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Does annual report readability influence the design of SEOs?

Premkanth Puwanenthiren [a], Md Saiful Azam [b], Muhammad Jahangir Ali [c,*], Sivathaasan Nadarajah [d]

[a] Senior Lecturer at the University of Westminster, UK
[b] Lecturer at the RMIT, Australia
[c] Associate Professor at La Trobe University, Australia
[d] Academic Member at Griffith University, Australia

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ABSTRACT

Motivated by the rapid growth in non-quantitative corporate disclosure and seasoned equity offerings (SEOs) in the U.S., we take a fresh look at the decision-making process behind accelerated offerings in SEOs, with a specific emphasis on the readability of annual reports within 10-K filings. In particular, our study explores whether readability of annual reports affects the choice of SEOs methods. Using a hand-collected sample of 3143 instances of seasoned equity issues between 2002 and 2021, we show a significantly positive relation between readability scores and accelerated offerings. These results hold across various robustness tests. We further reveal a negative relationship between abnormal operating performance and long-term stock performance following the announcements of SEOs, demonstrating that: firstly, SEOs provide valuable insights into future earnings; and secondly, these insights have a lasting impact on stock performance. Overall, our evidence strongly highlights the substantial influence of annual report readability on the design of SEOs, emphasizing the critical importance of conveying financial information concisely and effectively to the market.

1. Introduction

Our paper is motivated by the rapid growth of SEOs in comparison to initial public offerings (IPOs) in the U.S., demonstrating the importance of seasoned equity in corporate funding. According to the U.S. Federal Reserve, the total value of SEO issuance in the U.S. increased from a low of $20 billion in 1994 to nearly $140 billion in 2020 (see US Federal Reserve System, 2022). SEOs have increasingly emerged as the primary additional equity financing mechanism among publicly traded firms (Sun et al., 2020). Of the various methods for conducting SEOs, the accelerated method stands out for its ability to quickly secure additional capital for firms. Consequently, while issuers have a range of options for SEOs, accelerated SEOs are gaining popularity in the U.S., constituting more than half of all issuances of SEOs (Bortolotti et al., 2008). Particularly, issuers adopting the accelerated method over other SEO methods must be prepared to offer reduced asymmetric information in exchange for cost savings and a shorter timeframe.

As asymmetric information increases costs for investors (Myers, 1984; Myers & Majluf, 1984), information asymmetry problems affect a firm's financing choices. As per prior research, annual reports serve as a means for companies to provide credible information to prospective investors (Dang et al., 2022). Recent studies in the field of corporate disclosures underscore the key role of annual

* Corresponding author.
E-mail addresses: p.puwanenthiren@westminster.ac.uk (P. Puwanenthiren), mdsaiful.azam@rmit.edu.au (M.S. Azam), m.ali@latrobe.edu.au (M. Jahangir Ali), sivathaasan.nadarajah@griffith.edu.au (S. Nadarajah).

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reports' readability in shaping various economic outcomes associated with textual information, such as cost of equity, cost of debt, credit ratings, earnings persistence, insider profitability, stock liquidity, and stock price crash risk.[1] The readability of annual reports influences users' assimilation of relevant information (Loughran and MacDonald, 2016) and more readable disclosures in annual reports improve the coherence of information presented in these annual reports (Rennekamp, 2012). The inherent nature of readability positions a readable annual report as a valuable tool for issuers to mitigate asymmetry of information and promote transparency. The communication of information in a clear, understandable, and coherent way reduces the time and effort required for users to process information. Consequently, the readability of annual reports contributes significantly to addressing the information asymmetry issues that emerge between firms and outside parties (Lo et al., 2017). Building on these arguments, reducing information asymmetry plays a vital role in enabling these firms to efficiently raise seasoned equities.

Recognising the importance of SEOs' issuance, several studies delve into the selection of SEOs.[2] These studies are especially pertinent in the U.S. during the 1990s given the marked decline of certain methods, such as rights offering (Gao & Ritter, 2010). Simultaneously, the accelerated method quickly emerges as a dominant choice for SEOs (Bortolotti et al., 2008). The method for issuing seasoned equity in the U.S. greatly influences ownership structures. Particularly, rights issues often lead to a more concentrated ownership structure (Kothare, 1997). According to Eckbo and Masulis (1992), the choice of issuance method, whether it is uninsured rights, rights with standby underwriting, or firm commitment underwriting, hinges on factors like information asymmetry, shareholder characteristics, and the direct flotation costs. Wu (2004) documents the impact of information asymmetry on the issuance choice decision between public offerings and private placements, while Pandes (2010) discovers that firms engaged in less information asymmetry tend to opt out of deals instead of firm commitment offerings.

Autore et al. (2011) show that firms with less information asymmetry are inclined to favour accelerated shelf offerings over the book-built shelf offerings. Burton and Power (2003) and Barnes and Walker (2006) both underscore that firms with higher information asymmetry tend to choose private placements. In contrast, Slovin et al. (2000) reveals that the placement approach for SEOs generates significantly positive average abnormal returns during the announcement period, whereas the rights offering method is associated with a significantly negative market reaction. Kim and Song (2020) point out a global trend from rights issue as the preferred approach of SEOs. Consequently, that the accelerated method has gained widespread popularity and is now the primary choice for raising seasoned equity in the U.S., means that issuers accept the trade-off of reduced marketing efforts by investment banks in exchange for lower fees in an accelerated SEO (Gao & Ritter, 2010).

The cost-savings benefits, and expedited issuance process make the accelerated method particularly appealing to issuers. However, it is crucial for issuers to ensure that information processing costs are minimized for underwriters. As a result, issuers must prioritize efforts to reduce information asymmetry and enhance transparency in their annual reports. Since underwriters are compelled to conduct due diligence in the accelerated method, issuers should ensure that their annual reports are easily comprehensible to underwriters. Highly readable annual reports facilitate efficient information assimilation, thereby reducing information asymmetry (Bonsall & Miller, 2017).

Prior research on SEOs explores the concept of information asymmetry as a crucial framework for explaining their outcomes. For instance, media coverage plays a significant role in boosting market responses to SEOs by disseminating information to investors prior to the announcement (Sun et al., 2020). Management guidance, as suggested by Li and Zhuang (2012), has the potential to mitigate information asymmetry during the process of SEOs. Further insights from studies (Bird et al., 2017; Nagar et al., 2019) indicate that company managers possess a distinct advantage in understanding the impact of policy risk on the firm's intrinsic value, highlighting the presence of information asymmetry, a concept initially articulated by Myers and Majluf (1984). Despite the recognition of information asymmetry as a vital factor in SEO decision-making, what remains is a dearth of research that specifically examines the influence of readability. Although some studies have investigated the impact of information asymmetry in the context of SEO methods, for instance Sun et al. (2020) and Shroff et al. (2013), the association between the readability of annual reports and the choice of SEO methods has received limited attention in recent literature. Our study fills this knowledge gap by examining the role of readability in shaping the selection of SEO methods.

The readability of documents, such as annual reports, is anticipated to reduce information asymmetry in issuers' decisions regarding SEOs. Based on this premise, we expect that the choice of SEO method by issuers is linked to the readability of annual reports, and we posit that businesses with highly readable annual reports are more inclined to opt for the accelerated SEO method. To test our prediction, we use a large data set (i.e., 3143 instances of seasoned equity issues after exclusions) of seasoned equity issuance in the U. S. during the period 2002–2021. To capture the readability of annual reports, we use *FILESIZE* (Bonsall et al., 2017) and *BOGINDEX* (Loughran and McDonald, 2016). Using various methods of SEOs (i.e., accelerated offerings, firm commitment, private placements, and rights offerings), we document a significantly positive relationship between annual reports' readability and the adoption of accelerated offerings, while the relationship between readability and other SEOs is either negative (rights offerings) or non-existent (private placements). Our base evidence remains robust across two robustness tests (i.e., alterative measures and endogeneity tests). Overall, our results suggest that issuers raising funds rapidly and cheaply via the accelerated offerings produce more readable annual reports. It demonstrates that readability helps underwriters make faster decisions by reducing information asymmetry and

[1] See, for example, Lawrence (2013), Loughran and McDonald (2016), Bonsall and Miller (2017), Ertugrul et al. (2017), Boubaker et al. (2019), Kim et al. (2019), Rahman and Oliver (2021), and Rjiba et al. (2021).

[2] In the capital market, many studies on SEOs have established associations between activities of SEOs and various aspects such as the management of reported earnings (e.g., Rangan, 1998; Teoh et al., 1998), risk profile of firms (e.g., Carlson et al., 2010; Gibson et al., 2004), institutional ownership and capital investments (Cheung, Evans, & Wright, 2010; Fu, 2010; Demiralp et al., 2011).

making the annual reports more transparent.

Our study offers several contributions to the existing body of literature. Firstly, we show that enhanced readability in corporate disclosures, particularly in their financial statements, exerts a tangible economic impact on the design features of SEOs in the U.S. economy. To the best of our knowledge, we offer the first comprehensive evidence on the association between annual report readability and various methods of SEOs. Secondly, prior literature has extensively explored the impact of annual report readability on corporate outcomes, including cost of debt, stock price crash risk, corporate payout policy, cost of debt (see Chowdhury et al., 2020; Ertugrul et al., 2017; Kim et al., 2019; Rjiba et al., 2021). In our paper, we extend this research by demonstrating how the readability (or lack of) of annual reports influences companies' ability to swiftly raise funds through SEOs. Investment banks or underwriters hold an important role in determining the success of an SEO by undertaking due diligence on issuer's financial health and by instill confidence in investors regarding the quality of offering. Our paper sheds light on the importance of clear and accessible financial disclosure by issuers, as it streamlines the due diligence process conducted by underwriters, ultimately leading to the successful issuance of seasoned equities. Specifically, we provide empirical evidence that a higher level of readability in annual reports has the potential to align with the expectations of underwriters and investors. This, in turn, empowers issuers to efficiently raise funds through the accelerated method of SEOs, outperforming other methods.

Finally, we contribute to the growing body of knowledge about the drivers of SEOs in the literature. Prior research has identified internal certification through corporate governance (Koerniadi et al., 2015), managerial ability (Puwanenthiren et al., 2019), policy uncertainty (Puwanenthiren et al., 2019), and audit quality (Dang et al., 2022) as key factors influencing firms' choices in the context of SEOs. Building on this line of research, we show readability of annual reports as a significant but omitted determinant in the existing literature that can explain differences in the choice of SEOs in the U.S. Overall, our research holds substantial implications for both publicly listed firms and their stakeholders. For instance, with respect to regulatory policies related to 10-K filings, our evidence lends compelling support for market regulators and policymakers, emphasizing the necessity for clear and concise disclosure due to the evident importance of information delivery to the financial markets (Rjiba et al., 2021; Easley & O'Hara, 2004).

The remainder of our paper is structured as follows. Section 2 comprehensively reviews extant research and develops the hypothesis, while Section 3 explains the research method. Section 4 presents the results from both baseline and robustness tests. Finally, Section 5 concludes the paper.

2. Extant literature and hypothesis development

For corporate entities, SEOs are a prevalent means to raise capital from the capital market by issuing more shares (Opare et al., 2020). If there is substantial demand from prospective investors for the firm's shares on the stock exchange, SEOs can occur repeatedly, enabling firms to access capital without the need for an initial public offering (IPO) (Dang et al., 2021). SEOs typically involve raising more capital larger than IPOs (Chan et al., 2021), since the latter often occur only once in a firm's lifecycle. The SEOs process encompasses three primary methods: the accelerated method, the fully marketed method, and rights offers. The fully marketed and rights offer methods typically require a longer timeframe (typically months). However, accelerated offerings can be swiftly executed (as quickly as a couple of days) and the accelerated SEO method has become increasingly prevalent in the U.S. (Bortolotti et al., 2008; Gao & Ritter, 2010). The accelerated method is generally more cost-effective for issuers, and it places a greater emphasis on the provision of reliable and transparent information, thereby reducing information asymmetry.

Prior research documents a link between lower stock prices around the announcement date of SEOs (Easley & O'Hara, 2004) and increased issuance costs associated with SEOs (Altinkiliç & Hansen, 2000; Corwin, 2003; Drucker & Puri, 2005; Liu & Malatesta, 2006; Marquardt & Wiedman, 1998). The issuance of seasoned equity is generally costly due to various factors, including flotation costs, as well as the potential additional costs stemming from issues related to asymmetric information and agency problem (Walker et al., 2016). Nonetheless, the accelerated method enables companies to secure additional capital quickly and at a reduced transaction cost. Underwriting banks, in particular, benefit from time and marketing efficiency with this method (Bortolotti et al., 2008), which is reflected in reduced issuance fees for issuers. However, this offering puts pressure on underwriters (or investment banks) to conduct thorough due diligence investigations on SEO firms within a considerably shorter timeframe. The accelerated method requires underwriters to swiftly assess market demand before determining an offering price (Dang et al., 2021). Consequently, the quality of information provided becomes a pivotal consideration for issuers when deciding which SEO method to adopt for raising additional capital (Dang et al., 2021).

The accelerated method of raising seasoned equity stands out qualitatively from other methods, such as placements and rights offers. This approach offers distinct advantages to issuers, as it expedites the seasoned equity process, while reducing costs compared to alternative SEO methods. As a result, the accelerated method mitigates price risk for issuers. However, it places heightened pressure on investment banks to complete due diligence tasks within a compressed underwriting timeframe. In contrast to other methods, underwriters involved in the accelerated method naturally expect issuers to provide more symmetric and transparent information, enabling due diligence to occur swiftly. For issuers opting for the accelerated SEO method, this implies a commitment to minimizing information asymmetry issues in corporate disclosures. The readability of annual reports plays a crucial role since it offers valuable insights into a company's information environment (Habib & Hasan, 2020). Excellent readability of annual reports' contents is instrumental in helping issuers address information asymmetry concerns.

Drawing on the concept of processing fluency, the readability of annual reports significantly guides how easily users can process the information contained within them (Rennekamp, 2012; Shah & Oppenheimer, 2007). When annual reports are less readable, corporate disclosures contain complex information (Lim et al., 2018). The potential there is to lead to an increase in information asymmetry (Lee, 2012), a decline in earnings quality (Lo et al., 2017), a rise in the cost of capital (Rjiba, 2016; Ertugrul et al., 2017), and a higher risk of

future fraud (Blanco and Dhole, 2017). Further, Rjiba et al. (2021) argue that companies with more complex annual reports are more likely to encounter information asymmetry problems. Lee (2012) provides evidence that less readable 10-Q filings are associated with reduced information efficiency and increased information asymmetry. This, in turn, diminishes users' comprehension of the firm, including underwriters, and can hinder their decision-making process.

The expensive nature of external financing processes often compels companies to engage intermediaries, typically investment banks or underwriting firms, to facilitate the issuance of securities. These investment banking firms play a pivotal role in the SEO process, as they are responsible for marketing and selling the securities on behalf of the issuing firms. Successful completion of the SEO process relies on the investment banks' ability to convince investors of the compelling reasons for the equity issuance (Ritter, 2003). The rapid due diligence conducted by investment banks regarding the financial health of the issuing firm allows them to promptly persuade investors to acquire the seasoned equities, expediting the entire SEO process. The clarity and comprehensibility of financial disclosures significantly assist investment banks in expediting their due diligence, facilitating the swift issuance of seasoned equities.

These financial disclosures contain all the essential information that investors need to assess before participating in the equity issuance. Improved readability of these disclosures simplifies the evaluation of risks and opportunities, piquing investor interest in the SEO process (Ritter, 2003). The readability of annual reports empowers investment banks or underwriters to efficiently scrutinize the financial health of the issuer within tight timelines and instill confidence in investors. The accelerated SEO method is frequently employed by companies to swiftly raise capital. Clear and comprehensive information disclosures are crucial in the accelerated SEO process to enhance investor understanding and positively influence market perception. The final decision regarding the SEO process design lies with the issuing firms, but they should not overlook the importance of the readability of annual reports, particularly when employing the accelerated SEO method.

The role of information production is of significant importance in the SEO process, as Chemmanur et al. (2009) highlight higher institutional investor participation in SEOs when there is favourable information available regarding the issuer's long-term prospects, certified by investment banks or underwriters. Investment banks/underwriters are instrumental in disseminating information to institutional investors during the SEO process (Chemmanur et al., 2020). The quality of an annual report produced by issuing firms is substantially improved by its readability attributes. Enhanced readability enables investment banks to efficiently process the information contained in the annual report. Investors, who are clients of the investment banks, incorporate the bank's aggregated insights into their own assessments of the issuer, shaping their decisions to participate in the SEO process (Chan et al., 2018). The marketing efforts of investment banks facilitate the sharing of information about issuers with investors, and the credibility of this shared information plays a pivotal role in the SEO process.

Companies with more readable annual reports typically have better-quality information disclosure procedures in place (De Franco et al., 2015). The Securities and Exchange Commission (SEC) encourages firms to use plain language in their disclosures (Nguyen & Kimura, 2020), and such readability leads to a reduction in information asymmetry among investors. As noted recently in Chen et al. (2023) and Xu et al. (2022), complexity related to poor readability in annual reports increases information asymmetry between firm management and investors. In line with these findings, we propose that the criteria for annual report readability suggest that firms aiming to issue seasoned equity through an accelerated method should submit reports with easily comprehensible language and clear narrative disclosures to reduce information asymmetry.

The Securities and Exchange Commission (SEC) announcements alleviate information asymmetry by conveying positive news to the market, which is expected to have a favourable impact on share prices (Kim et al., 2015). When annual reports are more readable in the context of accelerated SEOs, investors are more inclined to purchase shares, expediting the accelerated process and benefiting both the underwriter and issuer. Readable annual reports also enable underwriters to swiftly validate the issuer's disclosures, thus reducing information asymmetry between investors and issuers. This enhances the reputation of underwriters, as they can conduct due diligence rapidly before offering the issue to investors. The readability of annual reports serves the interests of both investors (through underwriters) and issuers when raising seasoned equities quickly using accelerated SEOs. In contrast, other SEO methods (e.g., rights offering) do not heavily rely on swift underwriter certification, making issuers less likely to prioritize the readability of disclosures. Given that the readability of annual reports strongly supports the reduction of information asymmetry and facilitates investment banks/underwriters in conducting due diligence on issuing firms quickly, we hypothesize that firms with highly readable annual reports are more inclined to opt for the accelerated SEO method. Subsequently, our posited hypothesis is as follows:

H1. Firms with more readable annual reports favour the accelerated SEO method.

3. Research method

3.1. Data and sample

Our dataset encompasses publicly traded U.S. firms that raise SEOs from 2002 to 2021. To source data on SEOs (i.e., accelerated offerings (ACC), firm commitment offerings (FC), private placements (PP), and rights offerings (RO)), we use the Thomson One Banker (SDC module) database. For data related to stock returns, market returns, and daily bid-ask prices, we rely on the CRSP database.[3] For

[3] Our data retrieval process focusses on a length of time period between one-year before the announcement date and one-year after announcement date. For market capitalization, we look at one month prior to announcement date.

Table 1
Summary of sample selection and data filtering.

Panel A: Sample Derivation	
Reason for Sample Exclusion	No. of offerings
Initial Sample before exclusion	27,764
Exclusions	
-Without offering techniques details	10,289
-Without shelf offering details	4395
-Without Readability Measures	885
-Duplicate offering	3183
-American Depositary Share (ADS)	78
-Warrants	189
-Convertible bonds	1384
-Preference shares	457
-Trust units	623
-Units	782
-Without Firm codes/announcement details	828
-Without Total assets and Market value	885
-Without Return Series Data for one year	643
-Without Offering Proceeds Data in SDC	654
Total Exclusions	17,998
Final Sample	3143

accounting measures and Big-4 audit firms, we consider Compustat and Audit Analytic, respectively.[4] As well, we employ 13 F and I/B/E/S databases for institutional ownership and financial analyst coverage, respectively.[5]

To drive our final sample, we initially start with 27,764 SEOs and then, exclude 10,289 deals due to a lack of offering technique aspects in the SDC module. Next, we remove various events, including those with shelf offering information, events lacking readability measures, and duplicate issuances, among others. Finally, we eliminate equity offerings in the absence of total assets or market value immediately preceding the SEO announcement. Our final sample consists of 3143 SEO events as a result of these sampling criteria.

In Table 1, we document a list of the exclusions, including the total number of exclusions used in forming our end sample (Panel A) and a sample distribution of SEOs by year and industry (Panel B). Over the sample period, accelerated SEOs consistently exhibit growth. There is a drop in 2008, attributed to the Global Financial Crisis (GFC) but the number of accelerated SEOs begins to rise again after 2009. For industry-wide distribution, the majority of SEOs originate from the retail and manufacturing sectors, accounting for 941 and 828 observations, respectively. Conversely, rights offerings and private placements are more prevalent in the transport and manufacturing industries. Overall, our sample exhibits a relatively evenly distribution.

3.2. Controls

Following previous research such as Puwanenthiren et al. (2019), we include controls that could affect the SEOs issuance decision.[6] First, we use the natural logarithm of the inflation-adjusted total assets to mitigate the impact of inflation and address extreme values immediately before the announcement date (*INSIZE*). Second, we use the ratio of total debt to total assets to consider leverage (*LEV*). Third, we measure the book value of assets over the market value of assets to represent the book-to-market ratio (*BM*). Fourth, we add bid-ask spread as the average proportionate bid-ask spread value throughout one-year period before the announcement (*LIQUID*). Fifth, we include *IDYRISK*, i.e., the standard error of daily returns over the one-year period prior to the announcement date (from day t-260 to day t-2). Sixth, we use *AGE)*, measured as the number of years since a firm's inclusion in Compustat. Seventh, we use intuitional ownership which highlights the proportion of total shares held by an institutional investor (*IO*).[7] Eighth, to assess the proceeds from the offering with reference to total assets, we use *OPTA*. We include a shelf offering (*DSHELF*) as the ninth control variable to assess if the offering falls under a shelf offering. Tenth, we consider *ANALYST* as the highest number of analysts making earnings forecasts. Eleventh, we include *BIG4*, taking the value of one (zero) for businesses audited by one of the Big-4 auditing companies. Additionally, we include *ACCRUAL*, representing the total value of accruals on the balance sheet immediately before the announcement.

3.3. Descriptive statistics

Table 2 presents a comparison of mean and median values for various firm attributes across different types of SEOs, providing

[4] Balance sheet date just before the SEO announcement date is used to ascertain the status of a Big-4 audit firm.
[5] 13 F database stands for Thomson Reuters Institutional Holdings, while I/B/E/S stands for Brokers' Estimate System.
[6] The definitions of variables are documented in Appendix A.
[7] Following Karpavicius and Suchard (2018), we set *IO* at zero if any firm is not owned by any institution.

Table 2
Seasoned equity offerings and sample firm characteristics. This table reports the descriptive statistics for our sample. The Appendix provides detailed descriptions of the variables.

Characteristics		ACC	FC	PP	RO	KW test
FILESIZ	Mean	4754.97	3991.84	1271.98	915.90	
	Median	1015.58	695.39	474.73	356.46	174.76***
BOGINDX	Mean	87.21	75.03	68.35	51.68	
	Median	86.48	66.09	55.50	37.21	131.48***
SIZE ($m)	Mean	7414.18	12,618.97	842.38	1330.49	
	Median	1848.86	746.51	143.39	285.39	123.84***
LEV (%)	Mean	40.54	25.62	12.79	27.29	
	Median	32.22	18.60	5.54	18.03	87.64***
BM	Mean	0.62	0.57	0.66	0.77	
	Median	0.62	0.54	0.57	0.80	37.93***
LIQUID	Mean	0.60	1.22	3.31	4.38	
	Median	0.29	0.43	2.26	2.63	154.39***
IDYRISK	Mean	0.02	0.03	0.04	0.05	
	Median	0.01	0.02	0.03	0.04	284.63***
AGE	Mean	13.91	10.06	8.41	6.96	
	Median	9.06	7.56	5.70	4.88	12.65***
IO (%)	Mean	38.70	27.21	14.46	11.94	
	Median	28.97	21.50	2.50	5.54	20.74***
OP ($m)	Mean	215.45	227.87	16.58	75.49	
	Median	127.96	97.59	10.16	14.33	193.62***
OPTA (%)	Mean	20.96	32.59	14.34	11.50	
	Median	8.63	14.85	9.91	9.91	48.43***
ANALYST	Mean	7.54	5.62	3.50	4.92	
	Median	5.25	4.33	1.75	3.50	54.89***
BIG4	Mean	0.82	0.68	0.34	0.51	
	Median	0.88	0.87	0.00	0.88	64.93***
ACCRUAL	Mean	0.07	0.08	0.15	0.26	
	Median	0.04	0.04	0.08	0.06	32.95***
Panel B: SEO offering Characteristics						
	File Size			Bog Index		
	HREAD	*LREAD*	*T-Test*	*HREAD*	*LREAD*	*T-Test*
OPTA (%)	26.674	14.187	12.65***	28.584	15.434	13.49***
DISCOUNT	0.128	0.176	9.75***	0.137	0.185	6.45***
CAR -1 to 1 (%)	−0.755	−1.342	5.83***	−0.776	−1.373	7.42***
ACC	0.363	0.118	17.59***	0.387	0.126	18.63***
FC	0.298	0.183	15.37***	0.319	0.248	13.46***
PP	0.162	0.275	14.81***	0.153	0.297	17.30***
RO	0.139	0.323	19.74***	0.142	0.348	20.74***

valuable insights.[8] Notably, older, large firms with better leverage, lower risk, improved liquidity, greater analyst following, Big-4 auditors, and higher institutional ownership tend to prefer accelerated offerings over private placement and rights offerings in SEOs. Conversely, firms with lower market capitalization, weaker leverage, higher risk, lower liquidity, employing the services of non-Big-4 auditing firms, and lower institutional ownership are more inclined to opt for private placements and rights offerings to secure external capital. To reinforce the comparison of firm features, we conduct a non-parametric test, revealing statistically significant differences in medians across all firm attributes among the four groups of SEOs ($p < 0.01$). Overall, our sample statistics suggest that firms utilizing accelerated SEOs are likely to address information asymmetry in their annual reports. This not only enhances underwriters' confidence in financial data, statements, and disclosures but also improves the readability of corporate information in annual reports, ultimately expediting the SEO process.[9] In conclusion, our evidence supports preference of firms for accelerated SEOs, especially when their financial position is excellent.[10]

Panel B shows the SEO offering characteristics comparison across between High readability (*HREAD*) and Low readability (*LREAD*). As reported in Panel A of Table 2.

[8] To categorize types of SEOs, we assign values of zero, one, two, and three to represent commitment offerings (FC), accelerated offerings (ACC), private placements (PP), and rights offerings (RO), respectively.

[9] We use an event study framework to test cumulative abnormal returns (CAR) during the announcement period (−1 to +1 days). Abnormal returns are estimated us the market model, utilizing a 260-days estimation period preceding the announcement day, extending to 61 days before the announcement day.

[10] These firms are recognized for their stronger governance and monitoring mechanisms, along with reputable external certification procedures (i.e., audited by Big-4).

Table 3
The effect of Readability on the SEO issuance choice decision.

	File size (FILSIZ)			BOG Index (BOGINDEX)		
	ACC	PP	RO	ACC	PP	RO
READ	0.7881	−0.0974	−0.2653	0.1984	−0.1111	−0.2587
	(4.78)***	(-1.32)	(-1.41)	(3.86)***	(-2.58)**	(-1.88)*
INSIZE	0.4188	−0.5608	−0.4338	0.4177	−0.5043	−0.4623
	(3.06)***	(-3.94)***	(-2.69)**	(2.98)***	(-2.52)**	(-4.42)***
BIG4	1.0845	−0.4069	−0.1104	0.8509	−0.3199	−0.1103
	(9.18)***	(-5.90)***	(-1.58)	(6.74)***	(-4.34)***	(-1.76)*
LEV	−1.1619	1.3028	1.4982	−1.1437	1.2918	1.3481
	(-5.84)***	(7.90)***	(8.43)***	(-4.58)***	(5.56)***	(6.34)***
IO	0.1542	−0.1339	−0.1589	0.1863	−0.1623	−0.1492
	(4.80)***	(-3.93)***	(-4.73)***	(4.68)***	(-4.54)***	(-5.96)***
lnBM	−0.0456	0.5109	0.4975	−0.0695	0.5517	0.5893
	(-0.56)	(2.04)**	(2.74)***	(-0.78)	(3.02)***	(3.92)***
lnAGE	0.1826	−0.3714	−0.1232	0.1911	−0.3225	−0.1174
	(2.42)**	(-2.86)***	(-1.62)	(2.82)***	(-2.54)**	(-1.58)
LIQUID	−0.0639	0.0227	0.0284	−0.0741	0.0133	0.0218
	(-4.04)***	(0.38)	(2.32)***	(-4.26)***	(0.42)	(2.32)**
OPTA	0.0229	−0.0613	−0.0375	0.0256	−0.0636	−0.0472
	(0.86)	(-5.52)***	(-6.29)***	(0.52)	(-6.00)***	(-7.02)***
IDYRISK	−1.6836	1.3678	0.9816	−1.6011	1.4133	1.0517
	(-3.64)***	(2.08)**	(1.15)	(-2.40)**	(3.94)***	(1.86)*
DSHELF	1.3450	−0.1921	−0.5602	1.3021	−0.2797	−0.4815
	(3.74)***	(-1.22)	(-1.62)	(3.19)***	(-1.26)	(-1.57)
lnACCRUAL	0.2094	−0.1754	−0.1476	−0.1005	−0.1876	−0.1229
	(1.08)	(-1.82)*	(-1.59)	(-0.58)	(-2.22)**	(-1.27)
lnANALYST	0.0428	−0.0477	−0.0131	0.0245	−0.0602	−0.0134
	(2.94)***	(-3.98)***	(-0.69)	(2.74)***	(-4.34)***	(-0.67)
Constant	−5.9012	7.4556	1.9880	−6.3383	7.9390	1.6269
	(-4.76)***	(6.42)***	(3.35)***	(-6.72)***	(8.46)***	(1.79)*
Fixed effects	YI			YI		
Pseudo R2	0.4754			0.4829		
Obs	3143			3143		

This table reports the results of a multinomial logistic regression of the SEO issuance decisions regressed on readability measures. Included here is the range of control variables, namely year and industry effects. The dependent variable *SEOMETH* is a dummy variable which takes the value of zero for firm commitment (base), one for accelerated offerings, two for private placement, and three for rights offerings. All continuous variables are winsorized at the 1% and 99% levels. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. The t statistics are reported in parentheses.

4. Empirical results

4.1. Readability and SEO decisions

To explore whether the readability of annual reports will favour an accelerated SEO over other methods of SEOs, we run multinominal logistic regression model as in Equation (1):

$$SEOMETH_{it} = \beta_1 + \beta_2 READ_{it-1} + \gamma CONTROLS_{it-1} \quad (1)$$

The dependent variable of interest, denoted as *SEOMETH*, takes a value of one for accelerated offerings (*ACC*), two for private placements (*PP*), and three for rights offerings (*RO*). The independent variable of interest, $READ_{it-1}$, is measured separately using *FILESIZE* (Loughran and McDonald, 2016) and *BOGINDEX* (Bonsall et al., 2017). Controls include *INSIZE, LEV, lnBM, LIQUID, IDYRISK, DHELF, lnAGE, IO, OPTA, lnANALYST, BIG4,* and *lnACCRUAL*. We classify industries based on two-digit SIC codes and include them across all specifications with year fixed effects. The *t*-statistics in parentheses are based on robust standard errors clustered by firm. All measures of independent and controls are lagged by one year (year *t*-1).

Table 3 reports the regression results of various types of SEOs. Specifically, we regress *ACC* (Columns 1 and 4), *PP* (Columns 2 and 5), and *RO* (Columns 3 and 6) on *READ* (captured by *FILESIZE* and *BOGINDEX*), along with controls and fixed effects. The coefficient on *READ* is significantly positive at the 1% level (Columns 1 and 5) for accelerated offerings (*ACC*) and significantly negative at the 10% level (Column 6) for rights offerings (*RO*). However, for private placements (*PP*), our measure of *FILESIZE* shows insignificantly negative (Column 2), while *BOGINDEX* suggests a statistically significant relationship at the 5% level (Column 5). Controls generally agree with previous research such as studies by Puwanenthiren et al. (2019) and Puwanenthiren et al. (2021). For instance, larger

Table 4
Robustness tests.

Panel A: Additional Control Variables						
	File size (FILSIZ)			BOG Index (BOGINDEX)		
	ACC	PP	RO	ACC	PP	RO
READ	0.7093	−0.0863	−0.2396	0.1745	−0.0981	−0.1966
	(4.32)***	(-1.01)	(-1.20)	(3.74)***	(-2.26)***	(-1.74)***
STATE_EDUCATION	0.0003	−0.0009	−0.0005	0.0002	−0.0005	−0.0004
	(3.85)***	(-2.76)***	(-4.60)***	(1.63)	(-6.23)***	(-3.21)***
STATE_INCOME	0.0005	−0.0001	−0.0008	0.0005	−0.0004	−0.0002
	(4.70)***	(-2.19)**	(-5.63)***	(2.73)***	(-5.57)***	(-2.54)**
COUNTY_EDUCATION	0.0001	−0.0001	−0.0006	0.0002	−0.0007	−0.0000
	(1.83)*	(-1.88)*	(-3.01)***	(1.47)	(-5.31)***	(-1.43)
COUNTY_INCOME	0.0000	−0.0005	−0.0004	0.0002	−0.0004	−0.0000
	(0.21)	(-3.60)***	(-2.84)***	(1.83)*	(-4.28)***	(-0.96)
Constant	−4.4131	5.6349	1.5028	−4.7959	6.0094	1.2369
	(-3.56)***	(4.89)***	(2.56)**	(-5.08)***	(6.36)***	(1.35)
Fixed effects	YI			YI		
Pseudo R2	0.4864			0.4973		
Obs	2874			2874		
Panel B: Firm Fixed Effects						
	File size (FILSIZ)			*BOG Index (BOGINDEX)*		
READ	0.5904	−0.0733	−0.2057	0.1499	−0.0899	−0.1958
	(3.68)***	(-0.92)	(-1.06)	(2.96)***	(-1.98)	(-1.48)
Fixed effects	FY			FY		
Pseudo R2	0.6734			0.6934		
Obs	3011			3011		

This table reports various robustness checks. In Panel A, we report the results when estimating regressions with additional controls. In Panel B, we report results when estimating regressions using Firm Fixed effects. The dependent variable *SEOMETH* is a dummy variable which takes the value of zero for firm commitment (base), one for accelerated offerings, two for private placement, and three for rights offerings. All continuous variables are winsorized at the 1% and 99% levels. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. The t statistics are reported in parentheses.

companies audited by Big-4 firms and those with higher institutional ownership are more likely to opt for accelerated offerings (*ACC*), while showing less inclination toward private placement (*PP*) and rights offerings (*RO*). Furthermore, accelerated offerings (*ACC*) are less common among highly leveraged firms relative to other SEO options (i.e., *PP* and *RO*).[11]

In summary, the relationship between readability and SEO decisions remains robust across different specifications. Firms with highly readable annual reports are more likely to choose accelerated offerings (*ACC*) but less inclined to consider rights offerings (*RO*). On the other hand, the relationship between readability and private placements (*PP*) appears mixed, suggesting that readability may not significantly have any impact on decisions of private placements (*PP*). Overall, our baseline evidence provides strong empirical support for H1.

4.2. Robustness tests

4.2.1. Additional controls and firm-fixed effects

To check the robustness of our findings, we perform various tests. First, we add four further controls at the state- and county-levels, i.e., *STATE_EDUCATION, STATE_INCOME, COUNTY_EDUCATION,* and *COUNTY_INCOME*. As shown in Panel A of Table 4, the coefficient on *READ* is significantly positive at the 1% level for accelerated offerings (*ACC*), ensuring robustness of our initial evidence. Second, we repeat our baseline analysis using firm-fixed effects (FFE). The results in Panel B of Table 4, comparable to previous evidence, continue to show a significantly positive association between *READ* and accelerated offerings (*ACC*), confirming that time-invariant unobservable firm characteristics do not drive our findings.

4.2.2. Alternative measures

To assess the robustness of our findings, we consider alternative measures of readability and SEOs. First, we replace our initial readability measures (*FILESIZE* and *BOGINDEX*) with the total number of words (*TNWORDS*) and sentences (*TNSENT*) in 10-K filings, as well as management tone (*MGTTONE*). As shown in Table 5, our results demonstrate a significant and positive coefficient on *READ* at the 1% level concerning accelerated offerings (ACC) and strengthens our argument. Second, we redefine our dependent variable of interest, *SEOMETH*, by assigning a value of one to accelerated offerings (*ACC*) and zero to all other SEO methods (i.e., *PP* and *RO*). In Table 6, we observe a significantly positive coefficient on *READ* at the 1% level, suggesting that firms with high readability are more

[11] Alternatively, smaller firms audited by non-Big-4 and subjected to less institutional ownership are more likely to use other offerings (e.g., *RO*) because the information environment in such firms is less transparent.

Table 5
Robustness check with alternative independent variable.

	Total number of words in 10-K filing (*TNWORDS*)			Total number of sentences in 10-K filing (*TNSENT*)			Management Tone		
	ACC	PP	RO	ACC	PP	RO	ACC	PP	RO
READ	0.6241	−0.0722	−0.2109	0.6448	−0.0846	−0.2026	0.6856	−0.0727	−0.2384
	(4.16)***	(-0.98)	(-1.17)	(4.42)***	(-1.64)	(-1.49)	(4.52)***	(-1.02)	(-1.22)
INSIZE	0.3664	−0.4292	−0.3426	0.3632	−0.3792	−0.3723	0.4062	−0.4721	−0.3713
	(2.66)**	(-2.96)***	(-2.13)**	(2.60)**	(-1.88)*	(-3.62)***	(2.95)***	(-3.22)***	(-2.38)**
BIG4	0.9546	−0.3028	−0.0817	0.7416	−0.2904	−0.0875	0.9940	−0.3324	−0.0897
	(8.04)**	(-4.46)**	(-1.26)	(5.80)***	(-3.68)**	(-1.35)	(8.89)***	(-4.86)***	(-1.30)
LEV	−1.0286	0.9638	1.1867	−0.9168	0.9674	1.0634	−1.1228	1.0585	1.3052
	(-5.12)***	(5.78)***	(6.60)***	(-3.02)***	(4.09)***	(5.01)***	(-5.64)***	(6.35)***	(7.25)***
IO	0.1356	−0.0906	−0.1239	0.1658	−0.1264	−0.1185	0.1429	−0.0979	−0.1303
	(3.59)***	(-2.98)***	(-3.27)***	(4.60)***	(-3.42)***	(-4.72)***	(3.92)***	(-3.28)***	(-3.59)***
lnBM	−0.0432	0.3792	0.3931	−0.0602	0.4916	0.4643	−0.0443	0.4115	0.4376
	(-0.56)	(1.49)	(2.15)**	(-0.64)	(2.22)**	(2.76)***	(-0.61)	(1.64)	(2.38)**
lnAGE	0.1604	−0.2764	−0.1028	0.1654	−0.2388	−0.0919	0.1761	−0.3045	−0.11286
	(2.14)**	(-2.19)**	(-1.32)	(2.48)**	(-1.90)*	(-1.26)	(2.39)**	(-2.45)**	(-1.42)
LIQUID	−0.0602	0.0126	0.0294	−0.0634	0.0176	0.0271	−0.0609	0.0133	0.0378
	(-3.08)***	(0.27)	(1.89)*	(-3.72)***	(0.36)	(1.87)*	(-3.36)***	(0.24)	(2.08)**
OPTA	0.0192	−0.0462	−0.0232	0.01866	−0.0474	−0.0305	0.0279	−0.0572	−0.0257
	(0.74)	(-4.33)***	(-4.96)***	(0.54)	(-4.58)***	(-5.66)***	(0.83)	(-4.71)***	(-5.47)***
IDYRISK	−1.4832	1.0178	0.7704	−1.4022	1.0536	0.8304	−1.6237	1.1142	0.8405
	(-3.27)***	(2.19)**	(1.27)	(-2.76)***	(2.68)***	(1.55)	(-3.56)***	(2.43)**	(1.31)
DSHELF	1.1988	−0.0764	−0.4518	1.1462	−0.2084	−0.3836	1.3136	−0.0888	−0.4962
	(2.95)***	(-0.96)	(-1.33)	(2.76)***	(-0.92)	(-1.23)	(3.24)***	(-1.06)	(-1.48)
lnACCRUAL	0.1701	−0.1320	−0.1542	−0.0914	−0.1308	−0.1156	0.1849	−0.1442	−0.1629
	(0.82)	(-1.82)*	(-1.20)	(-0.42)	(-1.66)	(-1.12)	(0.96)	(-1.94)*	(-1.35)
lnANALYST	0.0324	−0.0324	−0.0112	0.0214	−0.0449	−0.0106	0.0371	−0.0357	−0.0123
	(2.52)**	(-2.94)***	(-0.57)	(2.36)**	(-3.08)***	(-0.42)	(2.73)***	(-3.26)***	(-0.69)
Constant	−5.2748	5.5524	1.5312	−5.5265	5.9184	1.3114	−5.799	6.0589	1.6871
	(-4.22)***	(4.86)***	(2.62)**	(-5.91)***	(6.34)***	(1.46)	(-4.65)***	(5.37)***	(2.84)***
Fixed effects	YI			YI			YI		
Pseudo R2	0.3684			0.3697			0.3704		
Obs	2684			2684			2684		

This table reports the results of a multinomial logistic regression of the SEO issuance decisions regressed on alternative proxies for readability measures. and a range of control variables, including year, and industry effects. The dependent variable *SEOMETH* is a dummy variable which takes the value of zero for firm commitment (base), one for accelerated offerings, two for private placement, and three for rights offerings. All continuous variables are winsorized at the 1% and 99% levels. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. The t statistics are reported in parentheses. The Appendix provides detailed descriptions of the variables.

inclined to opt for accelerated SEO offerings over non-accelerated alternatives. These additional findings strongly support our H1.

4.2.3. Propensity score matching approach

When considering a firm's decision to choose one SEO strategy over another, one crucial factor is the likelihood of securing the necessary funds. This influence on the issuer's decision-making process opens the way to potential self-selection issues in the choice of SEO method. Thus, establishing causality in this context becomes a more challenging.

To address potential selection bias (if any), we use a propensity score matching approach (PSM), a useful tool for controlling both endogeneity and ex-ante observable characteristics (Dehejia and Wahba, 2002). This method classifies firms as having high or low readability (*READ*) based on the two-digit SIC industry median value of *READ* by year, assigning Treatment (Control) based on higher or lower than the median value of *READ*. To ensure a robust selection of control group, we estimate propensity scores using our baseline controls and match on year, two-digit SIC codes, and closest propensity scores, with a maximum distance of 1% with replacement. Panel A of Table 7 confirms a close match of all variables with no significant differences. In Panel B of Table 7, we observe a qualitatively similar effect of readability on SEOs based on matched samples. Overall, our PSM analysis reinforces our baseline evidence, indicating that firms with highly readable annual reports are more likely to opt for accelerated offerings (*ACC*) (see Table 8).

4.2.4. Additional tests

In Panels A–B of Table 8 we find that readability of annual reports (measured by *FILESIZE* and *BOGINDEX*) is negatively associated with SEO under-pricing and cost of equity. Implied in these findings is that underpriced SEOs are characterized by poorer readability, while superior readability in annual report reduces a firms' cost of equity capital of SEO firms. These results suggest that firms with lower readability in their 10-K reports tend to incur higher costs when raising external capital and experience greater under-pricing during SEO offerings. This observation aligns with the findings of previous research, as exemplified by the works of Cooper et al. (2010) and Cremers and Yan (2016). In summary, our study provides compelling evidence of an inverse correlation between readability and the expenses associated with equity funding for SEO firms, as well as under-pricing.

Table 6
Robustness check with alternative dependent variable.

Variables	File Size (*FILSIZ*)	Bog Index (*BOGINDEX*)
READ	0.7647	0.7921
	(5.32)***	(5.88)***
INSIZE	0.4533	0.4578
	(3.24)***	(3.31)***
BIG4	0.1026	0.1326
	(9.96)***	(10.08)***
LEV	−0.1864	−0.2167
	(-6.38)**	(-6.49)***
IO	0.1677	0.1683
	(4.38)***	(4.44)***
lnBM	−0.0599	−0.0547
	(-0.66)	(-0.63)
lnAGE	0.1913	0.1986
	(2.61)***	(2.69)***
LIQUID	−0.0779	−0.0754
	(-4.41)***	(-4.27)***
OPTA	0.0225	0.0236
	(0.90)	(0.98)
IDYRISK	−1.825	−1.8351
	(-3.91)***	(-3.96)***
DSHELF	1.4619	1.4743
	(3.64)***	(3.69)***
lnACCRUAL	−0.2202	−0.2221
	(-1.08)	(-1.12)
lnANALYST	0.0465	0.0484
	(3.18)***	(3.24)***
Constant	−6.3858	−6.4383
	(-5.17)***	(-5.24)***
Fixed effects	YI	Y1
Pseudo R^2	0.3467	0.3698
Obs	3143	3143

This table reports the results of a multinomial logistic regression of the SEO issuance decisions regressed on readability measures. Included here is a range of control variables, namely year and industry effects. The dependent variable is the dummy variable (DUMi,t) and it takes the value of one for accelerated offerings, and all other methods take a value of zero. All continuous variables are winsorized at the 1% and 99% levels. ***, **, and * denote statistical significance the 1%, 5%, and 10% levels, respectively. The t statistics are reported in parentheses. The Appendix provides detailed descriptions of the variables.

4.2.5. Long-term abnormal returns

This subsection delves into the long-term stock performance, measured by Buy-and-Hold Abnormal Returns (*BHARs*), and employs bootstrap statistics to assess its significance. First, using the reference portfolio frameworks of Daniel et al. (1997) and Lyon et al. (1999), we observe that *BHARs* are significantly negative during the post-announcement period of SEOs (see Panel A of Table 9). Second, based on the readability of firms (High versus Low), we find significantly more negative *BHARs* over the one-year and two-year periods, for firms with low readability in the post-announcement period of SEOs, at the 1% level (see Panels B–C of Table 9). Alternatively, SEO firms with high readability exhibit significantly less negative *BHARs* for one-year and two-year post-announcement periods of SEOs, at the 5% level. The results align with our H1, indicating that in the post-announcement periods of SEOs, firms with low readability tend to underperform compared to those with high readability concerning long-term stock performance. Overall, the stock performance observed over the post-SEO period conveys valuable information about readability and lends support to our prediction.

5. Conclusion

This study examines the role of readability in shaping the design of SEOs, shedding light on how users make their decisions. Using a comprehensive hand-collected sample of seasoned equity issues for the period 2002–2021, we find a significantly positive relationship between the readability of annual reports and accelerated offerings, whereas the association between readability and other SEOs is either negative or non-existent. Our results are robust across alternative measures and endogeneity tests. Furthermore, our results suggest that when choosing the accelerated method for SEOs, underwriters place a premium on the readability of annual reports. Consequently, firms opting for seasoned equity offerings through the accelerated route tend to publish highly readable annual reports. We reveal that there is a negative relationship between abnormal operating performance and the long-term stock performance following the announcements of SEOs.

The implications of our study extend to how managers and market regulators may benefit. Managers can utilize these findings to enhance policies and practices, especially in cases where improved annual report readability is essential. This can streamline resource

Table 7
Propensity score matching (PSM).

Panel A: Mean differences			
Variables	Treatment	Control	*t-test*
SIZE	5.91	5.98	0.97
BIG4	0.82	0.84	1.47
LEV	17.68	17.83	0.93
lnBM	3.66	3.72	0.67
lnAGE	12.09	11.64	1.29
LIQUID	0.48	0.37	1.13
OPTA	18.29	16.97	1.42
IDYRISK	0.03	0.02	1.27
ACCRUAL	0.06	0.07	1.41
ANALYST	7.96	7.37	1.06
Panel B: Propensity score matching			
		File Size (*FILESIZ*)	BOG Index (*BOGINDEX*)
READ		0.4925	0.4991
		(2.75)***	(3.22)***
Constant		−3.3473	−3.4752
		(-2.82)***	(-3.35)***
Firm-level controls		Yes	Yes
Fixed effects		YI	YI
Pseudo R^2		0.2598	0.2615
Obs		874	874

This table presents the results for whether firms subject to high firm readability would have higher accelerated offering decision using propensity score matching. We use the yearly two-digit SIC industry median value of the readability by year and classify firms with high (low) readability as those higher (or lower) than median readability. Firms subject to high firm readability function as the treatment group, whilst firms with low firm readability constitute the control group. Panel A compares the mean differences in the covariates of treatment firms with those of the control firms. We then estimate the probability of being assigned to the treatment or control group using a logit regression with all explanatory variables and fixed effects as specified in our baseline regression. We use the propensity scores from this logit estimation and perform the matching using the nearest neighbour matching. We run this procedure with replacement, allowing each treated firm to be matched with multiple controls. Panel B reports the logit regression results. The dependent variable is a dummy variable taking a value of one for accelerated offerings, and zero for non-accelerated offerings. The construction of the related variables is detailed in the Appendix. The symbols ***, ** and * indicate significance at the 1%, 5% and 10% levels, respectively.

Table 8
The impact of Readability on SEO under pricing and Cost of equity capital.

Panel A - The impact of Readability on SEO under-pricing		
	File size	*BOG Index*
READ	−0.0114	−0.0187
	(-2.89)***	(-4.56)***
Constant	4.8764	5.7437
	(5.83)***	(6.48)***
Firm-level controls	Yes	Yes
Fixed effects	YI	YI
Adj R2	0.2175	0.2236
Obs	3143	3143
Panel B - The impact of Readability on cost of equity		
	File size	*BOG Index*
READ	−0.0048	−0.0067
	(-3.74)***	(-4.86)***
Constant	4.7653	5.8742
	(7.87)***	(8.65)***
Firm-level controls	Yes	Yes
Fixed effects	YI	YI
Adj R2	0.2467	0.2654
Obs	3143	3143

Panel A of this table presents the regression results on the impact of Readability on Cost of equity capital. We define SEO Under-pricing as the return from the offer price to the closing price on the day of offering. Panel B presents the regression results for the impact of Readability on cost of equity. We use the model of Claus and Thomas (2001) to estimate cost of equity. All continuous variables are winsorized at the 1% and 99% levels. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. The t statistics are reported in parentheses.

Table 9
Long-term buy and hold abnormal returns – reference portfolio approach.

LBT (1999) Method			DGTW (1997) Method	
	1 year	2 years	1 year	2 years
Panel A: All SEO Firms				
Mean	−0.024	−0.023	−0.035	−0.033
Median	−0.018	−0.015	−0.021	−0.017
Bootstrap test	(2.73)***	(2.98)***	(3.67)***	(1.99)**
Panel B: AO				
Mean	−0.017	−0.014	−0.027	−0.024
Median	−0.014	−0.008	−0.019	−0.014
Bootstrap test	(1.71)*	(1.83)*	(1.57)	(1.98)**
Panel C: PP				
Mean	−0.030	−0.026	−0.037	−0.033
Median	−0.022	−0.016	−0.028	−0.026
Bootstrap test	(3.72)***	(2.24)**	(2.71)***	(2.79)***
Panel C: RO				
Mean	−0.035	−0.027	−0.044	−0.042
Median	−0.026	−0.020	−0.028	−0.025
Bootstrap test	(2.86)***	(2.39)**	(3.67)***	(3.58)***
LBT (1999) Method			DGTW (1997) Method	
	1 year	2 years	1 year	2 years
Panel A: High Readability (*FILESIZ*)				
Mean	−0.023	0.012	−0.031	0.017
Median	−0.015	0.009	−0.027	0.014
Bootstrap test	(2.46)**	(2.13)**	(3.52)***	(2.99)***
Panel B: Low Readability (*FILESIZ*)				
Mean	−0.041	−0.038	−0.052	−0.048
Median	−0.030	−0.026	−0.039	−0.034
Bootstrap test	(4.34)***	(3.52)***	(3.29)***	(3.86)***
Panel C: High Readability (*BOGINDEX*)				
Mean	−0.025	0.023	−0.033	0.030
Median	−0.017	0.012	−0.019	0.016
Bootstrap test	(2.29)**	(2.37)**	(2.19)**	(2.63)**
Panel C: Low Readability (*BOGINDEX*)				
Mean	−0.042	−0.048	−0.054	−0.051
Median	−0.031	−0.039	−0.030	−0.022
Bootstrap test	(3.28)***	(3.32)***	(4.76)***	(5.10)***

This table reports mean and median buy-and-hold abnormal returns for one year and three-year periods for various samples using matching reference portfolio approaches of Lyon, Barber and Tsai (1999) and Daniel, Grinblatt, Titman and Wermers (1997). We provide bootstrap test statistics to test the significance level of buy and hold abnormal returns. The superscripts ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

allocation and the decision-making process. Since the accelerated method stands as the preferred way to raise capital, our results emphasize the significance of readability for issuers, thereby alleviating underwriters' concerns about information asymmetry. As well, our analysis offers valuable insights for market regulators as they formulate polices concerning 10-K filings. However, our study does not delve into the precise mechanisms underlying precisely underwriters practice due diligence or how readability aids the accelerated method. Thus, further research in this area is necessary to qualitatively explain the significance of annual reports' readability from the underwriters' perspective.

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Appendix. Definitions of variables

Variables	Description
SEOMETH	A multinomial variable which takes the value of zero for firm commitment (base), one for accelerated offerings, two for private placement, and three for rights offerings.
FILSIZ	−1 x The natural logarithm of file size of 10-K filing.
BOGINDEX	−1 x The natural logarithm of BOG Index is calculated based on the annual report portion (10-K documents and Exhibit 13) of each parsed 10-K filing following Bonsall et al. (2017).
TNWORDS	−1 x the natural logarithm of the total number of words in 10-K filing.

(*continued on next page*)

(*continued*)

Variables	Description
TNSENT	−1 x the natural logarithm of the total number of sentences in 10-K filing.
Management Tone	100 multiplied by the difference between the number of positive words and the number of negative words, divided by the total number of words in the annual report.
BIG4	A dummy variable which equals one if a firm employs a Big-4 auditor, and zero otherwise.
lnBM	Logarithm of book-to-market ratio.
LIQUID	Logarithm of average proportionate bid-ask spread for the one-year period prior to the announcement of SEO offerings.
IDYRISK	The standard error for the 1-year period before the announcement date (return from day −260 to day −2).
OPTOTA	Offer proceeds relative to total assets.
DSHELF	A dummy variable which takes the value of one if the offerings are shelf offerings and zero otherwise.
lnAGE	Logarithm of age where age of the firm is measured in years since the firm entered the Compustat database.
LEV	The ratio of total debt to total assets.
lnANALYST	The logarithm of the maximum number of analysts making annual earnings forecasts in any month over the last 12-month period.
lnACCRUAL	The total accrual at the balance sheet date immediately prior to the announcement.
INSIZE	Logarithm of the inflation-adjusted total assets to mitigate the impact of inflation and address extreme values
IO	The proportion of shares held by institutional investors.
STATE_EDUCATION	The proportion of a state's population being at least 25 years old and having a bachelor's degree, Master's degree, and/or other professional degree.
STATE_INCOME	The median household income at the state level.
COUNTY_EDUCATION	The proportion of a county's population being at least 25 years old and having a Bachelor's degree, Master's degree, and/or other professional degree
COUNTY_INCOME	The median household income at the county level.

Continue.

Panel B: Summary of sample selection and distribution

Year-wise classification

Year	Accelerated offering	Firm commitment	Private placement	Rights offering	Total
2002	11	93	0	2	106
2003	20	123	0	2	145
2004	32	145	0	4	181
2005	33	114	0	2	149
2006	19	86	0	0	105
2007	25	119	1	1	146
2008	7	112	3	0	121
2009	9	112	6	6	132
2010	10	246	21	13	290
2011	10	148	14	3	175
2012	29	126	7	5	166
2013	39	135	11	3	187
2014	22	89	5	6	121
2015	66	83	7	6	162
2016	76	76	6	6	164
2017	94	62	9	4	168
2018	75	50	7	3	135
2019	102	67	10	4	184
2020	93	61	9	4	167
2021	74	49	7	3	133
Total	846	2096	123	78	3143
Industry-wise classification					
Year	**Accelerated offering**	**Firm commitment**	**Private placement**	**Rights offering**	**Total**
Agriculture	32	173	10	4	219
Transport	43	334	22	33	432
construct	98	264	19	5	386
Finance	14	54	14	3	85
Manufacturing	211	574	27	16	828
Mining	13	83	4	3	103
Retail	343	574	17	7	941
Services	21	14	4	4	43
Transport	43	7	2	2	54
Wholesale	28	19	4	1	52
Total	846	2096	123	78	3143

This table provides year-wise classification and industry representations of SEO offerings (on a yearly basis for the period 2002–2021) of the final sample.

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