2017). [↑](#footnote-ref-20)
20. Parametric univariate analysis reveals positive effect of *Restructuring* on *Letters,* which is consistent with the argument that the firm conducting restructuring activities could have more complexity in the business, suggesting a higher degree of the SEC review (Cassell et al., 2013; Hesse et al., 2017). [↑](#footnote-ref-21)
21. This result is obtained from the examination on the whole sample instead of the sub-sample of EGCs. According to Panel A, Table 7, it could be identified that the EGCs pre and post- JOBs Act are both dominate the sample with the proportion of 87.5% and 85.03%, respectively. Therefore, we could test the impact of JOBs Act by dividing the whole sample, rather than the sub-sample of EGCs, into pre- and post-JOBs Act. [↑](#footnote-ref-22)
22. Univatiye analysis shows positive effects of *Financial crisis* on *Duration, Letters* and *Comments*. This result supports the arguments that more SEC oversight over corporate disclosures exists in the financial crisis 2008 (Blackburne, 2014). This result is also in line with the findings of (Colaco et al., 2018) who observe that IPO firms’ waiting periods, which include SEC review periods, are longer during the period of financial crisis 2008-2009 [↑](#footnote-ref-23)
23. Univariate regression reveals positive effects of *Herfindahl index* on all SEC review attributes. This result is not in line with the arguments that the firms operating in high-concentrated markets could have higher uncertainty due to proprietary costs (Ali et al., 2014), suggesting more SEC scrutiny ( Ertimur & Nondorf, 2006; Chen & Johnston, 2010; Colaco et al., 2018). This finding is also consistent with Colaco et al. (2018) [↑](#footnote-ref-24)