**De-burdening the IPO approval process?**

**SEC reviews under the JOBS Act**

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**Abstract**

This paper examines the extent to which the 2012 JOBS Act relaxed the SEC review and approval process for U.S. Emerging Growth Company (EGC) IPOs. Although the intent of the JOBS Act was to make it easier for companies to go public, whether and to what extent SEC scrutiny waned as a result is unclear. The findings show that the JOBS Act in fact led to a pronounced reduction in IPO durations, the volume of SEC comment letters on S-1 filings, and the number and breadth of comments in initial comment letters. No mechanical link between reduced SEC scrutiny and additional disclosure exemptions for EGC issuers under the Act is identified. Reduction in SEC scrutiny is less pronounced in highly concentrated industries, where the proprietary costs of disclosure are high. Following the JOBS Act, the SEC comment proportionally more on issues directly related to the offering, but less on core accounting issues, general business matters, and potential disclosure deficiencies. Overall, the findings are consistent with the JOBS Act easing the IPO approval process via a substantial reduction in the volume and scope of SEC critiques, particularly in industries where competition, and thus information uncertainty, is lower.

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

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1. **Introduction**

Responding to a decade-long decrease in IPO activity, Title I of the 2012 Jumpstart Our Business Startups (JOBS) Act attempted to facilitate the IPO process for emerging growth companies (EGCs).[[1]](#footnote-2) In particular, the “de-burdening” provisions sought to reduce certain accounting and disclosure requirements in an attempt to make the IPO approval process cheaper and quicker. Before an IPO can be completed, the registration statements and prospectus information must be reviewed and approved by the SEC to ensure the completeness and integrity of the information that investors receive; an intent of the JOBS Act was to speed up this process to encourage more IPOs. This study seeks to quantify the impact of the JOBS Act on the duration of the approval process, as well as the volume and scope of comments issued by the SEC.

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

Currently, little is known of the extent to which the JOBS Act led to de-burdening of the IPO approval process. Agarwal et al. (2017) and Lowry et al. (2020) are the only studies to analyze variations in SEC comment letters in its aftermath. Agarwal et al. (2017) find that after the enactment of the JOBS Act, SEC comment letters are generally more negative in tone, contain more forceful suggestions, and focus more on hard information (e.g., about prices, dates and accounts). Lowry et al. (2020) observe that in the post-JOBS Act era, the SEC appears to reduce the focus on liquidity and executive compensation in their comment letters. However, the literature currently lacks a systematic evaluation of the extent to which the regulatory process has relaxed under the JOBS Act. Understanding the extent to which the JOBS Act (if at all) de-burdened the IPO approval process is important to help evaluate the efficacy of the initiative. This is important not only to regulators but also to investors, auditors and other stakeholders, who use SEC comment letters as one indicator of information quality (Chantziaras et al., 2021; Li & Liu, 2017).

Using a sample of 722 U.S. EGC-scale IPOs between 2005 and 2017, this study shows a substantial decrease in the duration of the IPO approval process under the JOBS Act, as well as significant declines in the typical number of SEC comment letters, and the number and breadth of comments in initial SEC comment letters.[[2]](#footnote-3) Specifically, controlling for other factors, average IPO duration and number of SEC comment letters are found to reduce by as much as 27.65% and 20.60%, respectively, for EGC IPOs. The number of comments (themes) in initial comment letters for EGC IPOs are also observed to reduce by 43.18% (26.46%) following the JOBS Act. Overall, the results document substantial de-burdening of the IPO approval process for EGC IPOs. The concern that reduced SEC scrutiny under JOBS may be mechanically linked to additional disclosure exemptions for EGC issuers under the Act is also removed as the reduction in SEC review extensiveness is identified to be experienced by both smaller reporting company (SRC) and non-SRC IPOs under the Act.

In further tests, extent of reductions in the number of comment letters, comments and themes as a result of JOBS are observed to be less pronounced in more concentrated industries. This suggests the SEC maintain scrutiny in areas where the proprietary costs of disclosure, and therefore information uncertainty, are high. Finally, findings document that under the JOBS Act, SEC comments focus proportionately more on issues directly related to the offering, but proportionately less on core accounting issues, general business issues and potential disclosure deficiencies.

This study makes several contributions to the extant literature on the IPO approval process and the effects of the JOBS Act. First, this study provides evidence that the JOBS Act, despite not reducing IPO costs (Chaplinsky et al., 2017), led to substantial de-burdening of the IPO approval process, particularly through reduced volume and scope of comments issued by the SEC. Although prior studies show the JOBS Act saw a change in focus of SEC reviews and comment letters (Agarwal et al., 2017; Lowry et al., 2020), to the best of our knowledge this is the first study to quantify the impact of JOBS on extent of regulatory scrutiny on IPOs. The findings in this regard yield important policy implications, demonstrating the materialization of the Act’s intended effects of easing the IPO on-ramp. However, findings of such a considerably less burdensome SEC review process under the JOBS Act may raise concerns whether investor are adequately protected after the passage of the Act. Chaplinsky et al. (2017) argue that while the JOBS Act potentially offers benefits to issuers, none of them seem adequate to counterbalance the general increase in the cost of capital under the Act.

Second, this study documents the degree of de-burdening to be moderated by the level of market concentration, suggesting that the SEC retain discretionary scrutiny to ensure sufficient disclosure by firms conducting IPOs in more highly concentrated industries. This is likely due to heightened need for investor protection given information uncertainty generated by proprietary disclosure costs (Ali et al., 2014; Dambra et al., 2015; Robinson et al., 2011). However, while SEC scrutiny remains relatively higher in those industries under the Act, it remains to be seen whether this additional scrutiny is sufficient to compensate for the higher propensity of those firms to take full advantage of the JOBS Act disclosure exemptions. Chaplinsky et al. (2017) report that firms in industries with greater proprietary information costs who opt to disclose less in the IPO prospectus tend to suffer more severe underpricing under JOBS, which does suggest the additional SEC scrutiny we observe is insufficient in itself to compensate.

In addition to the empirical contributions discussed above, this study also makes methodological contributions. The SEC review measures used in this study are based on the original text of SEC comment letters on S-1 filings which were hand-collected from EDGAR. Specifically, we develop and apply a self-constructed coding scheme to thematically classify the contents of each comment letter, and we demonstrate the effective use of the Naïve Bayes algorithm to code SEC comment letters in this context following our coding scheme. The Naïve Bayes algorithmic coding technique has advantages, particularly in increasing the efficiency and consistency of the coding compared with sole reliance on manual classification (Core, 2001). In terms of reliability, the Naïve Bayes algorithm also has advantages over other computerised text analysis techniques (e.g., Latent Dirichlet Allocation) because the Naïve Bayes algorithm relies on a combination of human and computer processing.

The remainder of the paper is structured as follows. Section 2 discusses the institutional background and the develops the hypotheses. Section 3 discusses the methodology and data. The empirical results are presented in Section 4, while Section 5 concludes the paper.

1. **Background and hypotheses**

The SEC review and approval process is an important regulatory hurdle that all firms going public in the U.S. must clear. The SEC reviews each IPO registration statement (Form S-1 or equivalent) to ensure the information content is clear, adequate and appropriate, issuing comment letters to request clarification, justification, or amendments on certain matters where deemed necessary. Following receipt of an SEC comment letter, filing firms issue a response and look to amend their registration statements accordingly. Only when all of the SEC’s concerns are addressed can the review be closed and the registration statements declared ‘effective’, enabling the issuer to complete the IPO. Since May 2005, the formal correspondence between the SEC and the filing firm (i.e., comment and response letters) have been made publicly available.

A number of extant studies examine determinants of SEC reviews of registration statements (e.g. S-1 filings) as well as various other disclosures types, e.g. periodic filings (e.g. 10-K, 20-F, 40-F), current reports (8-K), and proxy statements (DEF-14A). SEC reviews are typically found to be more intense for firms with lower profitability, higher complexity, higher leverage, weaker corporate governance and internal controls, that are audited by non-Big-4 auditors, and are conducting M&A activities (Cassell et al., 2013; Duro et al., 2017; Ettredge et al., 2011; Heese et al., 2017; Robinson et al., 2011). Furthermore, higher information uncertainty is also identified as a factor attracting more SEC scrutiny (Chen & Johnston, 2010), the intensity of SEC oversight particularly increasing during the financial crisis in 2008-2009 (Blackburne, 2014, Pettinicchio, 2020). Baugh et al. (2017) also demonstrate that individual SEC reviewers with a higher job position tend to spend less time reviewing disclosures, and address more issues in their comment letters. They also find that reviewers who are accountants comment on more issues than non-accountants (e.g. general attorneys).

Related to our study, Ertimur and Nondorf (2006) find that when reviewing registration statements prepared by IPO firms, the SEC issue fewer comments when reviewing firms having CFOs with higher managerial expertise, which implies higher reporting quality. They also observe that the SEC issues more comment letters and comments for IPO firms having outside, independent blockholders and with a higher percentage of shares held by the CEO, perhaps since these firms face stronger incentives to engage in earnings management (Dechow et al., 1996). Colaco et al. (2018) provide evidence that higher levels of ex-ante information uncertainty increase the duration of the IPO process, implying a greater level of scrutiny exercised. Examining SEC oversight of earnings management through revenue manipulation, Schuldt and Vega (2018) observe that the SEC is likely to provide more comments on revenue recognition issues on IPO prospectuses exhibiting greater earnings management and hence, lower earnings quality. Massel et al. (2021) observe a link between IPO firms’ revenue and the number of SEC comment letters issued in relation to the S-1 filing, implying that the SEC extensively scrutinises IPO firms' revenue reporting.

* 1. **Impact of the JOBS Act on SEC reviews**

On 5th April 2012, the Jumpstart Our Business Startups (JOBS) Act was signed into law, among other things, requesting the SEC to establish rules on research, capital formation, disclosure, and registration requirements. The primary motivation for the Act was to encourage more companies to conduct IPOs by easing the associated costs, and disclosure and compliance requirements (Forbes, 2013; Gao et al., 2013). The preceding decade saw increased regulation, e.g., via the Sarbanes-Oxley Act, arguably imposing prohibitive compliance costs on firms pursuing IPOs, in terms of time and money (Keating, 2012), dampening the volume of IPOs. Moreover, the global financial crisis of 2008-09 drove a deep decline in IPO activity, which, through the JOBS Act, the U.S. government sought to reverse. The JOBS Act particularly focused on encouraging IPOs by Emerging Growth Companies (EGCs), firms with total annual gross revenues less than $1 billion in the most recent fiscal year.

However, few studies have evaluated the impact of the JOBS Act on SEC reviews; moreover, there is tension in terms of the likely extent of this impact. On the one hand, iron triangle theory (Adams, 1981) and congressional dominance theory (Weingast & Moran, 1983) suggest that a bureaucracy (in this case, the SEC) will strictly carry out regulations authorized by Congress, as Congress maintain control over their budgetary allocation. Dambra et al. (2015) observe an increase in IPO volume in the period immediately following the enactment of JOBS, suggesting successful revitalization of IPO activity due to relaxation of IPO registration requirements. They also document that average IPO duration reduces in the early post-JOBS period, implying lower SEC scrutiny may also play a role, although they do not examine the SEC review process directly. Boeh and Craig (2021) identify that IPO withdrawal rates do not change after the JOBS Act, indicating the greater number of IPO filings materialized into more firms going public under the Act. Examining SEC comment letters directly, Lowry et al. (2020) document a reduction in the number of words relating to liquidity and executive compensation under the JOBS Act, suggesting reduction of scrutiny in those areas. They also find that after the JOBS Act enactment, the final approved prospectuses (424 filings) are more similar to the initial S-1 filings in terms of the number of words, suggesting fewer revisions are made.

Examining SEC reviews of IPO registration statements, Agarwal et al. (2017) observe that SEC comment letters concentrate more on the quantitative content of IPO registration statements and are more negative in tone and more forceful in the recommendations they make after the enactment of the JOBS Act. It is possible, however, that this is explained by the SEC narrowing their focus on only the most pervasive disclosure issues. Kurlat and Veldkamp (2015) also argue that if the production of information is insufficient, investor welfare might be harmed and hence, the SEC, in accordance with their mission, might become more vigilant in their disclosure oversight. It is also worth noting that previous studies (e.g. Agarwal et al., 2017; Dambra et al., 2015) mainly examine changes in the content and style of SEC comment letters rather than changes in the volume and breadth of SEC critiques in the aftermath of the JOBS Act. In this vein, the expectation is that information problems occurring after the enactment of the JOBS Act might increase the extensiveness of SEC reviews.

On the other hand, prior research evidence a reduction in the quality of the informational environment under the Act, which may result in more extensive SEC reviews to protect investors. Barth et al. (2017) examine the effects of the JOBS Act on information uncertainty in the IPO market, while Lowry et al. (2020) investigate its effects on information revelation, information asymmetry around IPOs as well as uncertainty, liquidity, insider sales, and post-IPO performance. In general, these studies find that the Act exacerbated information problems. As the JOBS Act resulted in reduced transparency and exacerbated information problems (Barth et al., 2017, Chaplinsky et al., 2017; Gupta & Israelsen, 2015; Lowry et al., 2020), the SEC may conduct more extensive reviews under the JOBS Act in order to protect investors from potentially inaccurate or misleading disclosures. Indeed, prior studies provide evidence that SEC scrutiny of registration statements is more extensive under conditions of high information uncertainty and low reporting quality (Colaco et al., 2018; Ertimur & Nondorf, 2006; Schuldt & Vega, 2018).

Given the conflicting arguments presented above, we formulate the first hypothesis in null form as follows:

***H1­­­:*** *The**extensiveness of**SEC reviews of IPO registration statements did not change under the JOBS Act.*

* 1. **Sensitivity to proprietary disclosure costs**

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

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

***H2:*** *Any reduction in the extensiveness of SEC reviews following the JOBS Act is less pronounced for IPOs in more highly concentrated industries.*

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

An initial sample of IPOs filed on NYSE, NASDAQ and AMEX between 12th May 2005 and 31st December 2017 is obtained from the Refinitiv Eikon database.[[3]](#footnote-4) Following prior studies (Gounopoulos and Pham, 2017, 2018; Lee, 2011; Li and Liu, 2017; Sletten et al., 2018), on the sample is comprised of IPO firms offering common shares and excludes IPOs with an offering price less than $5 per share, American Depositary Receipts (ADRs) and financial firms, unit issues and simultaneous offerings. Furthermore, for the sake of standardization, IPO firms that do not file S-1 filings are excluded. Accounting data are then obtained from Compustat, and corporate governance data are obtained from Refinitiv Eikon. The final sample consists of 799 IPOs with all necessary data available, of which 722 are classified as EGC IPOs (i.e., have less than $1 billion in revenues in their most recent fiscal year). The sample selection process is detailed in Table 1. For each IPO in the sample, all relevant SEC comment letters are manually identified and collected from the SEC EDGAR database.[[4]](#footnote-5)

**[Table 1 about here]**

* 1. **Coding of SEC comment letters**

As we are interested in examining how the focus of SEC comments change following the JOBS Act, we perform manual content analysis of themes covered in a training sample of comments from initial comment letters,[[5]](#footnote-6) and employ Naïve Bayes machine learning to apply the coding to our full sample. We begin by adapting the coding scheme developed by Ertimur and Nondorf (2006) to reflect seven main themes we find reflected in SEC comments on S-1 filings, namely core accounting; (2) non-core accounting; (3) offering-related; (4) business-related; (5) corporate governance-related; (6) disclosure-related; and (7) other. Each broad theme is then divided into a total of 45 individual headings, as detailed in Appendix B.We then manually code a sub-sample of 4,807 comments from a random sample of 261 comment letters to use as a training dataset for the development of the machine learning algorithm that codes the remaining 16,440 comments. Specifically, we use the Naïve Bayesian algorithm, a commonly-used coding method in the area of text classification (Ryans, 2021). Applying the Naïve Bayesian algorithm, we categorize each comment as relating to one of the 45 individual headings of our coding scheme. Under the Naïve Bayes algorithm, each comment is first converted into a set of words or word phrases (*vector of words or phrases*). The Bayes theorem is then applied to determine the type of comment as that with the highest conditional probability given the words and/or phrases contained in the comment, as follows:

where is notation of issue type i developed from the training dataset (, is vector of words or phrase in “unknown” comment *j* in the remaining dataset (), is notation of issue type categorized for comment *j* in the remaining dataset. An important assumption in Naïve Bayes algorithm, where the adjective “Naïve” comes from, is that the probability of a feature does not affect the probability of other features in a dataset. This assumption makes the calculation of the algorithm simpler and mitigates the “curse of dimensionality” issue (Bellman, 1961). Therefore, it is assumed that the probability of occurrence of each word or phrase is mutually independent.

To validate the effectiveness of the Naïve Bayesian algorithm, we conduct N-fold cross-validation tests with N = 10. According to Li (2010), the N-fold cross-validation test is unbiased toward training data and can discover both underfitting and overfitting. Since the coding scheme includes a wide range of themes (45 individual codes), there is a risk of low coding accuracy (Eskin & Bogosian, 1998; Long et al., 2009). For instance, Long et al. (2009) achieve error rates of 12.4%, 32.9% and 52.3% when employing their Naïve Bayes algorithm with 2, 5 and 10 categories, respectively. Similarly, Li (2010) reports that increasing from 3 to 12 categories reduces the accuracy of his Naïve Bayes algorithm from 82% to 63%. The results, presented in Table 2, reveal accuracy higher than 52% for each of the 7 broad themes. We observe an overall accuracy rate of approximately 65%, which is high given the number of categories in our coding scheme.

**[Table 2 about here]**

* 1. **Key variables**

Four main attributes of the IPO approval process are operationalized in this study, namely; *Duration, #Letters, #Comments,* and *#Themes*. *Duration* is measured by calculating the number of days from the filing date of the initial S-1 tothe date when the IPO becomes effective. This measure represents the length of the SEC review process for each IPO firm.[[6]](#footnote-7) *#Letters* is calculated by counting the number of comment letters that the SEC issues to eachIPO firm during their IPO approval process, as listed on the EDGAR database. *#Comments* is calculated by counting the number of comments in the initial SEC commentletter issued to each IPO firm. If no comment letter is issued by the SEC, #*Comments* is set equal to zero. *#Themes* is calculated by counting the number of different types of issues highlighted in the initialSEC comment letter, in accordance with the thematic coding of the data described in section 4.2. If no comment letter is issued by the SEC, *#Themes* is set equal to zero.

* 1. **Empirical models**

In order to examine the impact of the JOBS Act on each SEC S-1 review attribute, so as to test H1, this study estimates the following model using negative binomial regression:[[7]](#footnote-8)

where denotes each of the main SEC review attributes in turn, namely *, ,* , and; as an indicator variable which is equal to 1 ifthe S-1 filing year is in the post-JOBS Act period (2012 to 2017), and 0 otherwise; *X* is a vector of control variables; and λ represents industry fixed effects.

A broad range of control variables are included following prior literature identifying factors affecting SEC reviews (Cassell et al., 2013; Duro et al., 2017; Heese et al., 2017; Johnston & Petacchi, 2017), including: firm size (*Size*), estimated as the natural logarithm of total assets reported in the latest fiscal year prior to the initial S-1 filing (year t-1); firm age (*Age*),calculated as the number of years since IPO firms’ founding date provided by Jay Ritter’s website toyear t-1; *Segments*, calculated as the number of unique segment industry codes in year t-1, as reported on Compustat; *Restructuring*, an indicator variable equal to 1 if the IPO firm is engaged in restructuring activities (i.e., the firm has non-zero restructuring costs on a pre-tax basis in year t-1), and 0 otherwise; *M&A*, an indicator variable equal to 1 if the IPO firm is engaged in merger and acquisition activities (i.e., the firm has non-zero acquisition or merger costs on a pre-tax basis in year t-1), and 0 otherwise; *Leverage*,the ratio of total liabilities to total equity in year t-1; *Zscore*, as a measure of bankruptcy risk, calculated using the modified Z-score model for private companies developed by Altman (2013); *Positive earnings*,a measure of profitability, constructed as an indicator variable equal to 1 if the firm has net income in year t-1 equal or higher than zero, and 0 otherwise; *Big 4*, an indicator variable equal to 1 if the firm is audited by one of the Big 4 accounting firms, and 0 otherwise; and *CEOchairperson*,an inverse measure of the strength of internal monitoring mechanisms, calculated as an indicator variable equal to 1 if the CEO is also the chair of the board of directors in year t-1, and 0 otherwise.[[8]](#footnote-9)

The control variables also include an indicator variable (*Draft*) equal to 1 if the issuing firm has filed a draft registration statement under the “de-risking” provision of the JOBS Act, and 0 otherwise. Under the JOBS Act, EGCs can submit a draft of their S-1 filings to the SEC for confidential review prior to a public filing; accordingly, the SEC may issue fewer comments on the initial public S-1 filing because their previous comments on the draft were addressed by the issuing firm. A control for the amount of detail included in the S-1 filing (*S1 size*)is also included, measured as the total size (in megabytes) of the S-1 filing in EDGAR (Bonsall et al., 2017). Bonsall et al. (2017) suggest that quantity of information, as a proxy for readability, has an influence on the decision-making of information intermediaries (e.g., the SEC). To control for the potential impacts from temporal variation in IPO volume on SEC reviewer workload, *No. IPOs (decile rank),* calculated as the annual decile rank of the number of IPOs in each two-digit SIC code industry.[[9]](#footnote-10) A control for advisor quality is also included, indicated by the ranking of IPO firms’ underwriters (*Underwriter rank*) obtained from Jay Ritter's rank database.[[10]](#footnote-11) Ertimur and Nondorf (2006) argue that employing a more prestigious underwriter enhances the efficiency of the IPO filing process, while Lee and Masulis (2011) show that reputable underwriters participating can restrain earnings management at IPO. Lowry et al. (2020) also identify that high underwriter rank reduces the length of IPO registration period.

One potential concern is that reduced SEC scrutiny under JOBS may be mechanically linked to additional disclosure exemptions for EGC issuers under the Act. In other words, the SEC may provide fewer comments simply because there less information is disclosed that could be commented upon. To rule out this possibility, an augmented version of main model, as specified by Eq. (3) below, is estimated to contrast the impact of the Act on SEC reviews of EGC issuers that are (not) also eligible for smaller reporting company (SRC) status.

where is an indicator variable equal to 0 for IPOs eligible for SRC status (proceeds below: $25 million if prior to 2008; $75 million from 2008 onwards), and 1 otherwise, and including only EGC IPOs in the regression. All other variables are as defined above. The distinction in SEC scrutiny between SRC and non-SRC eligible EGCs is meaningful because issuers qualifying for SRC status, i.e., those with public float less than $25 million prior to 2008 (under Regulation S-B) or less than $75 million from 2008 (under Regulation S-K), were already afforded the disclosure exemptions prior to the JOBS Act. According to Chaplinsky et al. (2017), the JOBS Act, in effect, extended the threshold for scaled disclosures to the $1 billion revenue EGC threshold. Consequently, if the changes in SEC scrutiny we observe were mechanically driven by the introduction of additional disclosure exemptions under the Act, we expect they will be concentrated among non-SRC eligible EGCs, with little, if any, impact on SRC IPOs. In other words, this would be apparent in a significantly negative estimated coefficient.

As discussed in Section 2.2, heterogeneity is expected in the impact of the JOBS Act depending on the level of industry concentration. Specifically, a less pronounced impact of JOBS on SEC reviews may be expected for IPOs in more concentrated industries where competition, and therefore proprietary cost concerns and hence information uncertainty, are higher. Therefore, we estimate an augmented version of Eq. (2) which includes as an additional explanatory variable the *Herfindahl Index* measure of market concentration, as well as a *Herfindahl Index* x *JOBS Act* interaction, where *Herfindahl Index* is calculated as follows:

where is firm i’s sales in industry j in the year prior to the S-1 filing (year t-1), as defined by two-digit SIC codes, and is the sum of sales for all firms in industry j in the same year (Wang, 2016). The augmented version is as follows.

1. **Results and discussion**
	1. **Descriptive statistics**

Figure 1 presents the distribution of the sample of 722 EGC and 77 non-EGC IPOs over time. After a low of 17 IPO filings during the height of financial crisis in 2008, the volume of IPOs increases dramatically following enactment of the JOBS Act, starting in 2013 and reaching a peak of 110 IPO filings in 2014, suggesting the Act was successful in stimulating IPO activity, at least in the initial post-JOBS period (Dambra et al., 2015). However, from 2015 an apparent reversal of this trend is observed, with the level in 2017 (46 filings) sitting below that of 2011 (56 filings), immediately prior to the enactment of the Act. The proportion of IPOs qualifying for EGC status is consistently high (i.e. between 82-95%) throughout the sample period. This is consistent with the observations of Chaplinsky et al. (2017), who identify that firms qualifying as EGCs account for the vast majority of IPOs.

**[Figure 1 about here]**

Table 3 provides descriptive statistics for the variables employed in the analyses. It is observed in Panel A of Table 3 that the characteristics of SRCs differ to those of non-SRCs in a number of important ways, namely: SRCs tend to be smaller, younger, operate in fewer segments, and have a higher probability of bankruptcy (*Zscore)*. They are also less likely to be audited by Big 4 audit firms and engage in restructuring and M&A activities, they are less likely to be profitable, but more likely to have CEO-chairperson separation. Furthermore, SRCs operate in the industries having higher number of IPOs and are more likely to file draft registration statements.

**[Table 3 about here]**

In Panel B of Table 3, univariate tests of differences in SEC review attributes before and after the Act are presented for EGC firms. Overall, significant and sizable reduction in all four measures are observed following the Act. Specifically, using two-sample t-tests of differences in means, the following are observed: a 58.6% reduction in average *Duration*; a 59.6% reduction in average *#Letters*; an 86.3% reduction in average *#Comments*; and a 66.1% reduction in average *#Themes* in comment letters following the enactment of the JOBS Act. The tests reveal very substantial de-burdening of the IPO approval process in the era since the enactment of the JOBS Act. In addition, Panel B of Table 3 also shows that in post-JOBS Act period, ECG firms tend to be smaller, younger, have greater probability of bankruptcy, provide lengthier S-1 filings and operate in the industries having lower number of IPOs.[[11]](#footnote-12) EGC firms are also more likely to engage in M&A activity and less likely to have profits after the JOBS Act.

* 1. **Baseline multivariate results**

The multivariate analyses commence by examining the impact of the JOBS Act for EGC IPOs, specifically. Table 4 presents results from estimation of Eq. (2) using each of the dependent variables *Duration, #Letters, #Comments and #Themes*. Consistent with the univariate tests in Table 3, and the notion that the JOBS Act led to de-burdening of the IPO approval process for EGC firms, a significantly negative coefficient on *JOBS Act* is observed in each case. Controlling for other factors, the results imply that post-JOBS EGC filers enjoy reduced *Duration, #Letters, #Comments* and *#Themes* by on average 40.88days (27.65%), 0.76 letters (20.60%), 19.02 comments (43.18%) and 1.31 themes (26.46%), respectively, as compared with pre-JOBS levels.[[12]](#footnote-13)

The above findings suggest the JOBS Act was successful in relieving the regulatory burden on EGC issuers, a key intention of the Act that was thought necessary to revitalize the IPO market (Forbes, 2013; Gao et al. 2013). These findings are also in agreement with arguments that the SEC adjust their style in reviewing IPO prospectuses prepared by ECGs after the enactment of the JOBS Act (Agarwal et al., 2017). However, while Agarwal et al. (2017) document that individual comments become more negatively worded, on average, the findings of this study show that they also become less voluminous and narrower in scope. The signs of control variables are generally consistent with prior literature. The SEC appear to place more scrutiny on smaller filers who tend to have lower capacity to deal with reporting compliance issues (SEC, 2006), also younger firms who tend to have lower reporting quality (Cassell et al., 2013, Doyle et al., 2007), more highly levered firms (Duro et al., 2017; Filatotchev, 2019; Ryans, 2015) and firms reporting profits (Baugh et al., 2017; Wang, 2016) which may be a symptom of upwards earnings management (Healy & Palepu, 2001, Teoh et al., 1998). Financially distressed firms who may be less likely to comply with reporting regulation also tend to attract SEC scrutiny (Brazel et al., 2009; Ettredge et al., 2011), as well as firms conducting M&A activities due to greater complexity in corporate structures (Baugh et al., 2017; Cassell et al., 2013; Duro et al., 2017; Heese et al., 2017).

Interestingly, the results also reveal that SEC reviews are less extensive for issuers filing draft registration statements, suggesting that previous comments on the draft have been addressed. The SEC seem to spend more time reviewing IPO firms with shorter S-1 filings, which may be indicative of low transparency. Another interesting finding is that SEC scrutiny becomes less extensive when the number of IPOs in each industry increases or the workload of SEC staff is higher (Köchling et al., 2021). In addition, the SEC appear to spend more time reviewing IPOs with more reputable underwriters. This is consistent with the assumptions of “deep pocket” theory, which suggests that firms with higher litigation risk are more likely to appoint a high-ranking underwriter (Lowry and Shu, 2002).

**[Table 4 about here]**

While significant reductions in all four review attributes are observed for EGCs in the post-JOBS era, it is possible that they are explained by factors other than the enactment of the JOBS Act, per se. In order to draw a more robust link to the JOBS Act, this study contrasts changes in review attributes for EGC IPOs with a control sample of non-EGC IPOs. The JOBS Act focused specifically on de-burdening the IPO approval process for EGCs, therefore this study expects differences to be more pronounced for EGC IPOs. Untabulated test shows significantly negative coefficients on JOBS Act × EGC are observed in the regressions having *#Comments* and *#Themes* as dependent variables, indicating the reduction observed in these attributes is experienced mostly by EGC IPOs. On the other hand, the changes in *Duration* and *#Letters* following the JOBS Act are not significantly different for EGC IPOs than for non-EGC IPOs (the coefficient on JOBS Act *×* EGC is insignificant in models having *Duration* and *#Letters* as dependent variables). However, significantly lower averages *Duration* and *#Letters* are observed for EGC IPOs in the pre-JOBS era. Therefore, the proportional change for EGC IPOs may still be greater than for non-EGC IPOs.

* 1. **Sensitivity to SRC status**

Table 5 presents the results of regressions examining the effects of the JOBS Act on SEC reviews of smaller reporting company (SRC) eligible EGC IPOs compared with non-SRC eligible EGC IPOs. Significantly negative coefficients are observed on JOBS Act, but insignificant coefficients on the JOBS Act *×* non-SRC interaction. This indicates that the reduction in SEC scrutiny observed for EGC-eligible issuers under the Act applies to both SRC and non-SRC eligible EGCs, thus quelling the concern of a mechanical effect of disclosure exemptions since these did not change for SRC under the Act. Interestingly, a significantly negative coefficient on non-SRC is observed in all four columns in Table 5, suggesting relatively greater SEC scrutiny of SRC scale issuers, both before and under JOBS. This is presumably because the SEC consider IPOs of smaller companies to be more speculative investments.

**[Table 5 about here]**

* 1. **The moderating role of industry concentration**

The results of the moderating effect of industry concentration on the impact of JOBS Act on the SEC review attributes are presented in Table 6. In particular, a significantly positive coefficient on *JOBS Act\*Herfindahl Index* is observed in models 2, 3 and 4, suggesting less pronounced reductions in *#Letters, #Comments,* and *#Themes* for IPOs in more concentrated industries. At the maximum *Herfindahl Index* value of 1, the post-JOBS reduction on the log of expected counts for #*Letters, #Comments* and *#Themes* reduces by 0.54 units, 1.35 units and 0.60 units, respectively. In other words, the marginal effects suggest that at the maximum *Herfindahl Index* value of 1, the post-JOBS reduction on *#Letters, #Comments* and *#Themes* is less pronounced on average by 1.38 comment letters, 34.29 comments and 1.95 themes, respectively.[[13]](#footnote-14) On the other hand, changes in *Duration* do not appear to vary with the level of industry concentration (coefficient on *JOBS Act\*Herfindahl Index* is insignificant in model 1).

Overall, the results imply that decreases in the number of SEC comment letters, comments and themes under the JOBS Act are less pronounced in markets with higher concentration, where information uncertainty is expected to be higher, and information quality lower, due to high proprietary costs of disclosure (Ali et al., 2014; Robinson et al., 2011). In these cases, more intensive SEC reviews are likely to be more beneficial in terms of investor protection (Chen & Johnston, 2010; Colaco et al., 2018; Ertimur & Nondorf, 2006).

**[Table 6 about here]**

* 1. **Additional test - Change in focus of SEC reviews**

Further multivariate analyses using negative binomial regression are conducted in order to examine the effects of the JOBS Act on the proportion of comments relating to each theme (%*Core* *accounting issues,* %*Non-core accounting issues, %Offering issues, %Business issues, % Corporate governance issues, %Disclosure issues)*. The data usedin this analysis are derived from the coding of SEC initial comment letters issued to EGC IPOs using Naïve Bayes machine learning. Definitions for these variables are provided in Appendix A. Table 7 shows the effects of the JOBS Act on the proportion of comments in each theme. Results reveal that the estimated coefficient on *JOBS Act* is significantly positive for *%Offering issues,* but significantly negative for *%Core accounting issues,* %*Business issues* and *%Disclosure issues.* This indicates that, after the passing of the JOBS Act, the SEC focus more on offering issues, but less on core accounting issues, business issues and disclosure issues. In particular, in the post-JOBS Act period, the percentage of offering-related comments marginally increases by on average 5.62%, but the proportion of core accounting, business and disclosure-related comments decreased by on average 5.65%, 6.48% and 4.67%, respectively, as compared with pre-JOBS Act period (as per the β1 coefficients in models 3, 1, 4, 6, respectively). No significant differences in the proportion of non-core accounting and corporate governance-related comments are observed.

**[Table 7 about here]**

1. **Conclusion**

This study empirically assesses the extent of de-burdening in the IPO approval process following the enactment of the 2012 JOBS Act, with a particular focus on changes in the duration of the IPO approval process, as well as the volume and nature of comments issued by the SEC following their review of S-1 filings. Findings indicate substantial de-burdening of the IPO approval process following enactment of the JOBS Act. Specifically, initial comment letters include fewer comments, and comments covering a narrower range of themes, in the post-JOBS enactment era. Furthermore, a pronounced reduction in the duration of the approval process and the number of comment letters is observed under the JOBS Act for EGC IPOs. Additionally, findings indicate no mechanical link between reduced SEC scrutiny and additional disclosure exemptions for EGC issuers under the JOBS Act. Further tests reveal that the extent of de-burdening is less pronounced for IPOs in more concentrated industries, where competition and the proprietary costs of disclosure, and therefore information uncertainty, are higher. Overall, post-JOBS comment letters focus proportionally more on matters directly related to the offering, but proportionately less on core accounting issues, general business matters and potential disclosure deficiencies.

The findings offer policy implications. In particular, findings of a significant decline in extensiveness of SEC reviews under the JOBS Act raise a natural concern regarding the current quality of the IPO information environment, and thus whether investors’ interests are sufficiently protected. While JOBS Act deregulation has encouraged firms to go public, this appears to come at a cost to investors’ ability to make informed investment choices; Chaplinsky et al. (2017) observe a considerable increase in the cost of capital under the Act. It is imperative for policymakers to re-consider whether manifest benefits of the JOBS Act deregulation outweigh the costs identified for investors. Findings in this study should help to inform this debate by highlighting the role played by relaxation of SEC reviewer scrutiny.

While this study provides evidence on substantial changes in the nature of SEC S-1 reviews following the JOBS Act, the findings do not, in themselves, speak to the quality of information within IPO registration statements under the Act. Ceteris paribus, more extensive revision requirements by the SEC are likely to increase information quality to an extent, however if the impact of the JOBS Act is to mitigate an *excessive* burden, the benefits in terms of facilitating capital formation may still exceed the costs from reduced information quality. On the other hand, many post-JOBS IPO firms provide offsetting voluntary disclosure to mitigate information problems (Barth et al., 2017), thus the net effect on IPO disclosure quality is ambiguous. This study therefore concludes with a call for further examination of how the de-burdening provisions of the JOBS Act have affected the quality of S-1 disclosures, considering this to be a fruitful and important topic for future research.

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| --- |
| **TABLE 1****Sample selection** |
|  | **Number of IPOs** |
| Initial sample of IPOs on NASDAQ, NYSE or AMEX with first registration statements filed between May 2005 and Dec 2017 | 3,525 |
| *Less: IPOs with offering price less than $5 per share* | (1,202) |
| *Less: Simultaneous offerings and unit offerings* | (56) |
| *Less: American Depository Receipts and other financial firms* | (733) |
| *Less: IPOs that do not offer common shares* | (532) |
| *Less: IPO firms that do not file an S-1* | (93) |
| *Less: IPOs with missing accounting and/or corporate governance data* | (110) |
| *Less: IPO firm has total annual gross revenues that are more than $1 billion in the most recent fiscal year* | (77) |
| Final sample | 722 |
| *Of which: EGC IPOs (pre-JOBS Act period)* | 351 |
| *EGC IPOs (post-JOBS Act period)* | 371 |

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| **TABLE 2****N-fold cross-validation test [N=10]** |
| Group | Number of themes | Number of comments coded | Classifier accuracy |
| 1. Core accounting issues | 8 | 853 | 53.93% |
| 2. Non-core accounting issues | 4 | 205 | 82.44% |
| 3. Offering issues | 6 | 514 | 72.96% |
| 4. Business issues | 10 | 1,532 | 54.90% |
| 5. Corporate governance issues | 5 | 331 | 75.23% |
| 6. Disclosure issues | 11 | 1,431 | 52.20% |
| 7. Other | 1 | 115 | 97.39% |
| Total | 45 | 4,087 | 65.15% |
| This table reports N-fold cross-validation test results (N=10) for Naïve Bayesian machine learning algorithm applied on training data set. In the training data set, comments are manually classified into 45 issues types belonging to one of the seven themes shown in the table. |

**TABLE 3**

**Descriptive statistics**

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| **Panel A. Descriptive statistics for EGC IPOs by SRC and non-SRC status** |
|  |  | **SRC IPOs (N=194)** |   | **Non-SRC IPOs (N=528)** |   | **Difference in mean** |
|   | **Mean** |   | **STD** |   | **p1** |   | **Median** |   | **p99** |   | **Mean** |   | **STD** |   | **p1** |   | **Median** |   | **p99** |   |  |
| Duration |   | 102.98 |   | 100.23 |   | 23 |   | 75 |   | 581 |   | 103.45 |   | 93.24 |   | 25 |   | 88 |   | 504 |   | -0.47 |
| #Letters |   | 2.23 |   | 1.95 |   | 0 |   | 2 |   | 9 |   | 2.68 |   | 1.93 |   | 0 |   | 3 |   | 8 |   | -0.45\*\*\* |
| #Comments |   | 16.14 |   | 23.28 |   | 0 |   | 3 |   | 88 |   | 27.59 |   | 26.12 |   | 0 |   | 27 |   | 88 |   | -11.45\*\*\* |
| #Themes |   | 2.65 |   | 2.37 |   | 0 |   | 2 |   | 7 |   | 3.50 |   | 2.44 |   | 0 |   | 4 |   | 7 |   | -0.85\*\*\* |
| Size | 2.77 |   | 1.53 |   | -1.91 |   | 2.98 |   | 5.83 |   | 4.39 |   | 1.39 |   | 1.06 |   | 4.24 |   | 7.57 |   | -1.62\*\*\* |
| Leverage | -0.50 |   | 5.03 |   | -31.87 |   | -0.21 |   | 7.58 |   | -2.16 |   | 48.01 |   | -40.16 |   | 0.23 |   | 34.68 |   | 1.66 |
| Firm age | 10.75 |   | 10.80 |   | 1 |   | 8 |   | 75 |   | 14.17 |   | 17.69 |   | 1 |   | 9 |   | 108 |   | -3.42\*\* |
| Segments | 1.17 |   | 0.71 |   | 1 |   | 1 |   | 5 |   | 1.32 |   | 0.92 |   | 1 |   | 1 |   | 5 |   | -0.15\*\* |
| Z-score | -44.91 |   | 128.34 |   | -797.47 |   | -12.11 |   | 18.07 |   | -4.76 |   | 18.97 |   | -103.6 |   | 0.42 |   | 17.25 |   | -40.15\*\*\* |
| Big 4 | 0.67 |   | 0.47 |   | 0 |   | 1 |   | 1 |   | 0.86 |   | 0.35 |   | 0 |   | 1 |   | 1 |   | -0.19\*\*\* |
| Restructuring | 0.02 |   | 0.14 |   | 0 |   | 0 |   | 1 |   | 0.08 |   | 0.27 |   | 0 |   | 0 |   | 1 |   | -0.06\*\*\* |
| M&A | 0.04 |   | 0.20 |   | 0 |   | 0 |   | 1 |   | 0.13 |   | 0.33 |   | 0 |   | 0 |   | 1 |   | -0.09\*\*\* |
| Positive earnings | 0.20 |   | 0.40 |   | 0 |   | 0 |   | 1 |   | 0.41 |   | 0.49 |   | 0 |   | 0 |   | 1 |   | -0.21\*\*\* |
| CEO-chairman | 0.13 |   | 0.34 |   | 0 |   | 0 |   | 1 |   | 0.23 |   | 0.42 |   | 0 |   | 0 |   | 1 |   | -0.10\*\*\* |
| Draft | 0.61 |   | 0.49 |   | 0 |   | 1 |   | 1 |   | 0.36 |   | 0.48 |   | 0 |   | 0 |   | 1 |   | 0.25\*\*\* |
| S-1 size | 7.24 |   | 4.79 |   | 1.32 |   | 6.40 |   | 30.87 |   | 6.73 |   | 6.15 |   | 1.37 |   | 5.33 |   | 23.80 |   | 0.51 |
| No. IPOs (decile rank) | 4.91 |   | 1.76 |   | 1 |   | 6 |   | 8 |   | 4.48 |   | 2.23 |   | 1 |   | 5 |   | 9 |   | 0.43\*\* |
| Underwriter rank |   | 4.63 |   | 5.40 |   | -9.00 |   | 7.00 |   | 9.00 |   | 5.05 |   | 6.74 |   | -9.00 |   | 8.00 |   | 9.00 |   | -0.42 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

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| **Panel B. Descriptive statistics for EGC IPOs in pre and post JOBS Act period** |
|  | Pre-JOBS Act period [n=351] |  | Post-JOBS Act period [N=371] | Difference in means |
|  | Mean | STD | 1st | Median | 99th |  | Mean | STD | 1st | Median | 99th |
| Duration | 147.84 | 103.18 | 53 | 111 | 627 |  | 61.20 | 62.40 | 24.00 | 37.00 | 365.00 | -58.6%\*\*\* |
| #Letters | 3.69 | 1.80 | 0.00 | 4.00 | 9.00 |  | 1.49 | 1.39 | 0.00 | 1.00 | 6.00 | -59.6%\*\*\* |
| #Comments | 44.05 | 21.85 | 0.00 | 46.00 | 95.00 |  | 6.03 | 12.17 | 0.00 | 1.00 | 62.00 | -86.3%\*\*\* |
| #Themes | 4.95 | 1.82 | 0.00 | 5.00 | 7.00 |  | 1.68 | 1.82 | 0.00 | 1.00 | 7.00 | -66.1%\*\*\* |
| Size | 4.18 | 1.41 | 0.35 | 4.06 | 7.30 |  | 3.74 | 1.73 | -1.71 | 3.84 | 7.67 | -10.5%\*\*\* |
| Leverage | -3.49 | 58.53 | -56.06 | -0.21 | 26.89 |  | -0.03 | 7.13 | -21.44 | -0.23 | 34.68 | -99.1% |
| Firm age | 15.21 | 20.91 | 0.00 | 9.00 | 129.00 |  | 11.40 | 9.51 | 1.00 | 9.00 | 56.00 | -25.1%\*\*\* |
| Segments | 1.42 | 1.07 | 1.00 | 1.00 | 6.00 |  | 1.15 | 0.59 | 1.00 | 1.00 | 4.00 | -19.0%\*\*\* |
| Z-score | -6.36 | 54.93 | -130.29 | 1.15 | 16.48 |  | -24.25 | 81.92 | -502.27 | -5.94 | 21.40 | -281.3%\*\*\* |
| Big 4 | 0.81 | 0.39 | 0.00 | 1.00 | 1.00 |  | 0.80 | 0.39 | 0.00 | 1.00 | 1.00 | -1.2% |
| Restructuring | 0.07 | 0.26 | 0.00 | 0.00 | 1.00 |  | 0.05 | 0.23 | 0.00 | 0.00 | 1.00 | -28.6% |
| M&A | 0.06 | 0.24 | 0.00 | 0.00 | 1.00 |  | 0.14 | 0.35 | 0.00 | 0.00 | 1.00 | 133.3%\*\*\* |
| Positive earnings | 0.49 | 0.50 | 0.00 | 0.00 | 1.00 |  | 0.23 | 0.42 | 0.00 | 0.00 | 1.00 | -53.1%\*\*\* |
| CEO-chairman | 0.20 | 0.40 | 0.00 | 0.00 | 1.00 |  | 0.21 | 0.41 | 0.00 | 0.00 | 1.00 | 5.0% |
| Draft | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |  | 0.84 | 3.67 | 0.00 | 1.00 | 1.00 | - |
| S-1 size | 4.76 | 3.31 | 1.26 | 3.86 | 19.16 |  | 8.86 | 6.89 | 1.98 | 7.41 | 27.55 | 86.1%\*\*\* |
| No. IPOs (decile rank) | 4.76 | 2.46 | 1.00 | 5.00 | 9.00 |  | 4.43 | 1.74 | 1.00 | 5.00 | 7.00 | -6.9%\*\* |
| Underwriter rank | 5.28 | 6.34 | -9.00 | 8.00 | 9.00 |  | 4.61 | 6.46 | -9.00 | 7.00 | 9.00 | -12.7% |
| This table presents descriptive statistics of our sample of EGC IPOs going public between May 2005 and December 2017. Panel A presents summary descriptive statistics for the variables employed in empirical tests and compares differences in mean values of these variables between samples of 194 SRC IPOs and 528 Non-EGC IPOs. Panel B presents analyses of differences in the variables employed in empirical tests between the pre- and post-JOBS Act period for a sample of 722 EGC IPOs. All variables are defined in Appendix A. Analyses of differences are performed using two-sample t-tests of significant differences in mean values. \*, \*\*, \*\*\* indicate statistical significance at the 10%, 5%, and 1% level, respectively. |

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| **TABLE 4****Regressions of SEC review attributes on the enactment of JOBS Act** |
| Dependent variable: | Duration | #Letters | #Comments | #Themes |
|  | (1) | (2) | (3) | (4) |
| JOBs Act | -0.395\*\*\* | -0.297\*\* | -0.749\*\*\* | -0.399\*\*\* |
|  | (-8.68) | (-2.47) | (-6.70) | (-3.54) |
| LnSize | -0.092\*\* | -0.009 | 0.015 | -0.011 |
|  | (-2.14) | (-0.34) | (0.70) | (-0.68) |
| Leverage | 0.001\*\*\* | 0.001\* | -0.001 | -0.001 |
|  | (2.83) | (1.81) | (-0.80) | (-0.10) |
| Firm age | -0.001 | -0.004\*\* | -0.006\*\*\* | -0.003\*\* |
|  | (-0.64) | (-2.09) | (-2.86) | (-2.44) |
| Segments | -0.026 | -0.007 | 0.060 | 0.012 |
|  | (-0.69) | (-0.27) | (1.36) | (0.88) |
| Z-score | 0.001 | -0.001\*\*\* | -0.002\*\*\* | -0.001\*\*\* |
|  | (1.05) | (-2.73) | (-5.14) | (-7.95) |
| Big 4 | -0.049 | -0.059 | -0.146 | 0.011 |
|  | (-0.71) | (-1.12) | (-1.49) | (0.19) |
| Restructuring | 0.096 | 0.102 | -0.064 | -0.035 |
|  | (0.85) | (1.48) | (-0.34) | (-0.47) |
| M&A | 0.077 | 0.046 | 0.307\*\*\* | 0.228\*\*\* |
|  | (1.39) | (0.70) | (3.05) | (3.35) |
| Positive earnings | 0.287\*\*\* | 0.136\* | 0.260\*\* | 0.070 |
|  | (2.76) | (1.71) | (2.49) | (1.39) |
| CEOchairperson | -0.037 | 0.048 | 0.067 | 0.024 |
|  | (-0.48) | (0.94) | (0.97) | (0.50) |
| Draft | -0.702\*\*\* | -0.788\*\*\* | -2.023\*\*\* | -0.911\*\*\* |
|  | (-14.11) | (-7.46) | (-14.94) | (-9.26) |
| S1 size | -0.001\*\* | -0.001 | -0.001 | -0.001 |
|  | (-1.99) | (-1.03) | (-0.35) | (-0.27) |
| No.IPOs (decile rank) | -0.046\*\* | -0.018 | -0.035 | -0.007 |
|  | (-2.02) | (-0.48) | (-1.03) | (-0.38) |
| Underwriter rank | 0.008\*\*\* | -0.004 | -0.003 | -0.002 |
|  | (4.14) | (-1.30) | (-0.40) | (-0.48) |
|  |  |  |  |  |
| Industry FE | Included | Included | Included | Included |
| N | 722 | 722 | 722 | 722 |
| Pseudo R2 | 0.062 | 0.144 | 0.096 | 0.162 |
| This table presents the results of the multivariate analysis of effect of JOBS Act 2012 on SEC review attributes for the sample of 722 EGC-eligible IPOs between 2005 and 2017. The negative binomial regression method is employed. Dependent variables are SEC review attributes including Duration, #Letters, #Comments and #Themes. Independent variable of interest is JOBS Act. All variables are defined in Appendix A. The regressions include industry fixed effects using two-digit SIC code. Results from Z-statistics are presented in parentheses below coefficient estimates and are based on robust standard errors clustered at the two-digit SIC industry level. \*, \*\*, and \*\*\* denote significance at the 10%, 5%, and 1% levels, respectively, based on a two-tailed test. |

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| **TABLE 5****Regressions of SEC review attributes on JOBS Act by EGC status** |
| Dependent variable: | Duration | #Letters | #Comments | #Themes |
|  | (1) | (2) | (3) | (4) |
| JOBS Act | -0.412\*\*\* | -0.397\*\*\* | -0.831\*\*\* | -0.456\*\*\* |
|  | (-3.46) | (-4.00) | (-6.31) | (-4.89) |
| non-SRC | -0.238\*\* | -0.178\*\*\* | -0.111\*\* | -0.145\*\*\* |
|  | (-1.97) | (-3.59) | (-2.11) | (-3.87) |
| JOBS Act \* non-SRC | -0.042 | 0.114 | 0.101 | 0.045 |
|  | (-0.32) | (0.94) | (1.24) | (0.41) |
|  |  |  |  |  |
| Controls | Included | Included | Included | Included |
| Industry FE | Included | Included | Included | Included |
| N | 722 | 722 | 722 | 722 |
| Pseudo R2 | 0.065 | 0.146 | 0.096 | 0.163 |
| This table presents the results of regressions examining the effects of the JOBS Act on SEC reviews of smaller reporting company (SRC) eligible IPOs compared with non-SRC eligible EGC IPOs using a sample of 722 IPOs between 2005 and 2017. The negative binomial regression method is employed. Dependent variables are SEC review including Duration, #Letters, #Comments and #Themes. Independent variable of interest are JOBS Act, EGC and interaction term between JOBS Act and EGC. All variables are defined in Appendix A. The regressions include industry fixed effects using two-digit SIC code. Results from Z-statistics are presented in parentheses below coefficient estimates and are based on robust standard errors clustered at the two-digit SIC industry level. \*, \*\*, and \*\*\* denote significance at the 10%, 5%, and 1% levels, respectively, based on a two-tailed test. |

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| **TABLE 6****Moderating role of industry concentration** |
| Dependent variable: | Duration | #Letters | #Comments | #Themes |
|  | (1) | (2) | (3) | (4) |
| JOBS Act | -0.307\*\*\* | -0.448\*\*\* | -1.077\*\*\* | -0.561\*\*\* |
|  | (-5.46) | (-3.31) | (-5.23) | (-4.27) |
| Herfindahl index | 0.293 | -0.095 | -0.483\*\* | -0.318\*\* |
|  | (1.02) | (-0.45) | (-2.47) | (-2.46) |
| JOBS Act \* Herfindahl index | -0.180 | 0.536\* | 1.353\* | 0.596\* |
|  | (-0.67) | (1.88) | (1.77) | (1.91) |
| LnSize | -0.093\*\* | -0.019 | 0.003 | -0.005 |
|  | (-2.25) | (-0.97) | (0.10) | (-0.36) |
| Leverage | 0.001 | 0.001\* | 0.001 | 0.001 |
|  | (1.51) | (1.78) | (0.29) | (0.71) |
| Firm age | -0.002 | -0.003\*\* | -0.005\*\*\* | -0.003\*\*\* |
|  | (-1.63) | (-1.96) | (-3.00) | (-2.61) |
| Segments | 0.008 | 0.009 | 0.099\*\* | 0.015 |
|  | (0.25) | (0.31) | (1.97) | (1.09) |
| Z-score | 0.001 | -0.001\*\*\* | -0.001\*\*\* | -0.001\*\*\* |
|  | (0.69) | (-3.49) | (-3.21) | (-9.86) |
| Big 4 | -0.016 | -0.032 | -0.135 | -0.001 |
|  | (-0.23) | (-0.61) | (-1.62) | (-0.03) |
| Restructuring | 0.070 | 0.075 | -0.095 | -0.039 |
|  | (0.59) | (1.19) | (-0.54) | (-0.54) |
| M&A | 0.081 | 0.051 | 0.205\*\* | 0.191\*\*\* |
|  | (1.45) | (1.11) | (2.04) | (2.61) |
| Positive earnings | 0.236\*\* | 0.101 | 0.158 | 0.079 |
|  | (2.49) | (1.54) | (1.56) | (1.52) |
| CEOchairperson | -0.036 | 0.054 | 0.034 | 0.009 |
|  | (-0.53) | (1.09) | (0.47) | (0.19) |
| Draft | -0.659\*\*\* | -0.712\*\*\* | -1.883\*\*\* | -0.842\*\*\* |
|  | (-11.36) | (-5.36) | (-10.03) | (-6.76) |
| S1 size | -0.001\*\* | -0.001 | 0.001 | -0.001 |
|  | (-2.07) | (-0.84) | (0.15) | (-0.90) |
| No.IPOs (decile rank) | 0.010 | -0.032\*\* | -0.076\*\*\* | -0.036\*\*\* |
|  | (0.54) | (-2.28) | (-4.05) | (-3.65) |
| Underwriter rank | 0.008\*\*\* | -0.003 | 0.001 | -0.001 |
|  | (3.69) | (-0.90) | (0.12) | (-0.26) |
|  |  |  |  |  |
| N | 722 | 722 | 722 | 722 |
| Pseudo R2 | 0.054 | 0.127 | 0.084 | 0.145 |
| This table presents the results of the moderating effect of Herfindahl index on the impact of JOBS Act on the SEC review attributes for the sample of 722 EGC-eligible IPOs between 2005 and 2017. The negative binomial regression method is employed. Dependent variables are SEC review attributes including Duration, #Letters, #Comments and #Themes. Independent variables of interest are JOBS Act, Herfindahl Index, and the interaction Herfindahl Index\*JOBS Act. All variables are defined in Appendix A. Results from Z-statistics are presented in parentheses below coefficient estimates and are based on robust standard errors clustered at the two-digit SIC industry level. \*, \*\*, and \*\*\* denote significance at the 10%, 5%, and 1% levels, respectively, based on a two-tailed test. |

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| **TABLE 7****Impact of JOBS Act enactment on focus of SEC comment letters (comment themes)** |
| Dependent variable: | % Core accounting issues | % Non-core accounting issues | % Offering issues | % Business issues | % Corporate governance issues | % Disclosure issues |
|  | (1) | (2) | (3) | (4) | (5) | (6) |
| JOBS Act | -0.323\*\* | 0.480 | 0.840\*\* | -0.209\*\*\* | -0.479 | -0.132\*\* |
|  | (-2.34) | (1.04) | (2.18) | (-2.61) | (-1.15) | (-2.49) |
| LnSize | -0.010 | 0.113 | -0.058 | -0.055 | 0.168 | 0.032 |
|  | (-0.19) | (0.54) | (-0.85) | (-1.11) | (1.29) | (1.41) |
| Leverage | -0.001 | -0.002\*\*\* | 0.001 | 0.001 | 0.004\*\* | 0.001\*\*\* |
|  | (-0.95) | (-2.77) | (0.07) | (1.05) | (2.24) | (3.08) |
| Firm age | -0.004 | -0.001 | 0.006 | -0.003 | 0.004 | 0.003 |
|  | (-0.61) | (-0.24) | (1.32) | (-1.29) | (0.56) | (1.42) |
| Segments | 0.045 | 0.036 | 0.096 | -0.023 | -0.107 | -0.003 |
|  | (0.93) | (0.35) | (1.07) | (-0.81) | (-0.73) | (-0.10) |
| Z-score | 0.001 | 0.001 | -0.001\* | 0.001 | -0.002 | -0.001 |
|  | (1.54) | (0.13) | (-1.74) | (0.73) | (-1.53) | (-0.22) |
| Big 4 | -0.075 | 0.017 | 0.050 | 0.048 | -0.947\*\*\* | -0.031 |
|  | (-0.80) | (0.07) | (0.40) | (0.54) | (-5.00) | (-0.51) |
| Restructuring | -0.407\*\* | -0.544 | -0.203 | -0.125 | -0.595 | 0.300\*\* |
|  | (-2.22) | (-1.05) | (-1.35) | (-0.60) | (-1.27) | (2.12) |
| M&A | 0.041 | -0.250 | 0.206 | 0.317\*\*\* | -0.666 | -0.248\*\*\* |
|  | (0.40) | (-0.66) | (0.49) | (3.84) | (-1.10) | (-3.62) |
| Positive earnings | -0.090 | 0.222 | -0.138 | 0.047 | -0.588\*\* | 0.078\* |
|  | (-0.77) | (0.89) | (-1.36) | (1.03) | (-2.55) | (1.77) |
| CEOchairperson | 0.002 | -0.865\*\* | -0.051 | 0.065 | 0.269 | -0.004 |
|  | (0.02) | (-2.43) | (-0.36) | (0.83) | (0.95) | (-0.06) |
| Draft | 0.466\*\*\* | 0.045 | -0.275 | 0.061 | -0.104 | -0.128\*\* |
|  | (2.67) | (0.05) | (-0.87) | (0.66) | (-0.16) | (-2.37) |
| S1 size | 0.001 | 0.001 | 0.001 | -0.001 | -0.001 | -0.001 |
|  | (0.14) | (0.94) | (1.12) | (-1.51) | (-1.02) | (-0.26) |
| No.IPOs (decile rank) | -0.001 | 0.030 | 0.033 | -0.029 | -0.163 | -0.004 |
|  | (-0.03) | (0.47) | (0.45) | (-1.52) | (-0.86) | (-0.23) |
| Underwriter rank | -0.003 | -0.010 | -0.010\* | 0.002 | 0.027\*\* | 0.004 |
|  | (-0.42) | (-0.84) | (-1.66) | (0.34) | (2.32) | (0.78) |
|  |  |  |  |  |  |  |
| Industry FE | Included | Included | Included | Included | Included | Included |
| N | 546 | 546 | 546 | 546 | 546 | 546 |
| Pseudo R2 | 0.016 | 0.024 | 0.026 | 0.009 | 0.026 | 0.014 |
| This table presents the results of the multivariate analysis of the effect of the 2012 JOBS Act on the percentage of each theme (%Core accounting issues, %Non-core accounting issues, %Offering issues, %Business issues, %Corporate governance issues, %Disclosure issues) mentioned in SEC comment letters issued to EGC-eligible IPOs. The negative binomial regression method is employed. All variables are defined in Appendix A. The regressions include industry fixed effects using two-digit SIC code. Results from Z-statistics are presented in parentheses below coefficient estimates and are based on robust standard errors clustered at the two-digit SIC industry level. \*, \*\*, and \*\*\* denote significance at the 10%, 5%, and 1% levels, respectively, based on a two-tailed test. |

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| **FIGURE 1****Sample distribution by year** |
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**Appendix A. Variable definitions**

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| **Variable** | **Definition** |
| ***Enactment of JOBS Act*** |
| JOBS Act | An indicator variable equal to 1 if the initial S-1 filing is made under the JOBS Act (during the period 2012 to present), and 0 otherwise. (Source: Refinitiv Eikon) |
| EGC | An indicator variable equal to 1 if IPO firm has total annual gross revenues that are less than $1 billion in the most recent fiscal year, and 0 otherwise. (Source: Compustat) |
| Non-SRC | An indicator variable equal to 0 for EGC IPO firms qualifying for smaller reporting company (SRC) status, and 0 otherwise.  |
| ***SEC review attributes*** |
| Duration | The number of days from the filing date of the initial S-1 to the IPO effective date. (Source: Refinitiv Eikon) |
| #Letters | The number of comment letters that the SEC issues for firm i during the IPO review process. (Source: EDGAR) |
| #Comments | The number of comments in the initial SEC comment letter for firm i during the IPO review process. If no SEC comment letters are issued, #*Comments* is set equal to 0. (Source: EDGAR) |
| #Themes | The number of different types of issues identified in the SEC’s initial comment letter for firm i during the IPO review process. Individual themes are identified using the coding scheme and process described in section 4.2. If no SEC comment letters are issued, *#Themes* is set equal to 0. (Source: EDGAR) |
| %Core Accountingissues | The percentage of comments in the initial SEC comment letter relating to core accounting issues. Core accounting issues are defined under Theme I of the coding scheme in Appendix B. (Source: EDGAR) |
| %Non-coreaccounting issues | The percentage of comments in the initial SEC comment letter relating to non-core accounting issues. Non-core accounting issues are defined under Theme II of the coding scheme in Appendix B. (Source: EDGAR) |
| %Offering issues | The percentage of comments in the initial SEC comment letter relating to offering-related issues. Offering-related issues are defined under Theme III of the coding scheme in Appendix B. (Source: EDGAR) |
| %Business issues | The percentage of comments in the initial SEC comment letter relating to business-related issues. Business-related issues are defined under Theme IV of the coding scheme in Appendix B. (Source: EDGAR) |
| %Corporategovernance issues | The percentage of comments in the initial SEC comment letter relating to corporate governance issues. Corporate governance issues are defined under Theme V of the coding scheme in Appendix B. (Source: EDGAR) |
| %Disclosure issues | The percentage of comments in the initial SEC comment letter relating to disclosure issues. Disclosure issues are defined under Theme VI of the coding scheme in Appendix B. (Source: EDGAR) |
| ***Market concentration*** |
| Herfindahl index |  where is firm i’s sales in year t-1 in industry j, as defined by two-digit SIC codes, is the sum of sales in year t-1 for all firms in industry j (Wang, 2016). (Source: Compustat) |
| ***Control variables*** |
| Size | Firm size, the natural logarithm of total assets of firm i in year t-1. (Source: Compustat) |
| Leverage | Leverage ratio of firm i in year t-1, calculated as total liabilities divided by total equity. (Source: Compustat) |
| Firm age | Firm age as at year t-1, calculated as the number of years since firm i’ founding date provided by Jay Ritter’s website .(Source: Jay Ritter’s website) |
| Segments | The number of unique segment industry codes for firm i in year t-1 (Duro et al., 2017). (Source: Compustat) |
| Zscore | Zscore of firm i, equal to 3.25 + 6.56\*[net working capital/total assets] + 3.26\*[retained earnings/total assets] + 6.72\*[earnings before interest and taxes/total assets] + 1.05\*[book value of equity/book value of liabilities] in year t-1 (Altman, 2013). (Source: Compustat). |
| Big 4 | An indicator variable equals to 1 if firm i is audited by one of the big four audit firms (EY, Deloitte, KPMG, PwC) in year t-1, and 0 Otherwise. (Source: Compustat) |
| Restructuring | An indicator variable equal to 1 if firm i has non-zero restructuring cost on a pre-tax basis in year t-1, and 0 otherwise (Cassell et al., 2013; Hesse et al., 2017). (Source: Compustat) |
| M&A | An indicator variable equal to 1 if firm i has non-zero acquisition or merger costs on a pre-tax basis in year t-1, and 0 otherwise (Cassell et al., 2013; Hesse et al., 2017). (Source: Compustat) |
| Positive-earnings | An indicator variable equal to 1 if firm i has earnings before interest and tax in year t-1 equal or higher than zero, and 0 otherwise(Hesse et al., 2017). (Source: Compustat) |
| CEOchairperson | An indicator variable equal to 1 if the CEO of firm i is also the chair of the board of directors in year t-1. (Source: Refinitiv Eikon) |
| Draft | An indicator variable equal to 1 if firm i filing draft registration statement and 0 otherwise. (Source: EDGAR) |
| S1 size | The file size (in megabytes) of the complete initial S-1 filing (Bonsall et al., 2017). (Source: EDGAR) |
| No. IPOs (decile rank) | The number-of-IPOs deciles based on annually sorts of the number of IPOs in each two-digit SIC code industry in year t. (Source: manual) |
| Underwriter rank | The rank of firm i’s underwriter in year t |

**Appendix B. Coding scheme of issue types mentioned in initial SEC comment letters**

|  |  |  |
| --- | --- | --- |
| **Code** | **Issue types** | **Descriptions** |
| **A. Core Accounting Issues** | **Comments regarding issuers’ choice of accounting method, application of accounting method and issues about accounting transactions or actions.** |
| A1 | 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 total assets, current assets (e.g. receivables, inventories, cash or cash equivalents, marketable securities, trading securities), non-current assets (e.g. property, plants and equipment, valuation allowance, deferred tax assets, plan assets, long-term securities), including choice and application of accounting methods of contra account (e.g. depreciation and amortization) |
| A2 | 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 total liabilities, current liabilities (e.g. payables, tax payables, current portion of long-term debt, accrued warranty) and non-current liabilities (e.g. long-term debt, deferred tax liabilities), including choice and application of accounting methods of contra accounts |
| A3 | 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) |
| A4 | Income | Questions, critiques and requests regarding choice of accounting methods (accounting principles, accounting literature) as well as application of accounting methods (estimates, assumptions, timing, classification, calculation, recording) of revenue recognition and other income (e.g. interest income, deemed dividend, reimbursement) |
| A5 | Expense | Questions, critiques and requests regarding choice of accounting methods (accounting principle, accounting literature) as well as application of accounting methods (estimates, assumptions, timing, classification, calculation, recording) of cost of good solds, R&D expense, advertising expense, compensation expense (e.g. valuation of stock option grant) and other expenses (e.g. Selling, general and administration expense, Benefit expense, contribution margin, customer acquisition cost, income tax, provision for income tax), including choice and application of accounting methods of contra-account (e.g. tax benefit) |
| A6 | Earnings | Questions, critiques and requests regarding choice of accounting methods (accounting principles, accounting literature) as well as application of accounting methods (estimates, assumptions, timing, classification, calculation, recording) of earning numbers (e.g. net income, other comprehensive income, EBIT, EBITDA) earning-related ratio (e.g. ROA, EPS), including choice and application of accounting methods of Extraordinary items and discontinued operation |
| A7 | Other financial items | Questions, critiques and requests regarding choice of accounting methods (accounting principles, accounting literature) as well as application of accounting methods (estimates, assumptions, timing, classification, calculation, recording) of aggregated financial items (e.g. working capital, capitalization, securities, cash flows, free cash flows, off-balance sheets items), or more than one financial items coded from A1-A6 (e.g. whole financial statements), or other components of financial statement (e.g. segment reporting, reporting currency, fiscal year-end), including new accounting announcements and auditors report about firms' financial statements. |
| A8 | Accounting-related transactions/events | Questions, critiques and requests regarding asset acquisitions and dispositions (e.g., when and how specific R&D activities or maintenance activities or sales of PPE or shipment of merchandise are conducted as well as when and how specific compensation expenses are paid) and firm’s other accounting-related transactions/actions which are often presented in section of "Note to Financial Statements" in S-1 filings (e.g. related-party (board members, other insiders) transaction, M&A activities, investment activities, acquisitions, leasing activities, off-balance sheet arrangement) , including accounting treatments for subsequent events. |
| **B. Non-core 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 “Core accounting issues".** |
| B1 | Pro forma financial information | Questions, critiques and requests regarding pro forma financial information derived from effects of changes in the firm’s capital structure based on the offering or effects of a merger transaction. Pro forma financial item presents historical balance sheet and income statement information adjusted as if a transaction had occurred in the latest fiscal year or subsequent interim period |
| B2 | Non-GAAP measure | Questions, critiques and requests regarding non-GAAP financial information. Non-GAAP financial measure is a numerical measure of a registrant's historical or future financial performance, financial position, or cash flow that excludes (or includes) amounts, or is subject to adjustments that have the effect of excluding amounts, that are included (or excluded) in the most directly comparable GAAP measure. |
| B3 | Internal controls | Questions about the firm’s internal control systems and the testing, if any, of controls as well as reportable conditions or other irregularity that was identified by management related to the firm’s internal controls |
| B4 | Claims, Commitments and Contingencies | Issues or comments raised about the firm’s accounting for and disclosure of its obligations and long-term commitments, including legal matters Issues or comments raised about the firm’s accounting for and disclosure of its obligations and long-term commitments, including legal matters |
| **C. Offering-related 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 offering | Requests for information about stock characteristics (e.g. type of stocks, number of stocks, stock price and stock value relating to issuers' initial public offering), symbol used to list on stock exchange, timing of offering (e.g. a point of time or duration of the issuer's initial public offering or other offering-related transactions), dividends to pay in the future, actions affecting stocks' value (e.g. conversion of stocks, split of stocks, redemption of stocks, offering fee (e.g. registration fee), offering-related transactions/actions ( e.g. listing, sale, transfer, or other disposition of stocks by the original firm's member to a third party or Exit event), offering-related regulation (e.g. the JOBS Act), reasons why the firm is undergoing an initial public offering as well as why they are filing S-1. |
| C2 | Proceed | Requests for information about amount of proceed from their initial public offering, how issuer raised the proceeds as well as how they will use this proceed. |
| C3 | Parties of offering | Questions and requests regarding principal and selling stockholders (including their identifications, their control indicated by the number/percentage of stocks held, their consents, tax status, rights as and communication with the issuer), underwriters (including their identification, obligation, compensation, underwriting procedures and underwriters' agreements) and other parties, e.g. sponsor, consultant, NASDAQ representative (including their identification, obligation and transactions) |
| C4 | Effect of offering | Critiques and requests regarding effects of the issuer's initial public offering (e.g. dilution effect, costs of being a public company) |
| C5 | Risk factors (offering) | Questions and requests regarding characteristics and impact of risk factors on the issuers' initial public offering as well as their risk management |
| C6 | Offering-related document | Questions, critiques and requests regarding the use, style and content of exhibits, undertakings, consent letters and other offering-related document (e.g. written communication with potential investors, research reports) |
| **D. Business-related issues** | **These items represent SEC's comments relating to issuer's manufacturing, operating, R&D, marketing & selling activities** |
| D1 | Products/Services | Questions and requests regarding definition, number, pricing of firms' products/services, including firms' operating segments (including identification, aggregation or disaggregation of operating segments) |
| D2 | External stakeholders | Request for information about identifications, behaviours, related activities of customers (including current customers, potential customers, website members and market, suppliers (including current and potential suppliers), holding company and other external stockholders (e.g. regulators, supporters, partners, vendors), including business-related (e.g. environmental law, tax rate, legal proceedings), and characteristics or trends of industry (e.g. Key Performance Indicators of industry) |
| D3 | Business activities | Question , critiques and requests regarding the issuers' operating activities (including manufacturing, R&D, distributing, marketing, selling a product or service (e.g. terms of sale, backlog, reimbursement, warranty)), financing activities (including activities of historical/current stockholders, historical/current dividends, credit facility, partnership distribution, market capitalization, indebtedness), investment activities (e.g. investment in stocks and bonds, purchase/sale of fixed assets, capital expenditure), M&A activities, restructuring activities, business plan, and firm’s ability and capacity to continue as a going concern |
| D4 | Competition | Questions, critiques and requests regarding firm's competitive strength |
| D5 | Material Agreements | Question, critiques and requests regarding material contracts/agreements (e.g. lease agreements, debt/credit agreement, debt covenants, contractual obligation) and their terms |
| D6 | Properties and Facilities | Question, critiques and requests regarding firm's operating location, technology infrastructure, intellectual property (including terms of and claims against intellectual property) |
| D7 | Risk factors (business) | Questions and requests regarding characteristics and impact of risk factors on the issuers' business as well as risk management, e.g. self-insurance program |
| D8 | Results of operation | Questions, critiques and requests regarding issuer's results from operations (e.g. liquidity, probability, capital resource, gross margin, key business metrics, segment reporting) which are often presented by the disclosure of amount of accounting item, determinants/trends of the results as well as the firm's plans to achieve the results, including critiques regarding the issuer's business strength |
| D9 | External reports | Question, critiques and requests regarding information from reports prepared by external parties, data cited from these reports as well as the identification of the parties who prepared these reports |
| D10 | Status | Questions, critiques and requests regarding firm's status e.g. limited liability company, Delaware corporation, emerging growth company |
| **E. 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 & obligation (e.g., issues on the firms' status as controlled company), including key performance measure applied to the managers, leadership structure and managers' signatures |
| E2 | Related parties' transactions | Questions and requests regarding transactions of related parties, including anti-takeover provisions that are included in firm’s by-laws |
| E3 | Organizational structure | Questions and requests regarding the issuers' organizational structure and ownership structure (including identifications, control and interest of the owners) |
| E4 | Compensation | Questions, critiques and requests regarding amount of non- or stock-based compensation which was paid as well as the compensation plans for the firm’s executives and employees, metrics that the firm (typically through its board of directors) uses to assess management performance, in order to determine annual bonuses |
| E5 | Employee | Questions, critiques and requests regarding employee-related matters, including salary, labour issues, employment contracts, pension and other employee benefit |
| **F. 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, jargons, defined terms in S-1 filing |
| F2  | Abstract word | Questions, critiques and requests regarding use of abstract words |
| F3 | Tone | Critiques and requests regarding word tone in S-1 filings, e.g. over-positive tone (including hype or overstating information), uncertain tone |
| F4 | Selective disclosure | Critiques and requests selective disclosure S-1 filing, for example, the disclosure focus on upside or 'good' information with lack of discussion of the risk s and downside of their business and operating environment |
| F5 | Completeness | Critiques and requests regarding lack of necessary or important information required by specific rules (e.g. Regulation S-K), request of including information which is disclosed in other sections in S-1 filings or other document, requests for including additional statement. |
| F6 | General information | Questions, critiques and requests regarding general, unclear or unintelligible, unnoticeable information in S-1 filing which are often required to clarify by a specific rule, requests for highlight unnoticeable information or including more clear statement. |
| F7 | Inaccurate/inappropriate disclosure | Questions, critiques and requests regarding (could-be) inaccurate or (could-be) inappropriate disclosures of information (e.g. disclaimer, incorrect grammar) as well as (could-be) inappropriate position of the information in S-1 filing, including images, graphics or artworks used in the S-1 filing |
| F8 | Disclosure too outdated, generic, or too detailed | Critiques regarding the degree to which the information disclosed in S-1 filing are outdated, or not unique/specific to issuer, or too much detail and lengthy |
| F9 | Relevance | Questions regarding information in S-1 filings that conflict with other, unnecessarily repeated information and methods of matching information |
| F10 | References | Questions, critiques and requests regarding use, style of references as well as requests for adding references in S-1 filings |
| F11 | Format | Questions, critiques and requests regarding pictures, graphic and artworks used in S-1 filing as well as format (design or layout) of financial statements and other disclosure in S-1 filings which is inappropriate or difficult to follow |
| **G. Other issues** | **Comments on matters other than those identified above.** |

1. EGC status is afforded to companies having total annual gross revenues less than $1 billion. [↑](#footnote-ref-2)
2. Given formal EGC status was first introduced under the JOBS Act, we classify IPOs pre and post JOBS enactment as EGC if they satisfy the criterion for EGC status under the JOBS Act in order to enable comparison. [↑](#footnote-ref-3)
3. SEC comment letters were only released publicly as of 12th May 2005. [↑](#footnote-ref-4)
4. <https://www.sec.gov/edgar/searchedgar/companysearch.html> [↑](#footnote-ref-5)
5. We restrict our focus to initial comment letters, i.e. the first comment letter issued by the SEC for each IPO. We do so to avoid duplication, as subsequent comment letters tend to involve ongoing discussion of issues identified in the initial letter and/or merely acknowledging the company’s response. [↑](#footnote-ref-6)
6. According to Ertimur and Nondorf (2006), although this period covers not only the SEC review period but also other events (e.g. road shows, execution of underwriting agreement) in the IPO process, it is commonly considered to be a positive function of the extensiveness of SEC reviews. Colaco et al. (2018) suggest that IPO duration indicates multiple layers of oversight from regulators. [↑](#footnote-ref-7)
7. The negative binomial regression method is employed since the dependent variables are discrete, i.e., they are counts of the number of days in the IPO process; comment letters; comments; and themes. According to Rock et al. (2000), it would be statistically problematic if discrete and countable variables are employed as independent variables within conventional OLS regressions. Negative binomial regression outperforms other methods in estimating cross-sectional regression on discrete-count dependent variables. Moreover, the distributions of SEC review attributes display signs of overdispersion since these variables have variances that are greater than their meanvalues, which does not satisfy the assumptions of Poisson regression. The alpha parameters from likelihood tests of overdispersion also demonstrate that negative binomial regressions are more appropriate than Poisson regressions due to overdispersion. [↑](#footnote-ref-8)
8. The results remain consistent if Eq. (2) includes the variable *sales growth*, which equals the percentage change in annual sales of firm i from year t-2 to year t -1. However, due to limited data availability, sales growth is omitted from the model*.* [↑](#footnote-ref-9)
9. As a result of a rise in the volume of IPOs, SEC staff may become too busy to adequately handle/monitor the each individual IPOs. Köchling et al. (2021) identify that high workload results in fewer total comments in subsequent comment letters, and the SEC issue comment letters more quickly during busy periods. This study uses two-digit SIC code industry to group the number-of-IPOs deciles as S-1 filings are assigned to SEC reviewers based on the SIC code industry. [↑](#footnote-ref-10)
10. Data on underwriters is obtained from Refinitiv Eikon. Where data are not available, they are hand collected from S-1 filings. [↑](#footnote-ref-11)
11. Even though the JOBS Act relaxed many reporting requirements of IPO registration statement, S-1 size appears to increase after the Act. We conduct a test on a random sample of 130 firms and observed that the increase in S-1 filings size is derived from the increase in non-textual content (e.g. exhibits, graphic, html). Therefore, a note of caution should be provided when comparing S1 size over time. [↑](#footnote-ref-12)
12. The marginal effects of a negative binomial regression is calculated as described by Hilbe (2011). In negative binomial regressions, the coefficient on an independent variable reflects a unit change in the log of the expected count of the dependent variable when the independent variable changes by one unit. [↑](#footnote-ref-13)
13. Untabulated marginal effects shows the coefficients on *JOBS Act\*Herfindahl index* in model (2), (3) and (4) are 1.38, 34.29 and 1.95, respectively. [↑](#footnote-ref-14)