



Reduced disclosure and default risk: analysis of smaller reporting companies

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Abstract

We examine the causal effect of reduced disclosure levels on the risk of default. Employing regression discontinuity (RD) design as our main identification strategy and the smaller reporting company rule (SRC rule) as the exogenous source of variation, we show that smaller reporting companies (SRCs), which are permitted to provide scaled disclosures in their 10-Ks, experience significantly and economically higher default risk. We demonstrate that, while there is no effect of information loss if a smaller reporting company voluntarily maintains its disclosure level by continuing to report its financial performance in full, there is an increase in its default risk due to the loss of commitment to mandatory disclosure. We also find that, compared to previously qualified SRCs, newly qualified smaller reporting companies face steeper increases in bankruptcy risk during their first year of eligibility. Our analysis indicates that strong external oversight mechanisms, better corporate governance, and credible audit quality attenuate the negative impact of reduced disclosure levels on the risk of default. Our results are robust to alternative model specifications, RD design assumptions, and measures of default risk.

Keywords Smaller reporting company rule · Disclosure · Default risk · Regression discontinuity design

JEL Classification G28 · G32 · G33 · G38 · M41 · M49

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1 Introduction

Financial reporting and disclosure are crucial to a well-functioning and efficient capital market. Each year, the majority of U.S. public firms are required to produce a 10-K and file it with the U.S. Securities and Exchange Commission (SEC). A 10-K contains detailed information about the firm's ongoing business risks, and the operating and financial results. Importantly, firms are prohibited by law from making materially false or misleading statements in their 10-Ks and from omitting material information that is necessary to ensure the accuracy of the disclosure. The company's CFO and CEO are required, under the Sarbanes-Oxley Act (SOX), to certify that the company's 10-K is accurate. Some companies go beyond the SEC's requirements and participate in voluntary communication, such as analysts' presentations, conference calls, press releases, internet sites, management forecasts, and other corporate reports, among others.

As discussed at length in Healy and Palepu (2001), the need for financial reporting and disclosure emerges from information asymmetry and agency conflicts between managers and outside investors. A number of studies found that reducing information risk through increased voluntary disclosure ameliorates information asymmetry as well as agency conflicts and is associated with lower costs of capital (Barry and Brown 1985, 1986; Merton 1987) and lower bid-ask spreads (Welker 1995; Leuz and Verrecchia 2000). Despite numerous research exploring the relation between disclosure and capital market transactions, corporate controls, and managerial compensation, the impact of disclosure on the risk of default has not been well understood.¹

In this article, we examine the causal impact of reduced disclosure on the risk of default. Evidence on the causal effects of disclosure is difficult to obtain since identifying counterfactuals, unaffected control groups, or natural experiments that would allow a clean identification of the effects and the economic consequences of disclosure is a major challenge (Healy and Palepu 2001; Leuz and Wysocki 2016). As pointed out by Healy et al. (1999), disclosure changes are unlikely to be random events as they tend to coincide with changes in firm economics and governance. Simply modelling the risk of default as a function of disclosure would result in biased estimates due to omitted variables since disclosure could potentially be determined, at least in part, by the risk of default. Moreover, while it has been demonstrated that voluntary disclosure is associated with improved liquidity (Balakrishnan et al. 2014) and that enhanced liquidity decreases the risk of default (Brogaard et al. 2017), our work is the first to directly establish the causal link between disclosure and the risk of default.

Addressing the endogeneity issue, we employ the *Smaller Reporting Company Regulatory Relief and Simplification* rule (hereafter the SRC rule) as the exogenous source of variation and regression discontinuity (RD) designs as the main identification strategy to estimate the causal effect of the reduced disclosure level on default risk. The SRC rule allows *Smaller Reporting Companies* (hereafter SRCs)—firms whose equity float values are smaller than pre-specified thresholds—to voluntarily adopt the reduced disclosure levels for 10 non-financial items in their 10-Ks.² Because the firm's eligibility to reduce the disclosure levels is dictated by its public float value and the pre-specified threshold which

¹ See Healy and Palepu (2001) for extensive literature survey on empirical research on disclosure regulation, information intermediaries, and the determinants and economic consequences of corporate disclosure.

² The list of the 10 non-financial items in 10-Ks for which SRCs can voluntarily provide scaled disclosures can be found in Table 14 in the "Appendix".

is prescribed by the well-defined SRC rule, whether a company is classified as an SRC or a non-SRC is determined exogenously.

We hypothesise that both the loss of commitment to mandatory disclosure as well as the reduction in the disclosure levels among SRCs exacerbate information asymmetry and information risk, which in turn, elevate the risk of default. Existing research provides supportive evidence of this hypothesis. For example, employing a structural model of corporate default risk, Giesecke and Goldberg (2008) showed that information asymmetry can induce an event premium which they defined as compensation for the abrupt changes in security prices that occur at default. As the threshold asset value at which firm management liquidates the firm is private information, investors are taken by surprise when the firm value reaches the default threshold and therefore demand compensation for bearing exposure to non-diversifiable corporate default risk. Lindset et al. (2014) presented a theoretical model of credit spreads where debtholders and equityholders have incomplete information about the financial health of the company. The information is incomplete because it is revealed with a time lag and is asymmetrically distributed between debtholders and equityholders. The authors found that the degree of information asymmetry between debtholders and equityholders is positively associated with the risk of default. Using a dynamic moral hazard model, Fu and Trigilia (2018) demonstrated that disclosure lowers information asymmetry between managers and investors, dampening the variations in the value of the firm's stock and funding liquidity which are required by the optimal contract to alleviate the agency problem.³

In this article, we estimate the risk of default following Bharath and Shumway (2008). Their expected default frequency (EDF) measure uses the same functional form and inputs as the Merton distance-to-default (DD) framework, based on Merton (1974), but does not require an iterative procedure to solve a system of nonlinear equations. We examine the robustness of our findings by also employing both the Z-score of Altman (1968) and the O-score of Ohlson (1980) as alternative measures of default risk in the analysis. In addition, in order to address the legal uncertainty around the definition of an "affiliate" (and hence the definition of public float), we classify if companies in our sample are SRCs or non-SRCs by employing textual analysis to extract the equity float information directly from the first pages of 10-Ks.⁴

Our research is related to several streams of literature. Existing research has shown that the level of information disclosure in financial reports significantly alleviates information asymmetry, agency conflicts between managers and shareholders as well as insiders and outside investors (Welker 1995; Diamond and Verrecchia 1991; Botosan 1997; Sengupta 1998; Gelb and Zarowin 2002; Healy and Palepu 2001; Brown and Hillegeist 2007).

³ Agency theory warns that managers may choose to maximize their own benefits rather than acting in the best interest of shareholders. Information disclosure by management is therefore an essential way of monitoring by shareholders which help mitigate the agency problem as managers are disciplined to act in the best interest of shareholders (Bushman and Smith 2001). Investors seek high-quality disclosures that reduce information asymmetry and improve shareholders' ability to better relate managerial decisions to firm performance (Diamond and Verrecchia 1991; Lombardo and Pagano 1999).

⁴ Information, provided on the SEC website (<https://www.sec.gov/smallbusiness/goingpublic/SRC>), on how public float is calculated states: Public float is calculated by multiplying the number of the company's common shares held by non-affiliates by the market price and, in the case of an IPO, adding to that number the product obtained by multiplying the common shares covered by the registration statement by their estimated public offering price. As pointed out by Iliev (2010), however, there is legal ambiguity around the definition of an "affiliate".

Moreover, mandatory financial disclosure also serves as credible commitment, thereby disciplining managers from empire building and inducing them to make better investment decisions (Hope and Thomas 2008). Our paper is also related to research on costs and benefits of voluntary disclosure (Wagenhofer (1990); Depoers (2000); Dedman et al. (2008); Dambra et al. (2023), and Wang et al. (2008)) and studies examining factors influencing voluntary disclosures (Chow and Wong-Boren 1987; Raffournier 1995; Meek et al. 1995; Ho and Wong 2001; Chau and Gray 2002; Eng and Mak 2003; Barako et al. 2006; Lim et al. 2007; Wang et al. 2008; Francis et al. 2008; Hope and Liu 2023). We also add to existing research on textual analysis of financial disclosure (Loughran and McDonald 2011; Ertugrul et al. 2017; Kim et al. 2019; Bochkay et al. 2023).

As a preview of our main findings, the RD results show that, eligible SRCs do reduce their disclosure levels. 10-K reports, filed by SRCs, are about 20% smaller in size, contain 19% fewer words and 12% lower word counts among the 10 items in the report where the reduced disclosure levels are allowed. We find that the reduced level of disclosure leads to an increase in the risk of default, as measured by the EDF, by approximately 4 basis points after controlling for factors which have been documented to affect default risk. The estimated effect, evaluated at the unconditional mean of the EDF, is equivalent to an increase of about 70% in default risk—a statistically and economically significant impact. These results are robust to alternative model specifications and subsamples where observations of firms located near the threshold which are most susceptible to public float manipulation are excluded. As a check for robustness, we estimate RD models based on the stronger assumptions of local randomisation and obtain similar results. We also conduct a number of falsification tests and find that the effect of the reduced disclosure level is absent at all the artificial thresholds. Taken together, our results point to the economically and statistically significant impact of an increase in information asymmetry, due to the reduced disclosure level, on the risk of default.

We extend our main analysis in several directions. First, we quantify the effect of the reduced disclosure level on the risk of default when firms become eligible for reduced disclosure under the SRC rule for the first time. Our results show that while there is no evidence to suggest that the disclosure levels of newly eligible SRCs differ from those of previously qualified SRCs, newly qualified SRCs witness a much larger increase in default risk than non-SRCs and previously qualified SRCs. Second, we disentangle the impact of the loss of commitment to mandatory disclosure and the impact of the loss of information due to the reduced disclosure levels from the overall impact on the risk of default. We analyse the risk of default among the samples of SRCs that choose to reduce their disclosure levels, SRCs that voluntarily maintain their disclosure levels despite being allowed to reduce disclosure levels, and non-SRCs that are not qualified for reducing disclosures and must disclose in full around the 2007–2008 and the 2017–2018 periods. Our results demonstrate that while there is no effect of information loss if a smaller reporting company voluntarily maintains its disclosure level and continues to make a full report of its financial performance, there is still an increase in default risk due to an increase in information asymmetry caused by the loss of commitment to mandatory disclosure.

We conduct additional analyses by examining whether different degrees of analyst coverage, institutional ownership, and board independence transform the impact of the reduced disclosure level on the risk of default. We also investigate if SRCs that are audited by a Big 4 accounting firm suffer the same degree of an increase in bankruptcy risk as SRCs that are audited by a smaller, non-Big 4 firm. Our findings show that the causal impact of the reduced disclosure level on the risk of default disappears among SRCs that are followed by a large number of analysts and SRCs with high institutional ownership. We can also report

that SRCs that are audited by a Big 4 accounting company do not suffer an increase in default risk as a result of the reduced disclosure levels.

Our study makes a number of key contributions. First, our findings highlight a trade-off between the costs and benefits of the eligibility to voluntarily provide scaled disclosure. While the SRC rule was devised out of a desire with the best hope to assist small businesses in reducing costs associated with financial reporting (Cheng et al. 2013), an unintended consequence caused by the reduced disclosure levels is an increase in information asymmetry, resulting in an increase in the risk of default. This result provides valuable insight on the side effects of the SRC rule that should be noted by policy makers. Despite Fu and Trigilia (2018), who theoretically prove a negative link between default risk and information disclosures, the effect of disclosures on the risk of default risk has not been well understood. This paper is the first one to provide empirical evidence on the effect of reduced disclosure on default risk by employing the well-defined SRC rule as the exogenous variation and the regression discontinuity design as the main identification strategy. We therefore rule out any potential endogeneity. Second, using the DiD approach to compare SRCs who choose to maintain their disclosure levels with those non-SRCs, it allows us to look at the commitment effect of mandatory disclosures on default risk. We demonstrate that, as a result of the loss of commitment to mandatory disclosure, SRCs still experience higher default risk even if they voluntarily maintain their disclosure levels, underlining the importance of mandatory disclosure which provides credible mechanisms that cannot be replaced by voluntary disclosure. Third, our results emphasise the essential roles played by financial analysts, institutional investors, corporate boards, and auditors in mitigating the impact of information asymmetry on the risk of default. The default risk can be mitigated by employing a larger number of financial analysts, more institutional holdings, more independent boards, and Big-4 auditors, suggesting the importance of improving oversight mechanisms, strengthening corporate governance, and enhancing the audit quality for SRCs.

2 Institutional background

In 1992, the Securities and Exchange Commission (SEC) adopted Regulation S-B, a securities law that outlined integrated reduced disclosure requirements for small businesses. Regulation S-B was prescribed under the Securities Act of 1933 and the Securities Exchange Act of 1934, requiring all registered firms on the SEC to disclose their essential financial information to their investors. It was the first deregulation of its kind, aiming to deviate small businesses from the “one-size-fits-all” policy and, more importantly, help them lower their compliance costs. Under Regulation S-B, firms with both revenues and public equity floats of less than \$25 million were permitted to provide scaled disclosures, allowing them to complete a simplified version of the disclosure forms, thus giving them an option to report significantly smaller amount of financial information about their businesses.

Following recommendations by ACSPC, the SEC discarded Regulation S-B and instead adopted the *Smaller Reporting Company Regulatory Relief and Simplification* rule (hereafter the SRC rule) in July 2007. Under the SRC rule, firms with public equity floats of less than \$75 million (or revenues lower than \$50 million if public floats could not be calculated) were permitted, but not required, to reduce the disclosure levels of the 10 non-financial items in their 10-Ks, including, for instance, the description of business, qualitative and quantitative disclosure on market risk, business and other risk factors, policies and

procedures for approving related party transactions, and executive compensation, etc.⁵ The rule required all eligible companies—regardless of whether or not they voluntarily opted to provide the scaled disclosures—to identify themselves as *smaller reporting companies* by checking the appropriate box in the SEC filings. The initial threshold used in the classification was \$75 million for public float or \$50 million for revenue if the value of public float could not be determined.⁶⁷

A decade later, the SEC adopted the amendments to the definition of SRCs which became effective in September 2018. Under the new definition, a company qualifies as an SRC if it has public float of less than \$250 million or it has less than \$100 million in annual revenue and no public float or public float of less than \$700 million. Once a company determines that it does not qualify as an SRC under the applicable thresholds, it will not subsequently qualify until its public float falls below a lower threshold, set at 80% of the initial qualification threshold (i.e., \$200 million). An SRC that subsequently qualifies under the lower \$200 million public float threshold remains qualified until its public float exceeds \$250 million.⁸ The advantage of being an SRC is that such a company can comply with certain SEC rules and regulations that are less onerous. SRCs are also granted flexibility to comply with the rule by allowing them to pick and choose between scaled or non-scaled financial and non-financial disclosure requirements on an item-by-item basis. As a result of the amendment, the number of companies that qualify for this classification expanded. Because of that, more companies are therefore able to take advantage of the reduced disclosure requirements.

3 Data and construction of variables

3.1 Sample

We collect data from the CRSP, Compustat, and SEC's EDGAR databases. Our sample spans a period between January 2008 (the year in which the SRC rule was first enacted) and December 2019. We exclude financial firms (SIC codes between 6000 and 6999) from the sample.

We calculate the default risk measures following (Bharath and Shumway 2008; Altman 1968, and Ohlson (1980)) using the CRSP data. The default risk sample, which contains a total of 29,636 firm-year observations, is then merged with the CRSP/Compustat Merged (CCM) databases, resulting in a sample of firms with available financial information which

⁵ See Appendix 14 for the list of items permitted for the reduced disclosure and detailed comparisons between SRCs and non-SRCs.

⁶ If a company, however, did not qualify as an SRC in 2008, it would not qualify in the future unless its public float fell below \$50 million as of the last business day of its second fiscal quarter. In order to avoid situations in which firms frequently entered and exited the SRC status due to small fluctuations in their public float, once a company acquired the SRC status, it would then remain an SRC until its public float exceeded \$75 million.

⁷ A smaller reporting company (SRC) is defined in Rule 405 under the Securities Act as a company that is not an investment company, an asset-backed issuer or a majority-owned subsidiary of a parent that is not a smaller reporting company, and that has a public float of less than \$75 million as of the last business day of its most recently completed second fiscal quarter.

⁸ For more details of the SRC rule, see Table 15 and also <https://www.sec.gov/rules/final/2018/33-10513.pdf>.

we use as controls. The sample is then merged again with a sample of 10Ks, retrieved from the SEC's EDGAR database. After dropping observations of firms with missing information on equity floats, our final sample contains a total of 25,276 firm-year observations with 4144 unique firms.

3.2 The measures of default risk

Our main measure of default risk is the expected default frequency (EDF) of Bharath and Shumway (2008). It uses the same input and functional forms as those of the Merton distance-to-default (DD) model but does not require an iterative procedure to solve a system of nonlinear equations. Bharath and Shumway (2008) reported that the EDF measure can predict bankruptcy events out-of-sample more accurately than the Merton DD model.⁹

The EDF is constructed as follows.

$$DD_{i,t} = \frac{\ln\left(\frac{Equity_{i,t} + Debt_{i,t}}{Debt_{i,t}}\right) + \left(r_{i,t-1} - \frac{\sigma_{V_{i,t}}^2}{2}\right) \times T_{i,t}}{\sigma_{V_{i,t}} \times \sqrt{T_{i,t}}}, \tag{1}$$

$$\sigma_{V_{i,t}} = \frac{Equity_{i,t}}{Equity_{i,t} + Debt_{i,t}} \times \sigma_{E_{i,t}} + \frac{Debt_{i,t}}{Equity_{i,t} + Debt_{i,t}} \times \left(0.05 + 0.25 \times \sigma_{E_{i,t}}\right) \tag{2}$$

and

$$EDF_{i,t} = N(-DD_{i,t}) \tag{3}$$

where i and t index firm and year, respectively. $Equity_{i,t}$ is firm i 's market value of equity (in millions of dollars) calculated as the product of the number of shares outstanding and the stock price at the end of fiscal year t ; $Debt_{i,t}$ is the face value of debt calculated as the sum of debt in the current liabilities (Compustat item 45) and one-half of long-term debt (Compustat item 51) at the end of fiscal year t ; $r_{i,t-1}$ is firm i 's stock return during the past 12 months; $\sigma_{E_{i,t}}$ is the stock return volatility estimated using monthly stock returns from the previous year; $\sigma_{V_{i,t}}$, shown in Eq. (2), approximates the volatility of firm i 's assets and is calculated from $\sigma_{E_{i,t}}$; T is set to 1 since we are interested in annual default probabilities; and $N(\bullet)$ is the cumulative standard normal distribution function.

In order to examine the robustness of our results, we also measure the risk of default using the Z-score of Altman (1968) and the O-score of Ohlson (1980). We winsorise all the default risk measures at the 1st and 99th percentiles to lessen the impact of outliers.

⁹ The Merton DD model considers firm's equity as a call option on the firm's underlying assets with the strike price equal to the face value of the firm's debt which is assumed to be a zero coupon bond. Under this framework, a firm defaults when its asset value falls below the face value of the firm's debt. The probability of default is estimated as the cumulative normal density function of a z-score, calculated using the firm's underlying value, the firm's volatility, and the face value of the firm's debt. See Merton (1974), Campbell et al. (2008), and Bharath and Shumway (2008) for more detailed discussion.

3.3 Assignment of control and treatment statuses

We classify observations of firms in our sample as SRCs (treated) and non-SRCs (control) in each year based on their public equity float values as of the last business day of their most recently completed second fiscal quarter in that year. We apply the \$75 million threshold to classify observations of firms in our sample for fiscal year 2008 and the \$50 million threshold for observations between 2008 and 2017. For observations of firms in fiscal years 2018 and 2019, we use the thresholds of \$250 million and \$200 million, respectively.¹⁰

We define a binary variable, $SRC_{i,t}$, which takes the value of 1 if firm i is classified as an SRC in year t , and 0 otherwise. Table 15 in Appendix details the thresholds used in the classification of SRCs and non-SRCs.

3.4 Control variables

Following Bharath and Shumway (2008), Campbell et al. (2008), and Brogaard et al. (2017), we include the following control variables in our analysis. We control for firm size using the logarithm of assets ($LnAssets$). Since bankrupt firms are likely to have extremely high levels of debts relative to their assets, we include both the logged value of debt ($LnDebt$) and leverage ($Leverage$), calculated as the ratio of total debts to total assets. As firms are reported to experience high volatility prior to bankruptcy, we include the inverse of the annualised return volatility (Vol), where the annualised volatility (σ) is computed as the standard deviation of monthly stock returns over the previous year. The ratio of net income to total assets (NI) and the firm's excess return (ER), calculated as the difference between the annual return on the firm's stock and the CRSP value-weighted return, are also employed as control variables. To mitigate the impact of outliers, we winsorise the values of all the control variables at the 1st and 99th percentiles.

4 Empirical analysis

4.1 Summary statistics

We report descriptive statistics for all the variables in Table 1. The mean and the median of the EDF for our sample are 0.06 and 0 which are identical to the values of 0.0619 and 0, reported in Brogaard et al. (2017). That the median is 0 implies that at least 50% of the observations in the sample have no or very little default risk. In line with the finding in Brogaard et al. (2017), the distribution of the EDF in our sample is right-skewed with the minimum and the maximum of 0 and 0.946, respectively. The means of the Z-score and the O-score are 2.31 and 3.17 while the medians are 2.56 and 2.79. The other firm characteristics appear to be standard. *Leverage* has a mean of around 0.6. The average values of both

¹⁰ According to the amended SRC rule, firms can be classified as SRCs or non-SRCs based on the public float test or the revenue test. We exclude 66 firms that were qualified as SRCs under the revenue test, but not under the public float test in 2018 from our sample. They represent approximately 1.6% of the total number of firms in our sample.

NI and *ER* suggest that firms in our sample have negative profitability and slightly negative excess returns. The distribution of *NI* is left-skewed while that of *ER* is right-skewed.

4.2 The impact of eligibility under the SRC rule on the level of disclosure: textual analysis of disclosure

As a first step, we assess the effect of the eligibility to provide scaled disclosures under the SRC rule on the level of disclosure. Specifically, we hypothesise that SRCs—given their eligibility to reduce their disclosure levels—are likely to choose to provide scaled disclosures in order to lower the costs associated with financial reporting. We measure the disclosure levels using file size (in bytes) of the 10-K report (*FileSize*) and file size (in bytes) after excluding extraneous material such as figures and tables (*NetFileSize*), following Ertugrul et al. (2017). As noted by Loughran and McDonald (2014), 10-K file size is a straightforward measure of the amount of information in the 10-K files; it is easily computed and is not prone to the substantial measurement errors of other textual procedures requiring parsing of the 10-K documents. In addition, we also conduct textual analysis of 10-Ks in our sample to determine the total numbers of words (*TotalWords*) and the total numbers of words which occur at least once in the reports (*UniqueWords*).¹¹ All the variables are in logarithms.

Panel A of Table 2 reports results of a univariate analysis, comparing file size and word count statistics of 10-K reports of smaller reporting companies (*SRC* = 1) to those of non-smaller reporting companies (*SRC* = 0). Consistent with the conjecture, it is found that the average file size of 10-Ks filed by smaller reporting companies is smaller than the average file size of 10-Ks filed by non-smaller reporting companies. While the file size of 10-K reports for smaller reporting companies has a mean value of approximately 4.0 MB, the file size of 10-Ks for non-smaller reporting companies is around 9.3 MB.¹² Furthermore, smaller reporting companies submit 10-Ks that contain fewer numbers of words on average compared to 10-Ks filed by non-smaller reporting companies. Panel B of Table 2 compares the means of individual items. The differences in the means are statistically significant at better than the 1% significance level.

We employ RD designs to estimate the effect of the eligibility to voluntarily adopt the reduced disclosure framework on the disclosure level. Identification in a sharp RD design hinges on the assumptions of discontinuity in the probability of treatment and the inability of firms to precisely manipulate their treatment status (i.e., the public floats) around the threshold. Since companies in our sample are classified as either SRCs or non-SRCs based on their public float values which are difficult to be manipulated precisely, both the assumptions of discontinuity in the probability of treatment and no manipulation are therefore, by the research design, satisfied. Consequently, observations around the cutoff can be regarded as if they are randomly assigned. It is worth noting at this point that while the eligibility to provide scaled disclosures is discontinuous at the threshold, variation in other firm characteristics around the threshold must be continuous for the RD results to be valid. We formally test this assumption in Sect. 5 below.

¹¹ The total number of words and the number of unique words in 10-K reports are calculated after excluding stopwords which are not informative. Examples of stopwords include: a, an, the, and, should, must, those, very, etc.

¹² As an example, the average size of 10-K files of smaller reporting companies is computed as: $e^{15.193} \times 10^{-6} \approx 4$ MB.

Table 1 Summary statistics

	Mean	Median	SD	Min.	Max.	Obs
<i>EDF</i>	0.060	0.000	0.183	0.000	0.946	25,276
<i>Z-score</i>	2.310	2.560	4.780	-22.700	16.410	25,276
<i>O-score</i>	3.170	2.790	2.630	-1.750	14.440	25,276
<i>LnAssets</i>	6.789	6.875	2.042	2.387	11.447	25,276
<i>Leverage</i>	0.589	0.567	0.269	0.108	1.669	25,276
<i>LnDebt</i>	4.457	4.837	2.738	-3.381	9.737	25,276
σ_E	0.135	0.107	0.106	0.003	2.282	25,276
<i>NI</i>	-0.046	0.028	0.257	-1.456	0.264	25,276
<i>ER</i>	-0.002	-0.041	0.456	-0.912	1.929	25,276
<i>SRC</i>	0.190	0.000	0.392	0.000	1.000	25,276
<i>Float</i>	2.205	2.300	2.331	-2.928	7.598	25,276

This table reports the descriptive statistics of the variables employed in the analyses for the period between January 2008 and December 2019. *EDF* is the expected default frequency, calculated following Bharath and Shumway (2008). *Z-score* is the measure of default risk, computed following Altman (1968). *O-score* is the measure of default risk, estimated following Ohlson (1980). *LnAssets* is the logged value of total assets. *Leverage* is the ratio of total debt to total assets. *LnDebt* is the logged value of the face value of debt. σ_E is the annualised return volatility. *NI* is the ratio of net income to total assets. *ER* is the difference between the stock annual return and the CRSP value-weighted return

We estimate the following RD model:

$$Disclosure_{i,t} = \alpha_0 + \alpha_1 SRC_{i,t} + \alpha_2 Float_{i,t} + \alpha_3 (SRC_{i,t} \times Float_{i,t}) + y_{i,t} + v_i + \gamma_t + \varepsilon_{i,t} \quad (4)$$

where i and t index firm and year, respectively. The variable *Disclosure* denotes the measures of disclosure level: *FileSize*, *NetFileSize*, *TotalWords*, *UniqueWords*, and *TotalItems*. The dummy variable, $SRC_{i,t}$, equals 1 if firm i is eligible to provide scaled disclosures in year t , and 0 otherwise. The assignment variable $Float_{i,t}$ denotes the distance between the logged values of company i 's equity float and the cutoff applicable in year t .¹³ The interaction term $SRC_{i,t} \times Float_{i,t}$ captures a possible difference in the slope of the regression lines located on both sides of the threshold. A vector of control variables $y_{i,t}$ include $Insti_{i,t}$, which accounts for strength of corporate governance and is calculated as the proportion of institutional holdings to the total number of shares outstanding for firm i in year t , and $Complexity_{i,t}$, which represents complexity of financial operating and segments, measured as the sum of the squares of firm i 's sales in each business segment divided by total firm sales, then minus 1 and multiplied by minus 1, in year t . We include both the industry and the year fixed effects, denoted by v_i and γ_t , respectively.¹⁴ The parameter of interest is α_1

¹³ As discussed in Sect. 2, companies with public float below \$75 million during 2008–2018 and \$250 million from 2018 onwards are classified as SRCs. We recentre the thresholds and rescale the public float values around the normalised cutoff.

¹⁴ The year fixed effects are included in Eq. (4) to capture the impact of increasing length of 10-Ks over time as documented by Cohen et al. (2020).

Table 2 Univariate analysis of disclosure

	Treated (SRC)	Control (Non-SRC)	Difference
<i>Panel A</i>			
<i>n</i>	4812	20,464	
<i>FileSize</i>	15.193	16.050	- 0.856***
<i>NetFileSize</i>	12.517	12.900	- 0.383***
<i>TotalWords</i>	10.493	10.868	- 0.375***
<i>UniqueWords</i>	7.940	8.081	- 0.141***
<i>Panel B</i>			
<i>TotalItems</i>	9.832	10.183	- 0.351***
<i>Item 1</i>	6.744	6.818	- 0.074**
<i>Item 1A</i>	7.964	8.412	- 0.447***
<i>Item 5</i>	5.464	5.666	- 0.202***
<i>Item 6</i>	3.260	4.649	- 1.289***
<i>Item 7</i>	8.339	8.577	- 0.238***
<i>Item 7A</i>	3.826	5.375	- 1.548***
<i>Item 8</i>	6.689	7.692	- 0.913***
<i>Item 11</i>	4.136	3.422	0.714***
<i>Item 13</i>	3.977	3.454	0.523***

The table reports the results of the univariate analysis, comparing the mean values of file size and the mean values of word counts of 10-Ks filed by SRCs to those filed by non-SRCs. *FileSize* is the log of file size (in bytes) of 10-Ks. *NetFileSize* is the log of file size (in bytes) after extraneous materials such as figures and tables have been removed. *TotalWords* is the log of the total word counts of 10-Ks. *UniqueWords* is the log of the total number of words which occur at least once in 10-Ks. *TotalItems* is the total number of words in 9 items eligible for reduced disclosures on 10-Ks. *Item 1*, *Item 1A*, *Item 5*, *Item 6*, *Item 7*, *Item 7A*, *Item 8*, *Item 11* and *Item 13* are the simple summations of the number of words for each item. The SEC allows smaller reporting companies to reduce the disclosure levels in total 10 items in the S-K form. Since the item 402: Executive Compensation and item 407: Corporate Governance are included in item 11 in 10-Ks, the total number of the reduced items in 10-K reports is therefore 9

whose estimate quantifies the effect of the eligibility to provide scaled disclosures on the disclosure level. We expect the sign of α_1 to be negative and statistically significant, which would point to lower disclosure levels among SRCs compared to non-SRCs. In estimating Eq. (4), we cluster the standard errors at the firm level.

We report the estimation results in Table 3. The estimates of α_1 for all the measures of disclosure level are negative and statistically significant at the conventional levels, suggesting that SRCs voluntarily provide scaled disclosures given their eligibility to do so. Consider the RD result for the 10-K file size as an example, the estimate of α_1 of -0.195 is negative and statistically significant at the 1% level, indicating that 10-K reports filed by SRCs are approximately 20% smaller in size than 10-Ks filed by non-SRCs. Furthermore, the estimate of α_1 of -0.120 for the RD specification where *TotalItems* is the dependent variable, shown under the last column of Table 3, suggests that the total number of words of the 10 items in 10-Ks where scaled disclosures is permitted is around 12% lower for SRCs compared to that of non-SRCs.

Table 3 Regression discontinuity estimation of disclosure

	<i>FileSize</i>	<i>NetFileSize</i>	<i>TotalWords</i>	<i>UniqueWords</i>	<i>TotalItems</i>
<i>SRC</i>	− 0.195*** (0.055)	− 0.133*** (0.042)	− 0.193*** (0.057)	− 0.800** (0.031)	− 0.120** (0.059)
<i>Float</i>	0.001 (0.021)	0.005 (0.042)	0.043 (0.100)	0.035 (0.064)	0.030 (0.056)
<i>SRC</i> × <i>Float</i>	0.177** (0.077)	0.100* (0.060)	0.127 (0.135)	0.086 (0.081)	0.110 (0.131)
<i>Insti</i>	0.093*** (0.031)	0.042** (0.019)	0.035* (0.020)	0.008 (0.045)	0.037*** (0.011)
<i>Complexity</i>	0.072** (0.033)	0.075* (0.039)	0.068** (0.031)	0.089** (0.041)	0.091** (0.040)
Constant	14.407*** (0.100)	12.870*** (0.302)	10.836*** (0.265)	8.080* ** (0.146)	12.622*** (0.178)
Observations	2280	2207	2390	3455	2134
R-squared	0.770	0.198	0.392	0.279	0.111
Firms	1,069	1,057	1,092	1,406	1,209
Year FE	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES
Bandwidth	[± 0.642]	[± 0.623]	[± 0.681]	[± 0.944]	[± 0.590]

This table reports the RD results for Eq. (4). *FileSize* is the log of file size (in bytes) of 10-Ks. *NetFileSize* is the log of file size (in bytes) of 10-Ks after extraneous material such as figures and tables have been removed. *TotalWords* is the log of the total word counts of 10-Ks. *UniqueWords* is the log of the total number of words which occurs at least once in 10-Ks. *TotalItems* is the total number of words of the 9 items eligible for the reduced disclosure on 10-Ks. The SEC allows SRCs to reduce the disclosure levels in 10 items in the S-K forms. Since both the item 402 (Executive Compensation) and item 407 (Corporate Governance) are included in item 11 in 10-Ks, the total number of 10K items eligible for reduced disclosure is therefore 9. Standard errors are clustered at the firm level and reported in parentheses

***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively

We present the RD plots, showing the effect of the eligibility under the SRC rule on the disclosure levels in Fig. 1a–e. In each plot, values along the horizontal axis measure the distance between the logged values of public float and the applicable threshold. Values along the vertical axis quantify the disclosure level. Bins of observations of SRCs are located to the left of the cutoff while bins of observations of non-SRCs are situated to the right. Consistent with the RD results reported in Table 3, we observe sharp drops in the disclosure levels immediately to the left of the thresholds for all the disclosure level measures. The graphical evidence leads us to conclude that eligible SRCs voluntarily adopt the reduced disclosure requirements under the SRC rule.

4.3 The impact of the eligibility under the SRC rule on the risk of default

The RD model was used in the previous section to demonstrate that smaller reporting companies voluntarily provide a scaled disclosure on average. In this section, we attempt to answer our main research question. Specifically, we examine if SRCs experience an increase in bankruptcy risk. First, a univariate analysis is conducted to compare the average default risk between smaller reporting companies and non-smaller reporting companies. The results are reported in Table 4. The results suggest that smaller reporting companies

have a significantly higher default risk than non-smaller reporting companies. The average EDF of smaller reporting companies is 14.6%, whereas the corresponding value of non-smaller reporting companies is 3.9%. The difference (10.7%) is statistically significant at better than the 1% significance level. The results of the univariate analysis demonstrate that firms eligible for a scaled disclosure under the SRC rule experience a higher default risk compared to non-SRCs.

We then estimate the effect of the reduced disclosure level on the risk of default employing the following RD model:

$$Default_{i,t} = \beta_0 + \beta_1 SRC_{i,t} + \beta_2 Float_{i,t} + \beta_3 (SRC_{i,t} \times Float_{i,t}) + \beta'_4 \mathbf{x}_{i,t} + v_i + \gamma_t + \varepsilon_{i,t} \tag{5}$$

where $Default_{i,t}$ denotes the default risk measures: the EDF, the Z-score, and the O-score for firm i in fiscal year t . Vector \mathbf{x} contains the control variables previously discussed in Sect. 3.4. We also include the year fixed effects to capture the time-varying characteristic of default risk, potentially arising from changing macroeconomic environments, and the industry fixed effects to control for heterogeneity across industries as discussed in Chava and Jarrow (2004) and Brogaard et al. (2017).¹⁵ A positive and statistically significant estimate of β_1 would suggest that the eligibility to provide scaled disclosures under the SRC rule causes SRCs to experience higher risk of bankruptcy. We cluster the standard errors at the firm level.¹⁶

We present the estimation results for Eq. (5) in Table 5. The estimates of β_1 are all positive under columns (1) and (3) when the EDF and the O-score are employed as the default risk measures and negative under column (2) when the Z-score is used. All the estimates are statistically significant at the conventional levels. The estimates of β_1 suggest that SRCs experience statistically as well as economically significant higher default risk compared to non-SRCs. Considering the magnitude of the estimate of β_1 under column (1) when the EDF is employed as the measure of bankruptcy risk, the value of 0.042 indicates that the reduced disclosure level causes the EDF of SRCs to increase by approximately 4 basis points—an equivalence of approximately 70% rise in the risk of default when the impact is evaluated at the unconditional mean of the EDF of 6.0%. It is worth noting that excluding the control variables from the estimation results in higher estimates of β_1 but does not qualitatively change our findings.

To capture potential nonlinearity, we estimate the following specifications:

$$Default_{i,t} = \beta_0 + \beta_1 SRC_{i,t} + \beta_2 Float_{i,t} + \beta_3 (SRC_{i,t} \times Float_{i,t}) + f(\bullet) + \beta'_4 \mathbf{x}_{i,t} + v_i + \gamma_t + \varepsilon_{i,t} \tag{6}$$

¹⁵ Different industries face different levels of competition and, therefore, the likelihood of bankruptcy can differ for firms in different industries with otherwise identical balance sheets. Moreover, different industries may have different accounting conventions, implying that the likelihood of bankruptcy can differ for firms in different industries with otherwise identical balance sheets Chava and Jarrow (2004). As a check for robustness of our results, estimation results for models which include the firm fixed effects are qualitatively similar to those for models with the industry fixed effects.

¹⁶ In addition to the baseline RD model in Eq. (5), we check for stability of the estimated causal effect by experimenting with the following alternative specifications:

$$Default_{i,t} = \beta_0 + \beta_1 SRC_{i,t} + \beta_2 Float_{i,t} + v_i + \gamma_t + \varepsilon_{i,t}$$

and

$$Default_{i,t} = \beta_0 + \beta_1 SRC_{i,t} + \beta_2 Float_{i,t} + \beta_3 (SRC_{i,t} \times Float_{i,t}) + v_i + \gamma_t + \varepsilon_{i,t}.$$

Both equations exclude the control variables. The results for the alternative specifications are available upon request from the corresponding author.

Table 4 Univariate analysis of default risk

VARIABLE	Treated ($SRC = 1$)	Control ($SRC = 0$)	Difference
n	4812	20,464	
EDF	0.146	0.039	0.107***
$Z\text{-Score}$	- 0.741	3.023	- 3.765***
$O\text{-Score}$	2.955	0.579	2.376***

This table compares the average default risk between smaller reporting companies and non-smaller reporting companies. EDF is the expected default frequency, calculated following Bharath and Shumway (2008). $Z\text{-score}$ is the measure of default risk, computed following Altman (1968). $O\text{-score}$ is the measure of default risk, estimated following Ohlson (1980)

***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively

where $f(\bullet)$ denotes polynomial terms of $SRC_{i,t} \times Float_{i,t}$ whose order is selected based on the Bayesian Information Criterion (BIC). The RD results for Eq. (6) are presented under columns (4) to (6) in Table 5. Consistent with the linear RD results, reported under columns (1) to (3) in Table 5, we find that, compared with non-SRCs, default risk is statistically and economically higher among SRCs. The estimates of β_1 all remain statistically significant at the conventional levels. Overall, the results in Tables 5 indicate that the eligibility to provide scaled disclosures among SRCs escalates the risk of bankruptcy. The RD plots illustrated in Fig. 2a–f depict sharp rises (drops) in the EDF and the O-score (the Z-score) immediately to the left of the threshold, indicating marked increases in the risk of default among SRCs.

Our results are consistent with the findings reported in Verrecchia (2001) and Cheng et al. (2013). An increase in information asymmetry due to the reduced disclosure levels among SRCs leads investors to price in information risk which in turn causes the risk of default to rise. Verrecchia (1983) showed that German firms committing to increased levels of disclosure under the IAS or US GAAP standards witness a reduction in information asymmetry as measured by the bid-ask spreads. Cheng et al. (2013) reported an increase in market illiquidity among firms which are eligible for scaled disclosures. The authors argued that mandatory disclosure serves as a credible commitment mechanism and that losing such commitment by disclosure deregulation is costly in the absence of a loss of information. We further disentangle the impact of the loss of commitment to mandatory disclosure on the risk of default from the impact of information loss in Sect. 8.

5 Model diagnostics

In this section, we conduct two diagnostic tests to ensure that the underlying RD design assumptions are satisfied and that our results are valid. First, we employ a technique, developed by McCrary (2008), to inspect the density of the public float values around the threshold to examine whether firms, whose values of equity float are close to the threshold, manipulate their public floats in order to gain the SRC status.¹⁷ The approach tests whether

¹⁷ Nondorf et al. (2012) found that some firms with public float around \$75 million attempt to temporarily reduce their public float values during their second fiscal year quarter by lowering the stock prices and increasing insider buying.

Table 5 Regression discontinuity estimation of default risk

	(1)	(2)	(3)	(4)	(5)	(6)
	Linear model			Non-linear model		
	<i>EDF</i>	<i>Z-score</i>	<i>O-score</i>	<i>EDF</i>	<i>Z-score</i>	<i>O-score</i>
<i>SRC</i>	0.042*** (0.012)	- 1.695** (0.815)	1.074** (0.461)	0.048*** (0.016)	- 1.898* (1.101)	0.578* (0.346)
<i>Float</i>	- 0.060*** (0.015)	- 4.459* (2.323)	1.225 (0.830)	- 0.080** (0.038)	- 16.224 (10.268)	- 0.663 (2.993)
<i>SRC</i> × <i>Float</i>	0.028 (0.023)	3.494 (2.903)	0.989 (0.797)	0.119* (0.068)	21.381 (17.210)	5.276 (4.649)
<i>LnAssets</i>	0.056*** (0.005)	1.614** (0.654)	- 1.345** (0.685)	0.058*** (0.004)	3.149*** (0.513)	- 1.378*** (0.095)
<i>Leverage</i>	0.207*** (0.021)	- 2.701 (2.928)	2.399 (2.205)	0.201*** (0.015)	2.996 (4.574)	5.393*** (0.274)
<i>LnDebt</i>	0.010*** (0.002)	- 0.584 (0.425)	0.487 (0.389)	0.007*** (0.002)	- 1.835*** (0.636)	0.182*** (0.050)
<i>Vol</i>	- 0.010*** (0.001)	0.069 (0.053)	- 0.017 (0.020)	- 0.010*** (0.001)	0.282*** (0.039)	- 0.046*** (0.018)
<i>NI</i>	- 0.072*** (0.012)	16.979*** (3.030)	- 10.418*** (1.866)	- 0.091*** (0.008)	4.936*** (1.490)	- 0.261 (0.210)
<i>ER</i>	- 0.093*** (0.005)	- 0.168 (0.252)	0.376* (0.225)	- 0.091*** (0.004)	0.523*** (0.186)	- 0.199*** (0.059)
Constant	- 0.147*** (0.030)	- 1.390 (2.633)	7.785*** (2.233)	- 0.143*** (0.028)	- 10.267*** (2.344)	6.954*** (1.047)
Observations	4,142	1,807	2,249	10,202	4,889	4,478
<i>R</i> ²	0.433	0.285	0.252	0.423	0.497	0.521
Firms	1664	1000	1149	2612	1804	1721
Industry FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Bandwidth	[± 0.887]	[± 0.425]	[± 0.519]	[± 1.885]	[± 1.064]	[± 0.985]
Polynomial Order				3	4	4

This table reports the RD results for Eqs. (5) and (6), estimated using observations of firms within the MSE-optimal bandwidth around the normalised threshold. *SRC* is a dummy variable which equals 1 if the firm qualifies for the reduced disclosure requirement, and 0 otherwise. *Float* denotes the distance between company equity float value (in logarithm) and the corresponding cutoff (in logarithm). *EDF* is the expected default frequency, calculated following Bharath and Shumway (2008). *Z-score* is the measure of default risk, computed following Altman (1968). *O-score* is the measure of default risk, estimated following Ohlson (1980). *LnAssets* is the logged value of total assets. *Leverage* is the ratio of total debt to total assets. *LnDebt* is the logged value of the face value of debt. *Vol* is the inverse of the annualized return volatility, i.e., $Vol = 1/\sigma_E$. *NI* is the ratio of net income to total assets. *ER* is the difference between the stock annual return and the CRSP value-weighted return. Year and industry fixed effects are included in all the regressions. Standard errors are clustered at the firm level and reported in parentheses

***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively

the number of firms located immediately just below the threshold significantly differs from that situated just above it. The idea is that if firms cannot easily manipulate their public float, we should observe roughly the same numbers of observations of both types of firms around the cutoff.

Figure 3 shows the distribution of the public float values. Distances between public floats and the cutoff (in logarithms) are shown along the horizontal axis; values on the vertical axis are the density. The lines on both sides of the threshold represent the fitted equity float density along with the 95% confidence intervals which are depicted by the shaded areas. As can be seen from Fig. 3, we do not observe evidence of “bunching” of observations immediately to the left of the threshold. The fitted density on both sides of the threshold appears to be very close to each other, and more importantly, the confidence intervals overlap. Taken together, the evidence indicates no manipulation of public floats among SRCs.

We further conduct a statistical test to examine the discontinuity of the public float density around the cutoff. The test statistic, calculated following McCrary (2008), equals -0.9734 with a p -value of 0.3304 . We therefore fail to reject the null hypothesis of no manipulation of public float in the vicinity of the cutoff.

Second, focusing on the area around the threshold, we investigate whether observable firm characteristics of SRCs are similar to those of non-SRCs by estimating the following RD model:

$$\text{Characteristic}_{i,t} = \psi_0 + \psi_1 \text{SRC}_{i,t} + \psi_2 \text{Float}_{i,t} + \psi_3 (\text{SRC}_{i,t} \times \text{Float}_{i,t}) + v_i + \gamma_t + \varepsilon_{i,t}, \quad (7)$$

where *Characteristic* denotes the covariates previously discussed in Sect. 3.4. Since our focus is on the statistical inference of ψ_1 rather than its point estimate, we employ the CER-optimal bandwidth in the estimation of Eq. (7), as recommended by Cattaneo et al. (2019).¹⁸ The estimation results for Eq. (7) are reported in Table 6. The estimates of ψ_1 for all the covariates are insignificant and the RD plots of Eq. (7), illustrated in Fig. 4a–f, show no discernible jumps. The results suggest that, in the vicinity around the threshold, characteristics of SRCs are similar to those of non-SRCs.

6 Robustness of results

In this section, we examine if our results remain robust under different model parameters. We first examine the sensitivity of our RD results to potential manipulation of public floats around the cutoff.¹⁹ To do this, we discard observations whose values of public float lie very close to the cutoff from the sample and re-estimate Eq. (5) using only the remaining observations—effectively, creating a “donut-hole” around the threshold.²⁰

¹⁸ The CER-optimal bandwidth minimises an approximation to the coverage error.

¹⁹ As pointed out by Cattaneo et al. (2019), it is natural to assume that if systematic manipulation of the assignment variable does occur, observations whose values of the assignment variable are located closest to the cutoff are those most likely to have engaged in manipulation.

²⁰ A useful by-product of this procedure allows us to evaluate whether the RD results are susceptible to the extrapolation involved in local polynomial estimation since the effect of observations in the proximity of the cutoff outweighs those further away from it when fitting the local polynomial models (Cattaneo et al. 2019).

The estimation results for the subsamples from which observations within the 1%, 2%, and 3% radius of the threshold are excluded are shown under columns (1), (2), and (3) in Table 7, respectively. In line with the results for the full sample reported in Table 5, the estimates of β_1 are all positive and statistically significant at better than the 1% significance level, indicating that the causal effect of the reduced disclosure level on the risk of default remains qualitatively unchanged after observations of firms that are likely to manipulate their public floats are excluded from the sample.

Second, we attempt to falsify our main findings by investigating if we can still observe the higher default risk among SRCs at some other threshold values. We expect to see no discontinuity at these “artificial” cutoffs due to the absence of treatment and evidence to the contrary would call into question the validity of our main findings. We experiment with eight artificial cutoffs: \$55 million, \$65 million, \$85 million, \$95 million, \$230 million, \$240 million, \$260 million, and \$270 million. To avoid contamination due to the genuine treatment effect, we include only observations of SRCs (non-SRCs) in the falsification analysis when the artificial cutoff is lower (higher) than the actual cutoff. Thus, the falsification analysis around each of the artificial cutoffs focuses only on observations of firms with the same treatment status.

We re-estimate Eq. (5) for each of the artificial cutoffs and present the results in Tables 8.²¹ We can report that none of the estimates of β_1 are found to be statistically significant. The results suggest that the effect of the reduced disclosure level on the risk of default is absent around all the artificial thresholds, further strengthening our main findings.

And, finally, we adopt an alternative RD design, based on the assumptions of local randomisation, to estimate the impact of the reduced disclosure level of bankruptcy risk. For brevity, we employ the EDF as the measure of default risk in all the robustness checks from here onwards.²² While the standard approach allows for the smoothness of the regression function, an alternative approach to the RD analysis, based on stronger assumptions of local randomisation, ensures that observations within a narrow bandwidth in the vicinity of the cutoff are as good as randomly assigned.

As a first step, we employ a data-driven technique to compute the bandwidth around the cutoff where the treatment can be plausibly assumed to have been “as-if” randomly assigned. The estimated optimal bandwidth is $h = [-0.035, 0.035]$, giving the numbers of observations of SRCs and non-SRCs around the threshold of 67 and 76, respectively. In the next step, we calculate the the difference between the average values of EDF for SRCs and non-SRCs for observations of firms within the bandwidth. The difference in the means, reported in Table 9, is 0.151 with a p -value of less than 1%, indicating that the reduced disclosure level is associated with higher risk of default.

We also calculate the differences in the average values of the observable firm characteristics for SRCs and non-SRCs to ensure that the underlying RD design assumption is satisfied.²³ The statistics reported in Table 9 indicate no statistically significant differences

²¹ As we are more interested in the statistical inference than the point estimates, we employ the CER-optimal bandwidth in the estimation (Cattaneo et al. 2019).

²² Robustness results based on the Z-score and the O-score are qualitatively similar to the results using the EDF as the default risk measure and are available from the authors upon request.

²³ Unlike the standard continuity-based RDD estimation which requires computing separate bandwidths for each covariate, the estimation under the local randomisation assumes that treatment is “as-if” randomly assigned in the selected window h . We therefore use the same window $h = [-0.035, 0.035]$ for all the covariates.

Table 6 Tests of continuity of covariates at the threshold

	(1)	(2)	(3)	(4)	(5)	(6)
	<i>LnAssets</i>	<i>Leverage</i>	<i>LnDebt</i>	<i>Vol</i>	<i>NI</i>	<i>ER</i>
<i>SRC</i>	0.121 (0.079)	0.023 (0.018)	0.104 (0.110)	- 0.282 (0.302)	- 0.037 (0.028)	- 0.069 (0.049)
<i>Float</i>	1.115*** (0.180)	0.014 (0.025)	0.963*** (0.175)	0.606 (0.393)	0.049 (0.066)	- 0.090 (0.098)
<i>SRC</i> × <i>Float</i>	- 0.382 (0.255)	0.033 (0.036)	- 0.331 (0.246)	- 1.498** (0.680)	- 0.180* (0.103)	0.079 (0.152)
Constant	4.673*** (0.155)	0.224*** (0.076)	2.253*** (0.534)	7.814*** (0.750)	- 0.199 (0.151)	- 0.181 (0.114)
Observations	2509	3616	3717	4008	2070	2642
<i>R</i> ²	0.425	0.175	0.298	0.386	0.260	0.099
Firms	1,261	1,535	1,586	1,663	1,120	1,300
Industry FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Bandwidth	[± 0.532]	[± 0.783]	[± 0.765]	[± 0.823]	[± 0.445]	[± 0.557]

This table reports the RD results for Eq. (7), estimated using observations of firms within the CER-optimal bandwidth around the normalised threshold for falsification purposes following Cattaneo et al. (2019). *SRC* is a dummy variable which equals 1 if the firm qualifies for the reduced disclosure requirement, and 0 otherwise. *Float* denotes the distance between company equity float value (in logarithm) and the corresponding cutoff (in logarithm). Year and industry fixed effects are included in all the regressions. Standard errors are clustered at the firm level and reported in parentheses

***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively

between the means of firm characteristics since all the *p*-values are greater than 10%, confirming the validity of our results.

To conclude the last robustness check, we conduct a falsification test mirroring the investigation by performing an RD analysis under the assumptions of local randomisation around the artificial cutoffs of \$55 million, \$65 million, \$85 million, \$95 million, \$230 million, \$240 million, \$260 million, and \$270 million. The results, reported in Table 10, indicate no statistical differences in the average EDF values at all the artificial thresholds.

7 The impact of default risk by firms eligible under the SRC rule for the first time

In this section, we investigate the effect of the reduced disclosure level on the risk of default when firms become eligible under the SRC rule for the first time. The analysis in this section is motivated by Cohen et al. (2020) who argued that, while numerical financial statement entries are easily comparable as they are reported alongside figures from previous financial years, investors do not always compare the current year's 10-K text to last year's. As a result, they often miss the latest, and often negative, disclosure which is buried in lengthy reports. Since a reduction in the disclosure level, adopted by newly eligible SRCs, is one of the most conspicuous changes to 10-K reports and is likely to

Table 7 “Donut-Hole” analysis

	(1)	(2)	(3)
	1%	2%	3%
<i>Dependent variable: EDF</i>			
<i>SRC</i>	0.042*** (0.012)	0.036*** (0.013)	0.035*** (0.013)
<i>Float</i>	- 0.060*** (0.015)	- 0.062*** (0.015)	- 0.062*** (0.016)
<i>SRC × Float</i>	0.028 (0.023)	0.022 (0.023)	0.020 (0.024)
<i>LnAssets</i>	0.056*** (0.005)	0.056*** (0.005)	0.057*** (0.005)
<i>Leverage</i>	0.215*** (0.021)	0.221*** (0.021)	0.218*** (0.021)
<i>LnDebt</i>	0.010*** (0.002)	0.009*** (0.002)	0.009*** (0.002)
<i>Vol</i>	- 0.010*** (0.001)	- 0.010*** (0.001)	- 0.010*** (0.001)
<i>NI</i>	- 0.072*** (0.012)	- 0.069*** (0.012)	- 0.071*** (0.012)
<i>ER</i>	- 0.093*** (0.005)	- 0.092*** (0.005)	- 0.092*** (0.005)
Constant	- 0.150*** (0.030)	- 0.145*** (0.030)	- 0.146*** (0.030)
Observations	4105	4061	4019
R^2	0.434	0.433	0.433
Firms	1,661	1,657	1,647
Industry FE	YES	YES	YES
Year FE	YES	YES	YES
Bandwidth	[± 0.887]	[± 0.887]	[± 0.887]

This table reports the RD results for Eq. (5), estimated using observations of firms within the MSE-optimal bandwidth after excluding observations locating within the 1%, 2%, and 3% radius around the normalised threshold. *SRC* is a dummy variable which equals 1 if the firm qualifies for the reduced disclosure requirement, and 0 otherwise. *Float* denotes the distance between company equity float value (in logarithm) and the corresponding cutoff (in logarithm). Year and industry fixed effects are included in all the regressions. Standard errors are clustered at the firm level and reported in parentheses

***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively

be noticed by investors, we expect the risk of default among newly qualified SRCs to rise sharply due to heightened information asymmetry and information risk.

We can first report that a total of 552 companies were classified as SRCs when the SRC rule was first enacted in 2008. The number of newly qualified SRCs subsequently halved in the following year and fell sharply from 2010 onwards. When the threshold

Table 8 Falsification tests: regression discontinuity estimation of default risk at artificial cutoffs

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	\$55	\$65	\$85	\$95	\$230	\$240	\$260	\$270
<i>Dependent Variable: EDF</i>								
<i>SRC</i>	0.005 (0.018)	-0.019 (0.023)	0.014 (0.022)	-0.022 (0.017)	0.005 (0.019)	0.050 (0.033)	0.031 (0.023)	0.001 (0.019)
<i>Float</i>	-0.066** (0.029)	-0.054* (0.029)	-0.016 (0.281)	0.035 (0.107)	-0.067*** (0.015)	-0.065*** (0.014)	-1.267 (0.935)	-0.071 (0.373)
<i>SRC × Float</i>	-0.003 (0.082)	0.210 (0.243)	-0.078 (0.284)	-0.051 (0.112)	0.507 (0.374)	-0.413 (1.244)	1.221 (0.938)	0.023 (0.374)
<i>LnAssets</i>	0.097*** (0.007)	0.090*** (0.008)	0.080*** (0.010)	0.081*** (0.008)	0.087*** (0.007)	0.088*** (0.007)	0.086*** (0.008)	0.088*** (0.006)
<i>Leverage</i>	0.399*** (0.034)	0.399*** (0.038)	0.320*** (0.042)	0.343*** (0.037)	0.307*** (0.029)	0.304*** (0.029)	0.320*** (0.044)	0.324*** (0.027)
<i>LnDebt</i>	-0.031*** (0.007)	-0.027*** (0.007)	-0.029*** (0.007)	-0.031*** (0.006)	-0.027*** (0.004)	-0.027*** (0.005)	-0.027*** (0.005)	-0.029*** (0.004)
<i>Vol</i>	-0.009*** (0.001)	-0.010*** (0.001)	-0.009*** (0.001)	-0.010*** (0.001)	-0.010*** (0.001)	-0.010*** (0.001)	-0.008*** (0.001)	-0.008*** (0.001)
<i>NI</i>	-0.104*** (0.016)	-0.099*** (0.018)	-0.067*** (0.021)	-0.068*** (0.017)	-0.070*** (0.015)	-0.072*** (0.015)	-0.107*** (0.026)	-0.124*** (0.019)
<i>ER</i>	-0.052*** (0.006)	-0.055*** (0.007)	-0.052*** (0.008)	-0.055*** (0.007)	-0.071*** (0.007)	-0.071*** (0.007)	-0.063*** (0.012)	-0.066*** (0.007)
Constant	-0.202*** (0.038)	-0.184*** (0.042)	-0.242*** (0.056)	-0.238*** (0.044)	-0.337*** (0.039)	-0.354*** (0.046)	-0.379*** (0.065)	-0.308*** (0.049)
Observations	2239	1832	1435	1912	2820	2753	1268	3125
<i>R</i> ²	0.472	0.487	0.383	0.394	0.444	0.445	0.445	0.445
Firms	1026	913	816	971	1204	1190	791	1324
Industry FE	YES							
Year FE	YES							

Table 8 (continued)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
\$55	\$65	\$85	\$95	\$230	\$240	\$260	\$270
[± 0.645]	[± 0.616]	[± 0.389]	[± 0.427]	[± 0.782]	[± 0.800]	[± 0.303]	[± 0.735]

This table reports the RD results for Eq. (5), estimated using observations of firms within the CER-optimal bandwidth around the artificial, normalised threshold. We experiment with eight artificial cutoffs: \$55 million, \$65 million, \$85 million, \$95 million, \$230 million, \$240 million, \$260 million, and \$270 million. The results are shown under columns (1)–(8), respectively. To avoid contamination due to the genuine treatment effect, we include only observations of SRCs (non-SRCs) in the analysis when the artificial cutoff is lower (higher) than the actual cutoff. Thus, the falsification analysis around each of the artificial cutoffs focuses only on observations of firms with the same treatment status. *SRC* is a dummy variable which equals 1 if the firm qualifies for the reduced disclosure requirement, and 0 otherwise. *Float* denotes the distance between company equity float value (in logarithm) and the corresponding cutoff (in logarithm). Year and industry fixed effects are included in all the regressions. Standard errors are clustered at the firm level and reported in parentheses

***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively

Table 9 Default risk and covariates under the local randomisation assumptions

Variable	Difference in means	Number of control (Non-SRC) observations	Number of treated (SRC) observations
<i>EDF</i>	0.151***	76	67
<i>LnAssets</i>	0.269	76	67
<i>LnDebt</i>	0.228	76	67
<i>Leverage</i>	0.027	76	67
<i>Vol</i>	- 0.710	76	67
<i>NI</i>	- 0.068	76	67
<i>ER</i>	- 0.152	76	67

This table reports the Regression Discontinuity estimation results under the local randomisation assumptions. Differences in means between observations of SRCs and non-SRCs within the selected bandwidths are reported

***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively

Table 10 Default risk under the local randomisation assumptions at artificial cutoffs

Threshold	Difference in means	Number of control (Non-SRC) observations	Number of Treated (SRC) Observations
\$55	- 0.004	80	71
\$65	0.009	44	39
\$85	- 0.037	52	71
\$95	0.022	38	49
\$230	- 0.013	50	50
\$240	0.052	11	16
\$260	- 0.063	39	42
\$270	- 0.350	42	34

This table reports the Regression Discontinuity estimation results under the local randomisation assumptions at the artificial thresholds for falsification purposes. Differences in the average values of EDF between observations of SRCs and non-SRCs within the selected bandwidths are reported. We experiment with eight artificial cutoffs: \$55 million, \$65 million, \$85 million, \$95 million, \$230 million, \$240 million, \$260 million, and \$270 million

was raised from \$75 million to \$250 million in 2018, the number of newly eligible SRCs increased significantly from 43 in 2017 to 219 in 2018.

To quantify the impact of the reduced disclosure level on the risk of default, we estimate the following model:

$$\nabla EDF_{i,t} = \phi_0 + \phi_1 NewSRC_{i,t} + \phi_2' \nabla \mathbf{x}_{i,t} + \gamma_t + \varepsilon_{i,t} \quad (8)$$

where $\nabla EDF_{i,t} = EDF_{i,t} - EDF_{i,t-1}$ and $\nabla \mathbf{x}_{i,t} = \mathbf{x}_{i,t} - \mathbf{x}_{i,t-1}$. Vector \mathbf{x} contains the control variables, previously discussed in Sect. 3.4. $NewSRC_{i,t}$ is a binary variable which takes a value of 1 if firm i is eligible to provide scaled disclosures in year t but not in year $t - 1$. While observations in the treated group are newly qualified SRCs whose values of $NewSRC_{i,t} = 1$, we employ two control groups in the estimation of Eq. (8). The first control group consists of firms that are classified as SRCs in any years prior to year t . Firms in the

second control group are non-SRCs. To ensure that characteristics of the treated and the control observations are similar, treated firms are matched with control firms in each control group, based on the covariates discussed in Sect. 3.4, using the propensity score matching (PSM) technique.²⁴ γ_t captures the year fixed effects.²⁵ In estimating Eq. (8) above, we cluster all the standard errors at the firm level.

We report the estimation results for both control groups in Table 11 under columns (1) and (2), respectively. The estimates of ϕ_1 under both columns are positive and statistically significant at better than the 1% level, suggesting that recently qualified SRCs experience higher default risk compared to both previously eligible SRCs and non-SRCs. The estimated parameter on *NewSRC* under column (1) indicates that newly qualified SRCs experience approximately 4.6 basis points higher risk of default when compared to previously qualified SRCs. The results under column (2) show that, compared to non-SRCs, newly qualified SRCs witness their default risk rise by almost 12 basis points. These findings point to the stronger impact on the risk of default when comparing first-time SRCs to non-SRCs than when comparing first-time SRCs to SRCs that have already qualified for the reduced disclosure requirements.

We next compare default risk of firms that gain the SRC status in any year prior to year t with that of non-SRCs. Specifically, we estimate the following model:

$$\nabla EDF_{i,t} = \phi_0 + \phi_1 OldSRC_{i,t} + \phi_2' \nabla x_{i,t} + \gamma_t + \varepsilon_{i,t} \quad (9)$$

where $OldSRC_{i,t}$ is a dummy variable whose value equals 1 if firm i is classified as an SRC at any time prior to year t , and 0 if firm i is in the control group of non-SRCs that are matched to SRCs in the treated group using PSM. The estimation result for Eq. (9) is reported under column (3) in Table 11. The estimate of ϕ_1 is found to be positive and statistically significant, suggesting that previously eligible SRCs continue to experience higher risk of bankruptcy, compared to non-SRCs. We test for statistical differences between pairs of the estimated parameters of interest and can report that the differences are all statistically significant at better than the 5% level.

To conclude this section, the results in this section indicate that both newly eligible and previously eligible SRCs are found to experience higher risk of default compared to non-SRCs. Newly qualified SRCs, however, appear to suffer from a much larger increase in default risk in their first year of eligibility.

8 Information effects and commitment effects of financial disclosures on default risk

So far in this article, it has been shown that permitting smaller reporting companies to reduce disclosure levels increases their risk of default. The causal impact of the eligibility under the SRC rule could be potentially transmitted via two separate channels, namely, the loss of commitment to mandatory disclosure and the loss of potentially useful information

²⁴ Untabulated results for the tests of covariate balance between the two groups show no statistical differences in the mean values of the covariates between observations in the treated and the control groups. For brevity, results for the tests of covariate balance are not reported in this paper and are available from the authors upon request.

²⁵ The functional form of Eq. (8) is also employed by Cornett et al. (2020) and Nguyen et al. (2020) to examine bank actions when they enter the stress test for the first time.

Table 11 DiD of default risk for newly qualified smaller reporting companies

	(1)	(2)	(3)
	∇EDF	∇EDF	∇EDF
<i>NewSRC</i>	0.046*** (0.009)	0.118*** (0.014)	
<i>OldSRC</i>			0.076*** (0.012)
<i>LnAssets</i>	-0.056*** (0.009)	-0.022* (0.013)	0.001 (0.012)
<i>Leverage</i>	0.086** (0.035)	0.128*** (0.045)	0.098** (0.039)
<i>LnDebt</i>	0.099*** (0.008)	0.050*** (0.010)	0.031*** (0.008)
<i>Vol</i>	-0.022*** (0.002)	-0.021*** (0.002)	-0.012*** (0.001)
<i>NI</i>	-0.017 (0.014)	-0.044* (0.024)	-0.082*** (0.026)
<i>ER</i>	-0.117*** (0.008)	-0.104*** (0.010)	-0.102*** (0.010)
Constant	0.070 (0.055)	-0.087 (0.080)	-0.035 (0.051)
Observations	2944	1710	2086
R-squared	0.473	0.546	0.481
Year FE	YES	YES	YES

This table reports the difference-in-differences estimation results for Eqs. (8) and (9). ∇EDF is the difference of expected default frequency *EDF*, calculated following Bharath and Shumway (2008), between current year and last year. *NewSRC* is a binary variable whose value equals 1 if the firm is eligible to provide scaled disclosures in the current year but not in the previous year, and 0 otherwise. *OldSRC* is a dummy variable whose value equals 1 if the firm is an SRC in any year prior to the current year, and 0 otherwise. Column (1) shows the estimation results, comparing the EDFs of newly eligible SRCs to those of previously eligible SRCs. Columns (2) and (3) show the estimation results, comparing the EDFs between newly eligible SRCs and non-SRCs, and previously eligible SRCs and non-SRCs, respectively. Year fixed effects are included in all the regressions. Standard errors are clustered at the firm level and reported in parentheses

***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively

that is relevant to the firm value. If an SRC voluntarily maintains its disclosure level by continuing to report its financial performance in full, there is no information loss, but the SRC could still suffer from an increase in the risk of default due to the loss of commitment to mandatory disclosure. Indeed, research by Cheng et al. (2013) documented deterioration in stock liquidity among SRCs which they attributed to the effect of the loss of commitment by SRCs to provide mandatory disclosure.

In this section, the difference-in-differences (DiD) approach is used to disentangle the impact of the loss of commitment to mandatory disclosure from the impact of the loss of

information on the risk of default. We focus our analysis around the 2007–2008 when the SRC rule was first introduced and the 2017–2018 period when the SRC rule was amended to increase the threshold from \$75 million to \$250 million. Based on the fact that SRCs are allowed to provide scaled disclosures, our sample can be divided into three sub-samples: SRCs that choose to reduce their disclosure levels, SRCs that voluntarily maintain their disclosure levels despite being allowed to reduce disclosures, and non-SRCs that are not qualified for reducing disclosures and must disclose in full. The SRCs that choose to reduce their disclosure levels (Reducers) suffer from information loss (due to reduced disclosure) and loss of commitment to mandatory disclosure. The SRCs that voluntarily maintain their disclosure levels (Maintainers) are subject to loss of commitment only as they continue to choose to disclose in full. A comparison between Reducers and Maintainers allows us to disentangle the impact of the loss of commitment to mandatory disclosure from the impact of the loss of information on the risk of default.

The empirical work is conducted by first comparing SRCs and non-SRCs using the DiD approach to investigate the overall impact of reduced disclosures on default risk. The following DiD model for each time period is used:

$$EDF_{i,t} = \lambda_0 + \lambda_1 SRC_i + \lambda_2 Post_t + \lambda_3 (SRC_i \times Post_t) + \lambda'_4 x_{i,t} + \epsilon_{i,t}, \tag{10}$$

where $SRC_i = 1$ if firm i is classified as a smaller reporting company in year 2008 (or 2018), $x_{i,t}$ is the vector of controls as defined in Sect. 3.4, and $t \in \{2007, 2008, 2017, 2018\}$ where $Post_{2007} = Post_{2017} = 0$ and $Post_{2008} = Post_{2018} = 1$. The coefficient of interest is λ_3 , which measures the overall effect of the eligibility under the SRC rule on the risk of default. Smaller reporting companies in the treated group are matched with non-smaller reporting companies in the control groups using the PSM to ensure that the characteristics of the firms in both groups are similar, except for their treatment status.²⁶ All the standard errors are clustered at the firm level.

The estimation results for Eq. (10) are reported in columns (1) and (4) of Table 12. The estimate of λ_3 of 0.172 in column (1) indicates that the risk of default among eligible smaller reporting companies rose by approximately 17 basis points after the SRC rule became effective in 2008. This figure is found to be much higher than the corresponding estimate of 9 basis points, reported under column (4), for the 2017–2018 period when the threshold was raised from \$75 million to \$250 million.

Next, we compare Reducers and Maintainers to separate the impact of the loss of commitment to mandatory disclosure from the impact of the loss of information on the risk of default. The following DiD model is estimated:

$$EDF_{i,t} = \lambda_0 + \lambda_1 Reduce_i + \lambda_2 Post_t + \lambda_3 (Reduce_i \times Post_t) + \lambda'_4 x_{i,t} + \epsilon_{i,t}, \tag{11}$$

where $Reduce_i$ is a binary variable that equals 1 if firm i reduced its disclosure level in year 2008 (or 2018), and 0 if firm i maintained the level of disclosure in year 2008 (or 2018).²⁷ To identify SRCs that reduced and maintained their disclosure levels during the analysis

²⁶ We estimate propensity scores on $LnAssets$, $Leverage$, $LnDebt$, Vol , NI and ER . Treatment and control groups are matched without replacement using the logit of the propensity scores within 0.5 standard deviations.

²⁷ We focus on a short time window around the introduction of the SRC rule in 2008 in our DiD model to mitigate concerns relating to reverse causality and to better control for the impact of unobserved variables which are unlikely to change significantly during a short time period.

periods, we manually checked all the 10-Ks, filed by SRCs in 2008 and 2018. We found that 347 out of 552 SRCs reduced their disclosure levels in 2008.

The estimated results of the DiD model in Eq. (11) are shown in column (2) for the 2007–2008 sample and in column (5) for the 2017–2018 sample of Table 12. The estimate of λ_3 for the 2007–2008 sample is positive and statistically significant at the 1% level, which suggests that the default risk of the SRCs that reduce their level of disclosure (Reducers) is approximately 18 basis points greater compared to SRCs that maintain their disclosure levels (Maintainers) in 2007–2008 period when the SRC rule was first introduced. The estimate of λ_3 for the latter period 2017–2018 reported under column (5) is about 8 basis points. The results demonstrate that as a result of the loss of commitment to mandatory disclosure, SRCs still experience higher default risk even if they voluntarily maintain their disclosure levels.

Finally, we compare SRCs that maintain their disclosure levels and non-SRCs to investigate the impact of the loss of commitment to mandatory disclosure on the risk of default employing the following model:

$$EDF_{i,t} = \lambda_0 + \lambda_1 Maintain_i + \lambda_2 Post_t + \lambda_3 (Maintain_i \times Post_t) + \lambda'_4 x_{i,t} + \varepsilon_{i,t}, \quad (12)$$

where $Maintain_i$ is a binary variable which takes a value of 1 if firm i is a smaller reporting company that voluntarily maintained its disclosure in 2008 and 2018, and 0 if firm i is a propensity score matched non-smaller reporting company in the same year.

The DiD estimation results of Eq. (12) for the 2007–2008 and the 2017–2018 samples are shown in columns (3) and (6) of Table 12, respectively. Both of the estimates of λ_3 are positive and statistically significant at better than the 5% significance level, which suggests that the loss of commitment to mandatory disclosure among SRCs that voluntarily maintained their disclosure levels causes the risk of default to rise during both time periods under investigation. The findings echo Cheng et al. (2013) and Brogaard et al. (2017) who documented deterioration in stock liquidity due to the loss of commitment to mandatory disclosure. Interestingly, the increased risk of bankruptcy in 2007–2008 period is estimated to be approximately 18 basis points, while the increase in 2017–2018 period is about 7 basis points. This suggests that investors reacted more strongly to the loss of commitment during the introduction of the SRC rule, whose period coincided with the Global Financial Crisis of 2007–2008, than around the period when the rule was amended.

Taken together, the results in this section show that, if a smaller reporting company voluntarily maintains its disclosure level by continuing to report its financial performance in full, there is no effect of information loss. However, there is still an increase in its default risk due to the loss of commitment to mandatory disclosure. The effects of the loss of information due to reduced disclosure levels and the loss of commitment to mandatory disclosure are found to be greater during the 2007–2008 period when SRC rule was introduced than the 2017–2018 period.

9 Possible confounding effects of SOX Section 404

The Sarbanes-Oxley Act (SOX) was passed in 2002. Section 404 of SOX requires companies to install and regularly test the internal processes to ensure the quality of financial reporting. It also requires managers to report their findings in a special management's report which is attested by an outside auditor. Extensive research has found that auditors'

Table 12 The effect of information loss versus loss of commitment to mandatory disclosures

	(1)	(2)	(3)	(4)	(5)	(6)
	<i>EDF</i>	<i>EDF</i>	<i>EDF</i>	<i>EDF</i>	<i>EDF</i>	<i>EDF</i>
	2007–2008			2017–2018		
<i>SRC</i>	0.083*** (0.026)			0.030 (0.021)		
<i>SRC</i> × <i>Post</i>	0.172*** (0.033)			0.090*** (0.027)		
<i>Reduce</i>		0.063** (0.028)			0.068** (0.032)	
<i>Reduce</i> × <i>Post</i>		0.180*** (0.001)			0.082*** (0.016)	
<i>Maintain</i>			0.084*** (0.031)			0.031 (0.026)
<i>Maintain</i> × <i>Post</i>			0.178*** (0.038)			0.072** (0.030)
<i>Post</i>	0.296*** (0.040)	0.517*** (0.043)	0.290*** (0.043)	− 0.029* (0.015)	0.110*** (0.035)	− 0.022 (0.015)
<i>LnAssets</i>	0.010 (0.015)	0.008 (0.018)	0.010 (0.016)	0.050*** (0.015)	0.053** (0.024)	0.022 (0.017)
<i>Leverage</i>	0.270*** (0.055)	0.279*** (0.076)	0.263*** (0.059)	0.232*** (0.059)	0.245** (0.105)	0.152** (0.059)
<i>LnDebt</i>	0.013* (0.007)	0.040*** (0.010)	0.012 (0.008)	− 0.007 (0.007)	0.001 (0.015)	0.003 (0.007)
<i>Vol</i>	− 0.047*** (0.007)	− 0.057*** (0.007)	− 0.044*** (0.007)	− 0.017*** (0.002)	− 0.019*** (0.004)	− 0.015*** (0.002)
<i>NI</i>	− 0.017 (0.032)	− 0.018 (0.034)	0.015 (0.036)	− 0.061 (0.037)	− 0.050 (0.046)	− 0.044 (0.040)
<i>ER</i>	− 0.146*** (0.023)	− 0.157*** (0.024)	− 0.138*** (0.027)	− 0.078*** (0.015)	− 0.115*** (0.025)	− 0.087*** (0.017)
Constant	− 0.252*** (0.076)	− 0.362*** (0.095)	− 0.253*** (0.082)	− 0.155* (0.082)	− 0.189 (0.143)	− 0.032 (0.090)
Observations	828	618	721	834	322	712
<i>R</i> ²	0.662	0.562	0.671	0.580	0.532	0.573
Firms	598	423	519	578	225	505
Industry FE	YES	YES	YES	YES	YES	YES
Year FE	NO	NO	NO	NO	NO	NO

This table reports the difference-in-differences estimation results for Eqs. (10)–(12). *SRC* is a dummy variable which equals 1 if the firm qualifies for the reduced disclosure requirement in fiscal year 2008 (or 2018), and 0 otherwise. $t \in \{2007, 2008, 2017, 2018\}$ where $Post_{2007} = Post_{2017} = 0$ and $Post_{2008} = Post_{2018} = 1$. *Reduce* is a binary variable which equals 1 if the firm is a smaller reporting companies that reduced its disclosure level in year 2008 (or 2018), and 0 if the firm is a smaller reporting company that maintained its disclosure level in the same period. *Maintain* is a binary variable which equals 1 if the firm is a smaller reporting company that voluntarily maintained its disclosure in 2008 (or 2018), and 0 if the firm is a propensity score matched non-smaller reporting company in the same year. *EDF* is the expected default frequency, calculated following Bharath and Shumway (2008). Industry fixed effects is included in all the regressions. Standard errors are clustered at the firm level and reported in parentheses

***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively

attestation to management's assessment of the company internal control improves financial reporting quality and reduces information risk (Krishnan et al. 2020).

Under Section 404 of SOX, smaller firms with public floats of \$75 million or less during fiscal years 2002–2005 were classified as *non-accelerated filers* (NAFs). They did not have to comply with Section 404 of SOX, exempting them from having to submit the management's reports until 2007 and auditors' attestations until June 2010 (Iliev 2010). Since the threshold used in the classification of SRCs and NAFs is identical, it is thus possible that the causal impact of the reduced disclosure levels on default risk among SRCs under the SRC rule is confounded by the impact of the exemption for NAFs under Section 404 of SOX. We address this issue by estimating the following models:

$$EDF_{i,t} = \zeta_0 + \zeta_1 NAF_{i,t} + \zeta_2 Float_{i,t} + \zeta_3 (NAF_{i,t} \times Float_{i,t}) + f(\bullet) + \zeta'_4 x_{i,t} + v_i + \gamma_t + \varepsilon_{i,t} \quad (13)$$

using data for the period between 2002–2007 prior to the introduction of the SRC rule where $NAF_{i,t}$ is a dummy variable equal 1 if firm i is a non-accelerated filer, and 0 if firm i is an accelerated filer in fiscal year t . The estimation results (untabulated) show that the estimate of ζ_1 is not statistically significant, implying that the risk of default is not impacted by an exemption among NAFs under Section 404 of SOX.²⁸

10 The impact of external oversight, corporate governance, and audit quality

In this section, we examine the impacts of external oversight, corporate governance, and audit quality on the relation between the reduced disclosure level and the risk of default. First, we test if the effect of the reduced disclosure level on the probability of default differs among SRCs which are covered by a large number of analysts compared to those which are followed by a small number of analysts. We also investigate if larger institutional ownership attenuates the effect of the reduced level of disclosure on the risk of default.²⁹

To identify companies with high and low analyst coverage, we download data on analyst coverage from I/B/E/S and divide firms in each year in our sample into five quintiles based on the numbers of analysts following. We discard observations of firms that belong to the three intermediate quintiles and retain only those in the top and the bottom quintiles. Companies in the top quintile are those which are covered by the largest numbers of analysts while firms in the bottom quintile are those followed by the smallest numbers of analysts.

²⁸ For robustness checks, we also estimate the following alternative specifications:

$$EDF_{i,t} = \zeta_0 + \zeta_1 NAF_{i,t} + \zeta_2 Float_{i,t} + f(\bullet) + v_i + \gamma_t + \varepsilon_{i,t}$$

and

$$EDF_{i,t} = \zeta_0 + \zeta_1 NAF_{i,t} + \zeta_2 Float_{i,t} + \zeta_3 (NAF_{i,t} \times Float_{i,t}) + f(\bullet) + v_i + \gamma_t + \varepsilon_{i,t}.$$

The estimation results are consistent with those for Eq. (13) and are available upon request.

²⁹ By monitoring managerial behaviour, financial analysts also help reduce agency conflicts, raise firms' future expected cash flows, reduce leverage, and decrease default risk. While the monitoring role of financial analysts indirectly affects the probability of default, institutional investors can influence default risk directly through their participation in equity ownership. As stockholders, institutional investors take part in the monitoring of managerial activities through voting and other governance mechanisms but their informational role is limited and indirect since it arises from their power to encourage managers to provide better information to the markets.

We employ the same approach to classify observations of firms in our sample into companies with high and low institutional ownership. Firms in the top quintile are those the highest percentages of institutional ownership while firms in the bottom quintile are those with the lowest proportions of institutional ownership. Data on institutional holdings is retrieved from Thomson Reuters Institutional Holdings (13F).

We estimate Eq. (5) separately for each subsample of high and low analysts following as well as high and low institutional holdings and report the results in Panel A of Table 13. The estimates of β_1 indicate that SRCs that are covered by small numbers of analysts and SRCs with low institutional ownership see their default risk rise by about 4 and 3 basis points, respectively. Both estimates are statistically significant at the conventional levels. None of the estimates of β_1 for SRCs that are followed by large numbers of analysts and SRCs with high institutional ownership, however, are statistically significant, suggesting that strong external oversight mechanisms attenuate the link between the reduced level of disclosure and the risk of default. The differences between β_1 across the two respective subsamples are statistically significant at better than the 10% significant level.

Next, we investigate if the degree of board independence alters the relation between the risk of default and the reduced level of disclosure.³⁰ We first download the information on the board size and the numbers of independent directors from BoardEx. We then divide our sample of firms in each year into five quintiles based on the ratio of the number of independent directors to the board size. We retain only observations of firms which belong to the top and the bottom quintiles and discard those that belong to the three intermediate quintiles. Observations in the top quintile are companies with the highest degrees of board independence while those in the bottom quintile are companies with the lowest degrees of board independence. We then estimate the RD model in Eq. (5) for each subsample separately.

The estimation results are reported under columns (1) and (2) of Panel B in Table 13. The estimate of β_1 for the subsample of firms with the least independent boards points to a statistically significant and positive relationship between the risk of default and the reduced level of disclosure. However, we find no link between bankruptcy risk and the disclosure level among SRCs with the most independent boards as the estimated parameter is not statistically significant, suggesting that SRCs with high degrees of board independence do not suffer from increased default risk. The difference between the estimates of β_1 of the two subsamples is statistically significant at better than the 5% level.

Finally, we examine whether SRCs that are audited by a Big 4 firm witness their default risk increase by the same extent as SRCs that are audited by a non-Big 4 auditor.³¹ We download data about the audit firms from Compustat and divide our sample into two

³⁰ A number of studies have documented how the board composition and characteristics are linked to the success and failure of firms. Ashbaugh-Skaife et al. (2006), for example, showed that credit ratings are negatively related to the degree of board independence. Platt and Platt (2012) found that bankrupt firms tend to have smaller, less independent, and younger boards. The authors also showed that independent board members of bankrupt firms are likely to own more stocks in total.

³¹ Prior research on audit quality has shown that investors perceive the four largest international accounting firms (the Big 4) as providing higher quality audits than their smaller competitors (non-Big 4). The enhanced assurance on financial statements, provided by the Big 4 relative to other audit firms, is expected to translate into a tangible benefit for the client in the form of a lower *ex ante* cost of equity capital (Khurana and Raman 2004). Another stream of research, investigating audit quality from an investor's perspective, has documented that an audit alleviates the valuation problem caused by private information and that auditor's reputation helps reduce uncertainty and lower perceived risk (Slovnik et al. 1990).

subsamples: a sample of companies which use a Big 4 auditor and a sample of companies which use a non-Big 4 auditor. We then estimate the RD model in Eq. (5) separately for each subsample. The estimation results are shown under columns (3) and (4) of Panel B in Table 13. It is clear from the estimates of β_1 that the relationship between the reduced disclosure level and default risk remains statistically significant for SRCs audited by non-Big 4 auditors while the association disappears among SRCs audited by Big 4 firms. The difference between the estimates of β_1 for the two subsamples is statistically significant at better than the 5% significance level, suggesting that improved quality of financial reporting, provided by Big 4 auditors, shields SRCs from the increased risk of default, caused by the reduced level of disclosure.

11 Conclusions

In this paper, we investigate the causal effect of reduced disclosure level in 10-Ks on the risk of default. We exploit the SRC rule as the exogenous source of variation and employ RD designs as the main identification strategy. The SRC rule allows smaller reporting companies (SRCs) which are companies whose equity float values are below the thresholds, set by the SEC, to voluntarily provide scaled disclosures in their 10-Ks. We hypothesise that the reduced disclosure levels exacerbate information asymmetry and information risk, leading to an increase in the risk of default.

Our results reveal that SRCs, given an option to reduce their disclosure levels as permitted under the SRC rule, choose to reduce them. Our RD analysis shows that SRCs experience a statistically and economically significant increase in bankruptcy risk, as measured by the expected default frequency (EDF), of around 4 basis points—equivalent to an approximately 70% increase when the impact is evaluated at the conditional mean value of EDF. These results remain qualitatively unchanged when the analysis is conducted using an alternative RD design based on stronger assumptions of local randomisation. Results from the falsification tests demonstrate no significant difference of the risk of default between SRCs and non-SRCs around the artificial thresholds.

Additional analysis results show that newly qualified SRCs witness their default risk rising sharply during their first years of eligibility, compared to that of previously qualified SRCs and non-SRCs. We also report that, if a smaller reporting company voluntarily maintains its disclosure level by continuing to report its financial performance in full, there is no effect of information loss. However, there is still an increase in its default risk due to the loss of commitment to mandatory disclosure. Both effects are found to be much stronger during the introduction of the SRC rule during 2007–2008 than around the period when the definition of SRCs was amended in 2018. In addition, we do not find any impact of an exemption granted to NAFs under SOX Section 404, which allowed them to delay submitting management's reports and auditors' attestations, on the risk of default.

Our research also shows that although the SRC rule was conceived out of a desire to help small businesses reduce their reporting burdens, it exacerbates information asymmetry, and as a result, causes the risk of default to rise. Even if an eligible SRC voluntarily maintains its disclosure levels, it still experiences an increase in default risk stemming from the loss of commitment to mandatory disclosure. Remedial actions such as increasing

Table 13 The impacts of external oversight mechanisms

	Low analysts following	High analysts following	Low institutional ownership	High institutional ownership
	(1)	(2)	(3)	(4)
	<i>EDF</i>	<i>EDF</i>	<i>EDF</i>	<i>EDF</i>
<i>Panel A</i>				
<i>SRC</i>	0.040** (0.020)	0.315 (0.255)	0.030* (0.016)	- 0.136 (0.116)
<i>Float</i>	- 0.049** (0.020)	- 0.023*** (0.005)	- 0.052*** (0.014)	- 0.182 (0.185)
<i>SRC</i>	0.016 (0.035)	0.322* (0.176)	0.013 (0.018)	0.325*** (0.112)
Industry FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
	Low Independent Board	High Independent Board	Non-Big 4	Big 4
	(1)	(2)	(3)	(4)
	<i>EDF</i>	<i>EDF</i>	<i>EDF</i>	<i>EDF</i>
<i>Panel B</i>				
<i>SRC</i>	0.040** (0.019)	- 0.262 (0.291)	0.034** (0.015)	0.043 (0.029)
<i>Float</i>	- 0.021 (0.017)	- 0.349 (0.721)	- 0.032** (0.015)	- 0.120** (0.050)
<i>SRC</i> × <i>Float</i>	0.009 (0.029)	- 0.415 (1.085)	- 0.013 (0.024)	0.092 (0.098)
Industry FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES

This table reports the Regression Discontinuity Estimation results for Eq. (5) taking into account the impacts of external oversight mechanisms on the association between reduced disclosure and default of risk. Firms are sorted into five quintiles based on the number of analysts following and the proportion of institutional ownership. Results reported in Panel A under Column 1 (*Low Alyst*) use observations in the bottom quintile while results in Column 2 (*High Alyst*) use observations in the top quintile when firms are sorted by the number of analysts following. Results reported in Panel A under Column 3 (*Low Insti*) use observations in the bottom quintile while results under Column 4 (*High Insti*) use observations in the top quintile when firms are sorted by the proportion of institutional ownership. Results reported in Panel B under Column 1 (*Low Indep*) use observations in the bottom quintile while results under Column 2 (*High Indep*) use observations in the top quintile when firms are sorted by the number of analysts following. Results reported in Panel B under Column 3 (*Big 4*) use observations of firms whose auditors are a Big 4 company while results under Column 4 (*Non-Big 4*) use observations of firms whose auditors are a non-Big 3 company. Year and industry fixed effects are included in all the regressions. Standard errors are clustered at the firm level and reported in parentheses

***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively

oversight mechanisms, strengthening corporate governance, and improving audit quality, have been shown by our research to help SRCs lessen the impact of the reduced disclosure level on the risk of default and therefore should be promoted.

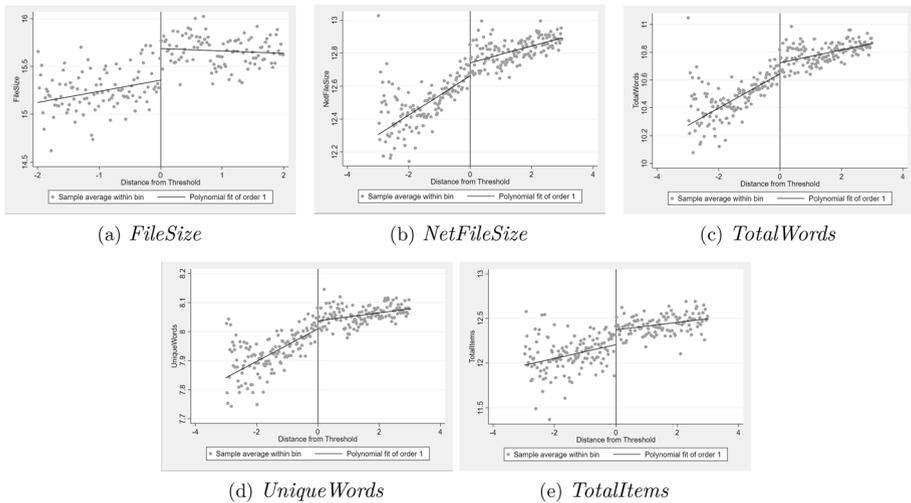


Fig. 1 RD plots: the impacts of SRC rule on information environments. These figures show the regression discontinuity plots of the effect of the eligibility of firms to voluntarily provide scaled disclosures under the SRC rule on the disclosure levels estimated using Eq. (4). Values along the horizontal axis measure the distance between the public float value and the normalised threshold (in logarithms). Values along the vertical axis show the levels of disclosure. Bins of observations of SRCs are located to the left of the cutoff while bins of observations of non-SRCs are situated to the right of the cutoff. *FileSize* is the log of file size (in bytes) of 10-Ks. *NetFileSize* is the log of file size (in bytes) of 10-Ks after extraneous material such as figures and tables have been removed. *TotalWords* is the log of the total word counts of 10-Ks. *UniqueWords* is the log of the total number of words which occurs at least once in 10-Ks. *Item 1*, *Item 1A*, *Item 5*, *Item 6*, *Item 7*, *Item 7A*, *Item 8*, *Item 11*, and *Item 13* are the total word counts for the items. *TotalItems* is the total number of words of the 9 items eligible for the reduced disclosure on 10-Ks. The SEC allows SRCs to reduce the disclosure levels in 10 items in the S-K forms. Since both the item 402 (Executive Compensation) and item 407 (Corporate Governance) are included in item 11 in 10-Ks, the total number of 10K items eligible for reduced disclosure is therefore 9

Appendix. The smaller reporting company (SRC) rule

A smaller reporting company (SRC) is defined in Rule 405 under the Securities Act as a company that is not an investment company, an asset-backed issuer or a majority-owned subsidiary of a parent that is not a smaller reporting company, and that has a public float of less than \$75 million as of the last business day of its most recently completed second fiscal quarter (Tables 14, 15 and 16).

According to the SEC's explanations of the SRC, all reporting companies on the effective date of the new rules can determine if they qualify for the SRC status based on \$75 million public float test as of the end of the second quarter in the fiscal year next ending after December 15, 2007 or the alternative \$50 million in revenue test if a firm cannot calculate its public float.³² The initial determination as to the SRC status for all current reporting companies is \$75 million in the first year. By comparison and consistent with the rule for exiting accelerate filer status, if a reporting company does not qualify as an SRC this year, it will not qualify as an SRC in the future unless its public float falls below \$50

³² See <https://www.sec.gov/info/smallbus/src-cdinterp.htm>

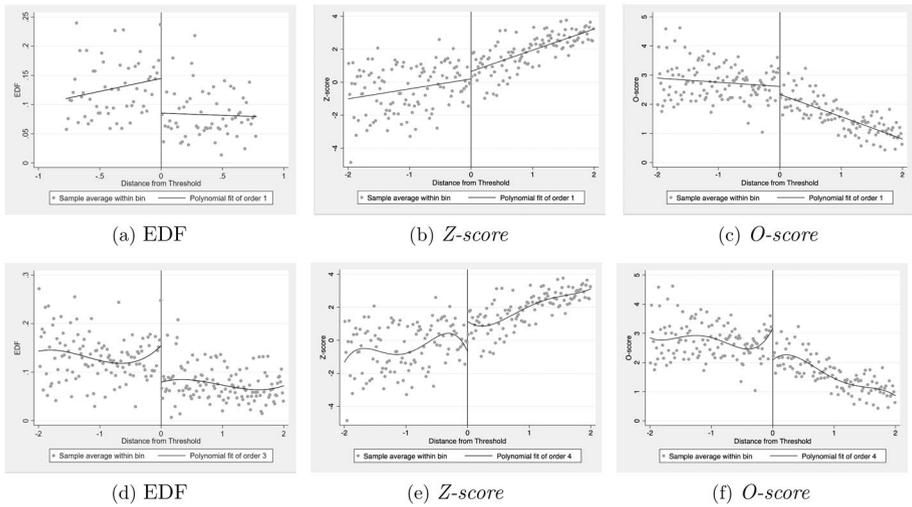


Fig. 2 Regression discontinuity plots: the impacts of reduced disclosure on default risk. These figures show the regression discontinuity plots of the impacts of reduced disclosure on default risk. Values along the horizontal axis measure the distance between the public float value and the normalised threshold (in logarithms). Values along the vertical axis show the levels of disclosure. Bins of observations of SRCs are located to the left of the cutoff while bins of observations of non-SRCs are situated to the right of the cutoff. Panels (a)–(c) illustrate the observations around the cutoff along with the linear fitted regression lines, estimated using Eq. (5). Panels (d)–(f) show the observations around the cutoff along with the fitted regression lines for the regression discontinuity model in Eq. (6) with up to the 4th-order polynomials

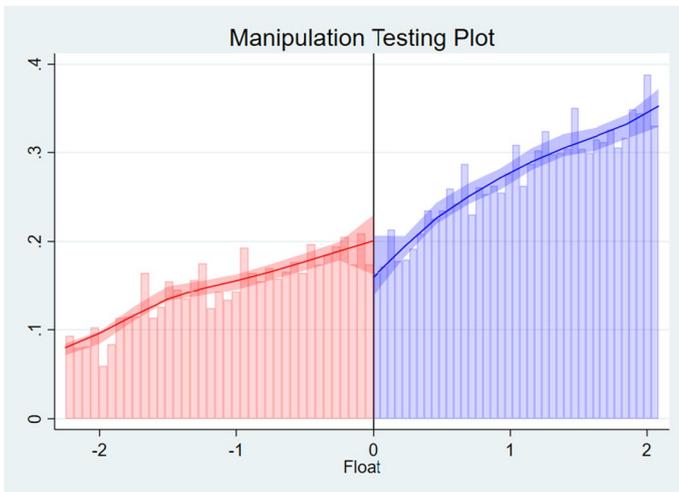


Fig. 3 Plot of density of the public float values. This figure shows the distribution of the public float values around the cutoff. Values along the horizontal axis measure distance to the threshold, calculated as the difference between the public float values and the cutoff (both in logarithms). Values along the vertical axis is the density. The lines on both sides of the threshold represent fitted density of the equity float along with the 95% confidence intervals depicted by the shaded areas

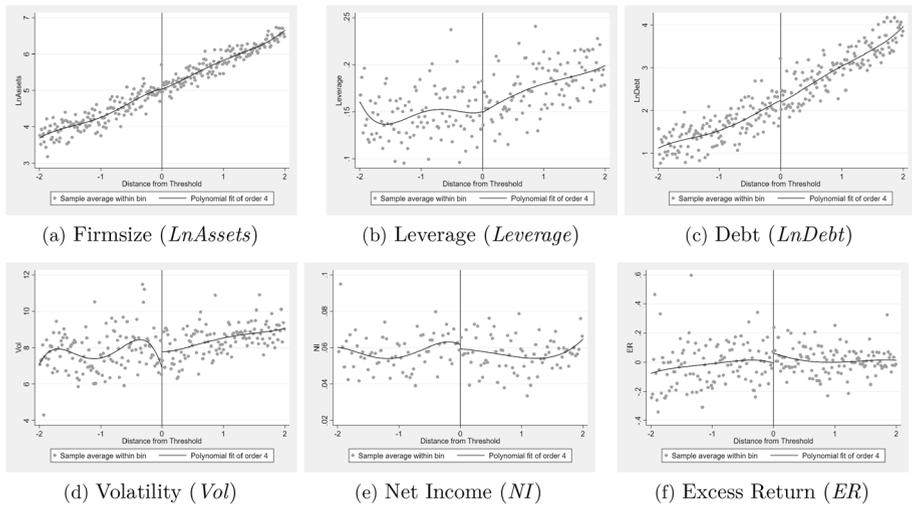


Fig. 4 Regression discontinuity plots of covariates. These figures show the regression discontinuity plots of the impacts of reduced disclosure on the covariate values. Values along the horizontal axis measure the distance between the public float value and the normalised threshold (in logarithms). Values along the vertical axis show the levels of disclosure. Bins of observations of SRCs are located to the left of the cutoff while bins of observations of non-SRCs are situated to the right of the cutoff. $LnAssets$ is the logged value of total assets. $Leverage$ is the ratio of total debt to total assets. $LnDebt$ is the logged value of the face value of debt. Vol is the inverse of the annualized return volatility, i.e., $Vol = 1/\sigma_E$. NI is the ratio of net income to total assets. ER is the difference between the stock annual return and the CRSP value-weighted return

million as of the last business day of its second fiscal quarter. That company would then remain an SRC until its public float again exceeds \$75 million.

On June 28, 2018, the Commission adopted amendments to the definition of “Smaller Reporting Company” that were effective on September 10, 2018. Under the new definition, a company qualifies as an SRC if it has public float of less than \$250 million or it has less than \$100 million in annual revenues and no public float or public float of less than \$700 million.³³

Under the new rule, the initial determination as to the SRC status for all current reporting companies is \$250 million. Once a company determines that it does not qualify as an SRC under the applicable thresholds, it will not subsequently qualify until its public float falls below another, lower threshold, set at 80% of the initial qualification threshold (i.e., \$200 million). Consistent with the SRC definition in 2008, under the amended definition, a firm that subsequently qualifies under the \$200 million public float threshold would remain qualified until its public float exceeds \$250 million in order to avoid situations in which firms frequently enter and exit the SRC status due to small fluctuations in their public float.

³³ See <https://www.sec.gov/rules/final/2018/33-10513.pdf> for the details of the explanation of SRC rule.

Table 14 Reduced disclosure level in 10-K filings applicable to SRCs

10-K item	Name	Reduced disclosure
Item 1	Description of business	Describe the development of its business during the last 3 years, rather than five years for the large reporting firms
Item 1A	Risk factor	Not required
Item 5	Market price of and dividends on registrant's common equity and related stockholder matters	Not required to provide the information required by paragraph e (stock performance graph)
Item 6	Selected financial data	Not required
Item 7	Management's discussion and analysis of financial condition and results of operation	Provide more streamlined disclosure for management's discussion and analysis of financial condition and results of operation by requiring only 2 years of analysis if the company is presenting only two years of financial statements instead of the three years currently required of larger companies. Not required to provide tabular disclosure of contractual obligations
Item 7A	Quantitative and qualitative disclosures about market risk	Not required
Item 8	Supplementary financial information	Not required
Item 11	Executive compensation	Not required to report a MD &A as required of large reporting firms. Only required to report disclosure about the CEO and two other highly-compensated executive officers. Provide only three of the seven tables required of large reporting companies
Item 11	Corporate Governance	Not required to provide information on Compensation Committee Interlocks and Insider Participation and Compensation Committee Report
Item 13	Transactions with related persons, promoters and certain control persons	Not required to provide disclosure relating to policies and procedures for reviewing related person transactions

Table 15 The description of the SRC rule

Criteria	Rule in 2008	Rule in 2018
<i>Initial qualification threshold</i>		
Public Float	Public float of less than \$75 million	Public float of less than \$250 million
Revenue	Less than \$50 million of annual revenues and no public float	Less than \$100 million of annual revenues and no public float, or public float of less than \$700 million
<i>Subsequent qualification threshold</i>		
Public Float	Public float of less than \$50 million	Public float of less than \$200 million
Revenue	Less than \$40 million of annual revenues and no public float	Less than \$80 million of annual revenues, if it previously has \$100 million or more of annual revenues; and less than \$560 million of public float, if it previously had \$700 million or more of public float

A non-SRC that subsequently gains the SRC status based on public float of less than \$200 million will qualify as an SRC regardless of its revenues. For further information, please see: <https://www.sec.gov/small-business/goingpublic/SRC>

Table 16 Variable definition

Variable	Symbol	Definition
<i>Dependent variable</i>		
Default Risk	<i>EDF</i>	Expected default frequency, computed as $N(-DD)$, where $N(\bullet)$ is the cumulative standard normal distribution function and DD is distance-to-default
Z-score	<i>Z-score</i>	An accounting-based measure of default risk, computed following Altman (1968)
O-score	<i>O-score</i>	An accounting-based measure of default risk, computed following Ohlson (1980)
Gross File Size	<i>FileSize</i>	10-K file size, calculated as the log of gross file size
Net File Size	<i>NetfileSize</i>	Net 10-K file size, calculated as the log of gross file size excluding extraneous material
Total Words	<i>TotalWords</i>	Log of total number of words, after excluding stopwords
Unique words	<i>UniqueWords</i>	Log of the number of words occurring at least once in the 10-K file, after excluding stopwords
Word Counts in 10 Items	<i>TotalItems</i>	Log of the total number of words in items eligible for the reduced disclosure on 10-K reports
<i>Independent variable</i>		
Eligibility for reduced disclosure	<i>SRC</i>	Dummy variable equals 1 if the firm's public float is below the threshold in year t , and zero otherwise
New SRC	<i>NewSRC</i>	Binary variable which takes a value of 1 if firm i is eligible to provide scaled disclosures in year t but not in year $t - 1$
Old SRC	<i>OldSRC</i>	Dummy variable whose value equals 1 if firm i is classified as an SRC at any time prior to year t , and 0 if firm i is in the control group of non-SRCs that are matched to SRCs in the treated group using PSM
Maintainer	<i>Maintain</i>	Dummy variable whose value equals 1 if firm i is classified as an SRC that voluntarily maintained its disclosure in 2008 and 2018, and 0 if firm i is a propensity score matched non-SRC in the same year
Reducer	<i>Reduce</i>	Dummy variable whose value equals 1 if firm i is classified as an SRC that reduced its disclosure level in 2008 and 2018, and 0 if firm i maintained the level of disclosure in 2008 and 2018
Assignment Variable	<i>Float</i>	Distance between the log of firm public float and the log of cutoff
Log of Firm Size	<i>LnAssets</i>	Log of total assets
Leverage	<i>Leverage</i>	The ratio of total debt to total assets
Log of Debt	<i>LnDebt</i>	Log of face value of debt
Volatility	<i>Vol</i>	The inverse of the annualized stock return volatility
Net Income	<i>NI</i>	The ratio of net income to total assets
Excess Return	<i>ER</i>	The difference between the stock's annual return and the CSRP value-weighted return

Table 16 (continued)

Variable	Symbol	Definition
Net Income	<i>NI</i>	The ratio of net income to total assets
Institutional Holdings	<i>Insti</i>	The proportion of institutional holdings to the total number of shares outstanding for firm <i>i</i> in year <i>t</i>
Firm Complexity	<i>Complexity</i>	The sum of the squares of firm <i>i</i> 's sales in each business segment divided by total firm sales, then minus 1 and multiplied by minus 1, in year <i>t</i>

All variables used in this paper. Default data are obtained from the CRSP databases; the financial data are obtained from the CRSP and Compustat merged quarterly databases. Public float information is extracted from 10-K reporting using text mining.

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