

Payment practices transparency and customer-supplier dynamics

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Abstract

We exploit the introduction of the Payment Practices Disclosure Regulation in the United Kingdom (UK) to examine the effects of mandating disclosure of customer-supplier payment practices. We find that non-disclosing small and medium-sized enterprises (SMEs) experience a reduction in their accounts receivable by 8.3%, consistent with an acceleration of their trade credit collections. Further, SMEs exhibit fewer financial constraints after the regulation. We survey managers from large firms and SMEs to understand the underlying mechanisms. The required disclosures raise large firms' reputational concerns and shift the bargaining power between large firms and SMEs. Additionally, the new disclosures compel executives at large firms to scrutinize their own firms' payment practices, leading to increased accountability and a stronger focus on timely payment among senior managers.

JEL codes: G30, M41, G32, L14, L24.

Keywords: payment practices; disclosure regulation; trade credit; supply chain; customer-supplier relations.

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1. Introduction

The World Trade Organization reports that over 80% of world trade relies on trade credit. Financing firm operations through suppliers is customary, but buyers do not always pay within agreed terms and large creditworthy companies often finance themselves through their less creditworthy smaller suppliers. Late payments can be especially challenging for small and medium-sized enterprises (SMEs) with limited access to external financing. This paper studies the effects of disclosure regulation on payment practices. Specifically, we examine whether requiring firms to disclose information about trade-credit payment practices accelerates payments to suppliers.

Securing timely payments from customers is a concern for firms of all sizes. However, SMEs are particularly sensitive to this issue, as late payments constrain their capital for investment (Murfin and Njoroge, 2015), expose them to liquidity risk (Barrot, 2016), and limit their growth (Barrot and Nanda, 2020). In addition, SMEs face the challenge of doing business with large customers with greater bargaining power to negotiate favorable prices and payment terms (Fabbri and Klapper, 2016). Even small, financially constrained firms offer trade credit (McMillan and Woodruff, 1999; Marotta, 2005).

To mitigate these challenges, the UK introduced the Payment Practices Disclosure Regulation (hereafter, PPDR) in 2017, which we use as a setting. PPDR mandates large UK firms to disclose detailed information about their payment practices relating to UK-based contracts. The required disclosures include statistics such as the average number of days a firm takes to pay its suppliers and the fraction of invoices that are not paid within agreed terms. Firms must submit this information semi-annually to the UK government, which publishes it on a publicly available website.

The UK government enacted PPDR to facilitate timely payments to small suppliers from large customers (Department for Business, Energy and Industrial Strategy (BEIS) 2017). However, previous regulatory attempts to address this issue were unsuccessful, making it unclear whether PPDR would achieve its intended goals. While mandatory disclosure has proven effective in several contexts (e.g., Jin and Leslie, 2003; Dyreng, Hoopes, and Wilde, 2015; Granja, 2018), PPDR might not affect payment outcomes. For

one, payment practices could already be reflected in transaction prices, as customers and suppliers typically interact frequently through a repeated game. For example, suppose a supplier knows that a customer habitually delays payments to boost its profitability by lowering its (interest-bearing) financing needs. In that case, this knowledge can be reflected in higher transaction prices.¹ Thus, the new disclosures could be uninformative. Another reason is that the pre-existence of alternate sources of payment practices information, such as financial statements and credit agency reports, may render the newly required disclosures redundant.

Alternatively, the new disclosure rule can affect the equilibrium via different mechanisms. First, customers with longer payment durations could suffer negative publicity and reputational damage when their payment practices become publicly available; companies may therefore alter their payment behaviors in response to public pressure (or the threat of it) (e.g., Dyreng et al., 2015; Bonetti, Leuz, and Michelon, 2023), and suppliers, anticipating faster repayment, could extend more trade credit. Regulators explicitly stated that they anticipated behavioral change from PPDR due to public shaming, suppliers' usage of reports, and responsible companies leading the way and encouraging best-in-class payment practices (BEIS, 2018). Second, according to the analytical model of Admati and Pfleiderer (2000), a supplier can use the new information to improve its bargaining position.² For example, if a firm learns that it receives payments in a less timely manner than other suppliers, it can react by offering less favorable pricing, service, quality, or other terms (CICM, 2018). To avoid these adverse reactions, the customer could speed up its payments. Ultimately, whether and how the disclosure of payment practices affects customer-supplier relations are empirical questions.

This setting presents several desirable features from a research-design perspective. Our primary specification estimates the effects of payment practices disclosures by comparing changes in accounts receivable between non-disclosing and disclosing firms in the UK. Our sample consists of 7,465 firm-year

¹ Trade credit may also be driven by other economic rationales such as allowing customers time to assess the quality of the supplied goods (Lee and Stowe, 1993).

² Consistent with the model developed by Admati and Pfleiderer (2000), this is a likely reason why firms do not voluntarily disclose detailed payment practices.

observations from SMEs and 8,107 from large firms. The identifying variation in this generalized difference-in-differences (DID) design comes from the plausibly exogenous reporting thresholds stipulated by PPDR.³

In our main analysis, we examine the effects of PPDR on firms in the UK that fall below the size thresholds (hereafter, SME firms). We focus on SMEs for three reasons. First, small firms were the intended beneficiaries of the regulation, and focusing on SMEs can help shed light on whether the regulation's stated objectives were achieved. Second, the fraction of SMEs' accounts receivable balances corresponding to their transactions with large firms is likely greater than the fraction of accounts payable that large firms owe small firms (i.e., a large customer will comprise a substantial portion of a small firm's sales, but a small supplier is unlikely to be a major supplier for a large firm). Third, large firms are more likely to do business outside of the UK than small firms, and because PPDR does not cover contracts outside of the UK (and the source of the accounts payable is unobservable), focusing on large firms is less precise for our purposes. In other words, PPDR is more likely to trigger significant changes from the perspective of SMEs that can be more precisely estimated.

Our results show that, after PPDR, SMEs exhibit a statistically significant 8.3% reduction in their accounts receivable (*A/R*). We present several tests to bolster the confidence in our results. For example, we find that the magnitudes of the coefficients obtained through a regression discontinuity design approach are comparable to our main results. This analysis helps allay concerns related to Brexit as a potential confounding event, which could have led SMEs to experience a reduction in *A/R* due to the adverse economic shock. To supplement our analysis of SMEs, we also examine the newly disclosed information included in the PPDR reports of large firms. Interestingly, 30% of invoices are not paid within the agreed terms, with approximately 14% being paid in over 60 days. After the introduction of PPDR, the reports

³ Firms had to meet two of the following three criteria in the most recent two fiscal years to be subject to the increased disclosure requirements: 1) sales greater than £36 million (USD \$43m), 2) assets greater than £18 million (USD \$21m), and 3) more than 250 employees.

indicate that large firms gradually accelerated the payment of their invoices and reduced the fraction of invoices not paid within the contractual terms.

Our subsequent analyses investigate potential mechanisms driving shorter payment durations after PPDR. Specifically, we examine bargaining power and reputation as potential mechanisms. The main challenge lies in obtaining direct evidence relating to these mechanisms. For example, negotiations between contracting parties and internal responses are unobservable. To overcome this challenge, we gathered field evidence by conducting interviews and administering a survey. We received 210 responses from approximately 2,040 surveyed firms, for a response rate of 10.3%. An additional advantage of the survey is that it allows us to examine the effects of PPDR from the perspective of *both* SMEs and large firms.

Regarding bargaining power, the survey results reveal that SMEs leveraged PPDR disclosures to obtain improved payment terms. Specifically, 67% of SMEs used PPDR data to negotiate better terms with their large customers, with a third of all SME respondents claiming that this information helped them obtain better payment terms. Similarly, 44% of SMEs used the disclosures to pursue late payment action against their customers. According to our interviews, the new data empowered managers to file complaints (even if anonymous) because the data helped validate their claims. However, we do not find evidence that SMEs dropped existing customers for new customers with better payment practices.

Regarding the second channel, reputation, 72% of large firms in our survey cited reputational concerns from the newly disclosed information. These concerns were threefold. First, large companies are concerned about the effects of PPDR on their environmental, social, and governance (ESG) ratings, which are important for building legitimacy and trust with investors and other stakeholders (e.g., Lins, Servaes, and Tamayo, 2017). Second, media and trade associations use PPDR data to name and shame large companies that do not pay on time. Third, the new disclosures make it easier to identify and suspend firms that violate the Prompt Payment Code (PPC), a voluntary commitment to pay invoices on time and adhere to other standards of good payment practice.

Two additional mechanisms emerged from our interviews and survey responses: internal learning and increased accountability. In terms of learning, 62% of large companies reported that PPDR gave

managers new insights into their *own* firms' payment practices. Interviewees explained that several metrics required under PPDR had not previously been collected internally. As a result, management was often surprised by the required payment statistics, discovering that their payment practices were worse than expected. While PPDR was expected to provide new information to SMEs, this evidence reveals that it also provided new information to reporting organizations.

In terms of accountability, 61% of large companies reported that the new disclosure requirements – which must be approved by a named Officer of the company – elevated the importance of payment practices to the level of the Board of Directors. Our interviews revealed that payment practices became a regular agenda item at Board of Directors and Executive meetings. Finally, over half of large companies implemented changes in response to the new disclosure requirements. These changes included communicating more frequently with suppliers, making technological improvements (e.g., digitizing systems), and providing explicit incentives to departments and business units to reduce payment delays. It is important to highlight that the four mechanisms we document are not mutually exclusive and may partially overlap. For instance, the reputation and accountability mechanisms are likely interrelated.

We then endeavor to link our survey evidence to archival data, focusing on the two external channels: bargaining power and reputation. Consistent with transparency increasing bargaining power, we find that SMEs with lower *ex ante* bargaining power experience larger reductions in their accounts receivable balances following PPDR. Similarly, consistent with large firms' expressed concerns about the impact of payment practices transparency on their ESG reputations, we find a faster collection for SMEs in industries with higher exposure to ESG reputational risks.

Last, we examine the implications of the new disclosure requirements for SMEs. From the regulator's perspective, a primary objective was to lessen SMEs' financial concerns owing to late payments. Consistent with the regulators' intent, we find a 15.6% reduction in SMEs' short-term debt and a loosening of their financial constraints, as evidenced by an 11.3% decrease in Whited and Wu's (2006) financial constraint index for the average SME. However, although regulators also emphasized wanting to help more constrained SMEs, the regulation did not specifically include terms or provisions to benefit these

firms. Thus, perhaps not surprisingly, we do not find strong evidence that SMEs with higher leverage or interest costs receive faster payment after the passage of PPDR. In particular, we only find some evidence suggesting that the regulation was slightly more effective for firms with higher short-term leverage.

Our study primarily contributes to research that examines customer-supplier payment practices. Existing research documents the adverse consequences of long payment terms (e.g., Murfin and Njoroge, 2015; Barrot 2016a; Costello, 2020) and suggests that large customers with strong bargaining power relative to their suppliers are more likely to extend the payment period and generate overdue payments (Klapper, Laeven, and Rajan, 2012). Less is known, however, about how payment practices can be altered. Unlike prior work examining regulations that directly mandate changes to payment practices (e.g., Barrot 2016b; Breza and Lieberman, 2017; Barrot and Nanda, 2020), we examine the effect of a regulation that does not directly impose changes to firms' payment terms. We show that mandating transparency alters how firms decide to pay their suppliers. Moreover, our study provides field evidence on *how* transparency on payment practices changes behaviors.

Our paper also adds to the emerging literature on how supply-chain partners utilize and respond to information about each other. For instance, Bourveau, Kepler, She, and Wang (2022) predict and find that more vertically-integrated firms have less need to provide voluntary disclosures to coordinate with their supply-chain partners. Relatedly, Darendeli, Fiechter, Hitz, and Lehmann (2022) document that newly-available information about suppliers' corporate social responsibility (CSR) negatively affects the contracts of firms with unfavorable CSR, and Pandey (2022) shows that firms use their customers' forecasts of future demand to make investment decisions. Related work also documents improved economic activity among firms whose supply-chain partners are required to disclose financial information (e.g., Breuer and Breuer, 2022; Breuer, Leuz, and Vanhaverbeke, 2022), consistent with the idea that firms utilize contracting partners' financial disclosures to strengthen their bargaining position (e.g., Berger, Choi and Tomar, 2022; Minnis and Shroff, 2017). We complement these findings by showing that SME suppliers use information from large customers' disclosures to improve their bargaining power and obtain faster payment terms.

Finally, we contribute to research on the effects of mandated disclosure on firm decision-making and actions. When firms are mandated to report on how their operations affect workers (e.g., She, 2022), the environment (e.g., Downar, Ernstberger, Reichelstein, Schwenen, and Zaklan, 2021; Tomar, 2023), customers (e.g., Jin and Leslie, 2013), and communities where they do business (e.g., Dyreng et al., 2015; Rauter, 2020), firms take actions to align their behaviors with what is deemed acceptable by society. While this line of research shows that investors and other actors care about how firms affect the typical non-equity constituents of a firm's CSR (e.g., Christensen, Hail, and Leuz, 2021), less is known about whether such concerns extend to transactions with other businesses. Our survey evidence reveals that the requirement to disclose payment terms that might appear exploitative towards suppliers led firms to change their payment practices, suggesting that inter-firm dealings can impose reputational costs. Further, our findings on additional mechanisms affecting firm behavior improve our understanding of the link between disclosure and real effects. For instance, contrary to the notion that managers possess all relevant organizational information, our evidence indicates that mandated reporting can provide new insights to the reporting firms themselves, complementing work on how mandated reporting helps firms learn from their peers about their own environmental performance (Tomar, 2023) and productivity (Fetter, 2022).

2. Setting

In 2015, the UK's Department for Business, Energy and Industrial Strategy (BEIS) introduced a duty on the UK's largest companies and limited liability partnerships (LLPs) to report their payment practices, policies, and performance. It was initially announced that the requirements would come into force in April 2016, but due to regulatory delays, firms began reporting in November 2017 (for financial years beginning after April 6, 2017). The mandated disclosure requirements affect companies that exceed at least two of the following three thresholds in the previous two financial years: 1) sales greater than £36 million, 2) assets above £18 million, and 3) more than 250 employees. Covered firms are required to submit a report every six months within 30 days of their regular semi-annual fiscal year-end date. The report must describe payment terms related to contracts for goods, services, or intangible property with a significant connection

to the UK. Whether a contract has a significant connection with the UK depends on the circumstances. However, examples would include a contract that is performed in the UK or where one or both parties are incorporated in the UK or conduct a significant part of their business in the UK; hence, the contract is likely to be governed by UK law (BEIS, 2017).⁴ Contracts for financial services are excluded from the reporting requirements, including insurance-related and banking services.

The disclosure requirements can be broadly categorized into three groups: statistics, narrative, and check-the-box statements. The main statistics required to be disclosed are (1) the average number of days taken to make payments to suppliers, (2) the fraction of payments that were paid in 30 days or less, between 31 and 60 days, and in 61 days or longer, and (3) the percentage of payments that were not paid within the agreed terms. Firms must also provide narrative descriptions of standard payment terms (including contractual length of time for payment of invoices and maximum contractual payment period) and the process for resolving payment disputes.⁵ Lastly, the check-the-box statements include whether suppliers are offered e-invoicing and whether supply chain finance is available to suppliers.

The regulation also dictates that submitted reports will be publicly accessible on a web-based service provided by the government. All qualifying entities within a business group are required to submit a report. In other words, each entity that meets the size thresholds is required to report, with no option for consolidated reporting. To ensure compliance, the government considers failing to publish a payment practices report within the specified filing period a criminal offense by the business and every company director. According to our analysis, the compliance rate with the new disclosure requirements among the

⁴ Companies incorporated outside the UK are not covered by PPDR. Thus, the contracts of foreign subsidiaries are excluded from the reporting requirements.

⁵ From our review of several PPDR reports, we found little/no useful information provided in the narrative responses. The narrative disclosures are mainly explanatory with respect to the underlying quantitative statistics and do not provide meaningful additional information. PPDR report examples can be found in Internet Appendix A.

FTSE 350 is 97%. Reports containing misleading, false, or deceptive information are also considered criminal offenses and are punishable by an “unlimited fine” (BEIS 2017, p. 10).⁶

PPDR came as a response to concerns about the financial burden faced by SMEs that are not paid on time. According to BEIS, late payment is a concern for more than half of SMEs (BEIS, 2018). Moreover, most SMEs that experience late payments wait a month or longer beyond the agreed terms to receive payment. Nearly a quarter of UK businesses report that late payments threaten their survival. The regulatory documents also relayed findings from research conducted by the UK Federation of Small Businesses. This research shows that 37% of small businesses face cash flow difficulties due to late payment, 20% report profit losses due to late payment, and tens of thousands of UK businesses fail each year due to late payments (BEIS, 2017). However, it is important to note that trade credit is not only used for financing purposes; prior research suggests that it allows suppliers to give favored clients longer terms (Giannetti, Burkart, and Ellingsen, 2011). Moreover, trade credit may simply be customary in an industry where collateral verification is important, allowing buyers time to assess the quality of supplied goods (Lee and Stowe, 1993).

While PPDR is the “most stringent action taken by the UK to address the issue” (Alvarez and Marsal, 2017), it is not the first effort to change payment practices in the UK. For example, in 1998, the Late Payment of Commercial Debts (Interest) Act created a statutory framework for addressing late payments, providing suppliers the right to charge interest and reclaim administrative costs for pursuing late payments. In addition, in 2008, the UK government established a voluntary code of practice, the Prompt Payment Code (PPC), as a way for firms to signal their commitment to good payment practices by publicly committing to paying 95% of invoices within 60 days. As of September 2018, over 2,000 organizations

⁶ A research report issued by the Government to quantify the costs of the regulation estimated that the average cost at the individual company level is £9,895 for “initial one-off costs including familiarization with the proposed new requirements, information gathering, IT costs and changes to processes” and £4,071 for “ongoing annual costs including maintaining systems and processes and preparing, collating, approving and submitting reports twice yearly.” (BEIS, 2017).

were signatories of the PPC. However, before PPDR, signatories were not required to report their payment practices.

According to BEIS, these previous governmental actions did not reduce payment delays. Likely, the unequal bargaining power between small suppliers and their large customers is a primary reason small firms are reluctant to use existing legislation to pursue late payments or challenge the status of a PPC signatory (BEIS, 2017). Moreover, PPC signatories are not required to submit evidence of their adherence to the Code. Although PPDR intends to change payment practices, the muted effects of these prior efforts raise doubts as to whether disclosure will result in shorter payment and collection durations.

3. Effect of Disclosure on Payment and Collection Durations

PPDR's mandated disclosures may affect equilibrium payment durations for at least three reasons. First, a particular supplier can use the newly disclosed data to learn how its customers pay *other* suppliers and how *other* customers pay *their* suppliers. Access to this information could improve suppliers' bargaining position. Second, after the passage of this rule, firms' payment terms become publicly available, and those with longer payment durations could suffer from negative publicity. Firms may, therefore, alter payment practices in response to public pressure or to avoid reputational damage. Third, disclosing firms could face difficulties forming new partnerships with suppliers if their payment practices are perceived as being untimely.

However, mandating disclosure of payment practices may not induce customers to pay in a timelier manner. For one, expectations about customers' payment practices are presumed to be already (rationally) incorporated into suppliers' pricing and terms. Even if PPDR reveals new information, customers may not amend their payment practices due to multiple benefits of delaying payments, such as reduced borrowing costs (Wilner, 2000) and increased time to assess the quality of the supplied goods, or "collateral verification" (Lee and Stowe, 1993). Additionally, alternate sources of credit information, such as credit agency reports and financial statements, may already provide some of the information that PPDR mandates.

Ultimately, whether greater disclosure about payment practices affects payment and collection periods for SMEs and large firms is an empirical question.

3.1. Data

We obtain data on firms' financial characteristics from S&P Global Capital IQ (S&P), which provides extensive coverage of public and private firms incorporated in the UK. To form our sample, we filter firms based on their country of incorporation and keep firms (1) in operation as of 2016 and (2) incorporated in the UK. We keep both public and private firms. We also impose a data availability requirement for our key variables: accounts receivable, sales revenue, and assets. In the steps where we run the difference-in-differences specifications, we keep only observations from firms where revenues and total assets are available for the years used to assign treatment and control status. The panel for our main analyses includes over 15,000 firm-year observations over the 2011 to 2020 period.

Table 1 reports descriptive statistics for the observations in our sample, consisting of large firms and SMEs. The average firm in our sample has assets of £2.01bn and revenues of £680m. As expected, these statistics are substantially different for the 63% (37%) of firms defined as large (SMEs) under PPDR. Large firms (SMEs) have, on average, £3.10bn (£33.8m) in assets and £1.05bn (£5.12m) in revenues. In terms of trade credit, the average firm in our sample has £128m in accounts receivable. Large firms hold £197m in accounts receivable, while SMEs hold £1.80m. The average firm in our sample has short-term debt (as a percentage of total assets) of 8%, with large firms owing 6% of total assets and SMEs owing 9%. Large firms in our sample generate 34% of their revenues within the UK, while small firms generate 52% of their revenues within the UK.

3.2. Empirical Analysis and Results

We use a difference-in-differences methodology to examine whether PPDR led to changes in Accounts Receivable for SME firms. The basic regression we use to estimate the effect on SMEs is as follows:

$$A/R_{i,t} = \alpha_0 + \alpha_1 SME_{i,t} + \alpha_2 Post_{i,t} + \alpha_3 SME_{i,t} \times Post_{i,t} + Sales_{i,t} + \alpha_i + \alpha_t + \epsilon, (1)$$

where the dependent variable $A/R_{i,t}$ is the natural logarithm of accounts receivable. The independent variable for the first difference, $SME_{i,t}$, takes the value of 1 for firms that fall below the minimum size thresholds set by the regulation (i.e., firms with assets at or below £18m and sales at or below £36m in the previous two fiscal years) and 0 otherwise.⁷ The second independent variable, $Post_{i,t}$, takes the value of 1 from 2018 onwards following the start of payment practices reports in November 2017 and 0 otherwise. We also control for revenues and firm and year fixed effects.⁸ Finally, we cluster standard errors at the industry level in all the regressions.

Table 2 reports the results of estimating equation (1). The coefficient on $SME \times Post$ in column 1 estimates the effect of PPDR on A/R . The coefficient is negative and statistically significant, indicating that SMEs experienced an 8.3% reduction in A/R . To increase confidence in our main result, we perform two tests. First, in column 2, we tighten the estimation of the model by using only the subset of firms whose revenues are lower than £86m (i.e., £50m over the regulatory threshold). By estimating the effects within this narrow window, we can better compare firms of a similar size, mitigating the potential concern that large companies may be systematically different from small firms. As shown in column 2, we find a negative and statistically significant effect on A/R for this subsample. Our second test, reported in column 3, estimates the coefficients using a placebo size threshold distinct from the one used by PPDR. Specifically, the placebo test defines SMEs as those firms with revenues between £136m and £236m and assets between £118m and £218m, and large firms as those with revenues and assets greater than £236m and £218m, respectively. As shown in column 3, we do not find a statistically or economically significant coefficient on the interaction term $SME \times Post$ when using these placebo cut-offs. We find similar (insignificant) coefficients using alternative placebo cut-offs (Internet Appendix C).

⁷ PPDR also includes a threshold for the number of employees. We ignore this threshold, as the number of employees is largely unavailable for our sample. However, in untabulated analyses we examine the distribution of the number of employees for the firms for which these data are available. We find that in 2016, over 95% of the firms that did not meet the assets and revenue thresholds also did not meet the number-of-employees threshold. Finally, note that even if we erroneously misclassify a firm as either large or small, this would bias against finding an effect.

⁸ Internet Appendix B reports a coefficient stability plot showing that our results are unaffected by including different combinations of the following additional control variables: assets, profitability, sales growth, and leverage.

The key assumption of the difference-in-differences model is that the trends in the outcome variable of interest are parallel across treatment and control groups in the absence of treatment. To gauge the validity of the parallel trends assumption in our setting, we estimate a variation of equation (1) that includes the interaction of *SME* with time indicator variables over the sample period. We then plot the treatment effects in event time to evaluate if pre-period trends in *A/R* are similar across the treatment and control groups. As shown in Figure 1, the treatment effects are close to zero and statistically insignificant leading up to PPDR, suggesting that the parallel trends assumption is reasonable in this setting. If the effects were driven by differences between SMEs and large firms and not by the disclosure mandated by the regulation, then we would expect to see effects in the pre-period. Thus, the lack of statistically significant treatment effects further mitigates the concern that our results are driven by the differential trends in *A/R* for SME firms rather than the regulation.⁹

Lastly, given the complex interplay between firms in the economy, our results capture the aggregate net effect, combining direct and spillover effects. For example, if a firm receives faster payments, it may expedite payment to its suppliers, thereby amplifying the overall effect. Alternatively, a negotiation may result in a firm accelerating payment to a particular supplier, leading to delayed payments to other suppliers, diminishing the effect. In untabulated analyses, we follow Breuer et al. (2022) and use the input-output matrix to separate direct and spillover effects by utilizing the treatment intensity among customer industries. Although the results are statistically insignificant, possibly due to the heterogeneity of spillover effects across companies and industries, they are consistent with the presence of spillovers. These spillovers also likely affect how the magnitudes of the effects generalize to other settings. It is important to consider these factors when interpreting our results.

3.3. Analysis of Payment Practices Disclosures

⁹ Following Rambachan and Roth (2021), we conduct sensitivity analyses on our parallel trends assumptions. Our results are robust to the presence of any linear differences in the pre-treatment effects and certain degrees of non-linearities. Our results are robust to allowing for a non-linearity in the slope of the differential trend between SMEs and large companies in the post-treatment period that changes less than 10 log points between periods.

Our previous analyses employ financial statement-based data to analyze the effects of PPDR on SME firms. In this subsection, we use the disclosures provided in the newly mandated payment practices reports to examine how *large* firms covered by PPDR change their payment practices following PPDR. Large firms are required to disclose their payment practices on a semi-annual basis within 30 days of their usual semi-annual year-end date.¹⁰ Given that pre-PPDR disclosures are unavailable, our tests can only examine the changes in large firms' payment practices between consecutive reports. However, the absence of pre-treatment data prevents us from studying trends in the pre-PPDR period. Consequently, this analysis cannot rule out the possibility that changes in payment practices may have occurred for reasons unrelated to PPDR. The findings should be interpreted in the light of this limitation.

Panel A of Table 3 presents summary statistics for the relevant numerical disclosures provided in the sample of 20,868 reports of large firms covered by the regulation. On average, the payment time for an invoice is 37 days (*Avg. Payment Time(days)*); 53.9% of invoices are paid within 30 days (*Invoices <30days(%)*), 31.6% are paid between 31 and 60 days (*Invoices between 30 to 60days(%)*), and 14.4% are paid in more than 60 days (*Invoices >60days(%)*). Interestingly, 30% of invoices are not paid within the agreed terms (*Invoices Not Paid in Agreed Terms(%)*). To avoid overweighting large transactions, the regulator requires that these calculations be based on the number of invoices rather than their nominal balance.

Our specification for the analysis of payment practices reports is as follows:

$$Y_i = \alpha_0 + \alpha_1 \text{Report Number}_i + \alpha_i + \epsilon, (2)$$

where the dependent variable Y_i represents one of the numerical variables constructed using the disclosure reports, Report Number_i takes a value between 1 and 5 (which was the maximum number of reports per

¹⁰ The earliest mandated reports were for firms with an April year-end date; their first semiannual reports were due by November 1, 2017 and became immediately available on the regulator's website. The first report for firms with a December 31, 2017 year-end was due August 1, 2018. The schedule of first-year reports is on page 20 of the Guidance document:

http://www.cicm.com/wp-content/uploads/2017/02/BEIS_Guidance_reporting_payment_practices_performance.pdf

firm as of the end of 2019), depending on whether the metrics refer to the first, second, third, fourth, or fifth report, and α_i denotes firm fixed effects.

Panel B of Table 3 reports the results of estimating this model. In column 1, the coefficient on *Report Number* is -1.33 (significant at the 1% level), indicating that with each report, firms reduce the fraction of invoices not paid within the contractually agreed time by approximately 1.33%. Given that the mean fraction of invoices not paid as agreed is approximately 30%, this reduction is economically significant and suggests that firms reduce this fraction to 22% (on average after five reports).¹¹

A possible avenue to reduce the fraction of invoices not paid in agreed terms is to increase the length of the contractual period to make a payment. In column 2, we explore this possibility. We find that the standard contractual payment period (*Standard Payment period (days)*) actually decreases by 6.3% of its mean after five reports. In addition, the coefficient on *Report Number* in column 3 indicates that the average payment time decreases by 0.22 days per report. The dependent variables in columns 4, 5, and 6 measure the fraction of invoices paid within 30 days, between 31 and 60 days, and over 60 days, respectively. The coefficients on *Report Number* from these models reveal a shift in payment practices, specifically an *increase* of 0.66% in the fraction of invoices paid within 30 days (column 4) and *decreases* of 0.45% and 0.21% in the fraction of invoices paid between 31-60 days (column 5) and over 60 days (column 6) respectively, suggesting an acceleration of payments. Overall, the evidence from these tests is consistent with our main results. Large firms accelerate the payment of their invoices and reduce the fraction of invoices not paid within the contractually agreed time.

4. Mechanisms

Prior research suggests that public disclosure draws attention and scrutiny from capital market participants and consumers, putting pressure on firms to change their behaviors (e.g., Dyreng *et al.*, 2015). For instance,

¹¹ We compute the economic magnitude by multiplying the coefficient by five reports and then dividing by the mean fraction of invoices not paid in agreed terms. We calculate the effect on *Standard Payment period* in the same way.

seemingly long payment durations revealed by mandated reporting can lead to negative media attention. Negative publicity along the lines of “supply-chain bullying” can be harmful to a firm’s ESG profile, which managers are incentivized to preserve (Albuquerque, Koskinen, and Zhang, 2019; Christensen, Serafeim, and Sikochi, 2021). Thus, we expect the reputational concerns to be a mechanism through which transparency leads to faster repayment once PPDR exposes firms to increased scrutiny of their payment practices.

Increased disclosure about payment practices can also increase the bargaining power of SME firms. Throughout the consultation process that resulted in the passage of PPDR, regulators emphasized that the intended beneficiaries of PPDR are small, cash-constrained firms with weak negotiating positions that “are being exploited” by their large, powerful customers (BEIS 2017, 2018). Thus, access to data on disclosed payment practices could allow SMEs to pressure large firms to improve their payment practices. For example, if an SME learns that a particular customer makes faster payments to other suppliers, the SME could demand an explanation and seek similar treatment. Moreover, the data could reveal that specific customers have long payment durations relative to other firms in the same industry. SME firms can use this information to pursue actions to recover late payments (such as lawsuits and filing complaints with the Chartered Institute for Credit Management) or bring this to the media’s attention.¹²

In addition, large organizations that report their payment statistics may obtain new insights into their own payment practices. PPDR requires firms to report firm-level payment statistics and given that large firms with complex organizational structures likely have disaggregated reporting, it is unclear whether these firms were already aware of their on-average firm-level payment practices. Thus, some firms may learn new information about their payment durations and other payment terms, which could spur internal organizational changes. Importantly, the various mechanisms we investigate are not inherently mutually

¹² PPDR can increase the likelihood of winning late payment claims because it enables suppliers to use information on *average* payment practices of their late-paying customer to validate their claims. For instance, prior to PPDR, a customer could claim that a late payment to a particular supplier was justified due to a “one-off” situation. After PPDR, the customer has less ability to make this “one-off” claim when its payment durations are revealed to be untimely across suppliers.

exclusive. As such, it is possible that they are interconnected and overlap to some extent. For example, a CEO who learns about her company's inadequate payment practices could become concerned about the possible adverse effects on the company's reputation and act accordingly.

There are two main challenges in examining the mechanisms driving changes after the new disclosure requirements come into effect. First, direct empirical evidence on negotiations and internal changes is largely unavailable. Second, the mechanisms pertaining to payment practices remain relatively unexplored in the literature, which allows for the possibility that other channels play a role. To overcome these challenges, we conducted a survey. Below, we describe the survey tool and the survey findings.

4.1. Survey

We surveyed 210 managers, 134 from SMEs and 76 from large companies in the UK, from November 1, 2020, to February 1, 2021.¹³ We reached these managers through several channels. To recruit managers from SMEs, the UK Federation of Small Businesses (FSB) included our survey in their monthly e-newsletters from November 2020 to January 2021. The monthly e-newsletter was emailed to its approximately 100,000 members (consisting of micro, small, and medium-sized companies); however, many FSB members are legacy members or non-active. Since FSB does not track email views, we used Twitter views to approximate how many FSB members were likely to have obtained and viewed the e-newsletters containing our survey. The average number of views on Twitter for FSB posts was 984.

To recruit managers from large firms, we collected investor relation (IR) contact information for the FTSE 350 (the 350 largest UK companies in terms of market capitalization). We sent an email to each company requesting participation in the survey. We also participated in roundtable discussions, forums, and meetings about prompt payment in the UK, in which we discussed the objective of our study and asked for participation in our survey. We joined relevant LinkedIn groups (e.g., UK-based SME groups, UK trade associations, the Institute of Chartered Accountants in England and Wales, the Chartered Institute of Credit

¹³ As we discuss in Section 4.4, the COVID-19 pandemic is unlikely to have confounded the findings from our survey.

Management, Prompt Payment Code, Institute of Directors, etc.) wherein we posted a short description of our study containing the survey link. In addition, some of the individuals and practitioners we consulted in the survey development shared the survey with their networks via email blasts and social media posts. Combining the number of attendees, social media views, and emails sent via these outlets, the number of potential respondents is 706. Our overall response rate was approximately 10.3% ($210 / (706+984+350)$), which falls close to those reported by other recent surveys in the accounting and finance literatures (e.g., D'Acunto, Rauter, Scheuch, and Weber, 2020; Graham, Harvey and Rajgopal, 2005).

4.2. Survey Development

To develop the initial survey questions, we conducted 29 semi-structured interviews with potential respondents from 19 SMEs and ten large companies.¹⁴ These interviews allowed us to reach “saturation,” or the point at which no new information is obtained from an additional interview (e.g., Bourveau, Chen, Elfers, and Pierk, 2022; Baker and Edwards, 2012; Guest, Bunce, and Johnson, 2006). In other words, the last few interviews did not offer novel responses to our questions or new insights to inform our research but instead confirmed previously discovered information.¹⁵ Based on the interviews, we developed a set of survey questions for SMEs and a separate set for large companies. To reduce different response biases that can arise in surveys (see Stantcheva, 2023), we solicited and incorporated feedback from academic researchers, practitioners, and potential respondents. In particular, we sought feedback on the wording of the questions (e.g., leading questions and slanted questions), the order of the questions (e.g., priming), and the clarity of the questions to reduce other biases, such as answer selection bias (systematically choosing a given answer regardless of the question which occurs as respondents take short-cuts to reduce cognitive load) and nonresponse. Although it is impossible to eliminate these biases, we assess the impact on our

¹⁴ The interview guide consisted of 15 questions for SMEs and 17 questions for large companies, which we developed based on consultations with regulators, managers from SMEs and large companies, and academic researchers.

¹⁵ There are “no published guidelines or tests of adequacy for estimating the sample size required to reach saturation” (Morse, 1995) but prior research has found that between 10 and 30 interviews is adequate to reach saturation (Guest et al. 2006; Baker and Edwards, 2012). Moreover, only a few respondents to our survey selected “None of the above”, “Not applicable” or “Other”, indicating that our survey questions and response options resonated with the vast majority of the respondents.

findings to be low, as we find corroborating evidence using archival non-survey data (see section 4.5), and many of our survey findings align with the UK Government’s statutory review of PPDR (BEIS, 2022). Finally, to further reduce nonresponse bias, we did not ask for identifying information and assured surveyors that their responses would remain confidential (Stantcheva, 2023). Following prior research (e.g., Lin and Shaeffer 1995; Lindner, Murphy, and Briers 2001; Lewis, Hardy, and Snaith 2013), we compared responses of late responders (who demonstrate less motivation to respond and can proxy for non-responders) to those of early responders (who demonstrate the highest motivation to respond). We did not find significant differences, which can be interpreted as not finding evidence of nonresponse bias (Graham et al. 2005).

The final version of the survey consisted of 23 questions for SMEs and 25 for large companies. Our final survey sample consisted of 210 responses. 31.4% of the respondents are in accounting/finance roles (e.g., Chief Financial Officer, AP/AR Manager, Finance/Accounting), 15.7% are founders, directors, or CEOs, 21.4% are in business development/procurement or sales, and 31.5% are in external communications, investor relations or other positions. In addition, most of the respondents (83.8%) have been with the company for over three years.¹⁶

4.3. Survey Findings

Panels A and B of Table 4 report the main survey findings and tests for statistical significance across responses. For ease of exposition, we organize our discussion of the findings into three general areas.

Perceptions of Prompt Payment Practices

Our first set of survey questions examines the state of payment practices in the UK. 44% of SMEs report that collecting payments from large customers is “A big problem,” 51% report that it is “Somewhat of a

¹⁶ The median firm has 50-249 employees, £10-36m in revenues, and £7-18m assets, and there is good representation across industries, with no more than 10% coming from a single industry (see Internet Appendix D, Questions V-VII and IX).

problem,” and 5% report that it is “Not a problem.” When asked about the reasons behind late payments, 77% of SMEs agree or somewhat agree with the statement “[Large customers] take advantage of us because we are small” while 72% attribute late payment to “Poor communication between us and our large customers” and 70% say the reason is that their large customers “have many suppliers and cannot keep track” of invoices. Interestingly, nearly a quarter of SMEs agree that payment delays are attributable to their own outdated invoicing systems and 32% acknowledge that payment delays are due to their own invoicing errors. Many of these responses align with the 2017 and 2018 surveys conducted by the UK’s BEIS.

Large companies perceive the state of payment practices somewhat differently. 76% believe that paying their SME suppliers on time is “Not a problem,” 22% believe that it is “Somewhat of a problem,” and only 1% believe that it is “A big problem.” Some 77% of large firms disagree or somewhat disagree that they “use SME suppliers as a source of financing” while only 38% agree or somewhat agree that they cannot keep track of all of their invoices, and 69% blame late payment on invoicing errors made by SME suppliers.

Awareness and Use of PPDR Data by SMEs

The next set of survey questions examined awareness and use of PPDR data. 68% of SMEs answered “Yes” to the question: “*Does your company utilize the payment practices data reported by large UK companies under the Payment Practices and Reporting Duty?*” which shows that a meaningful proportion of SMEs are aware of and utilize the newly disclosed information.

The new payment disclosures could allow SMEs to benchmark the payment terms they receive against those of other suppliers selling to the same large company or relative to other large companies in the same industry. Therefore, we asked SMEs to indicate how much they agree with various statements regarding what, if anything, they have learned from the newly disclosed data. 64% of SME suppliers agreed or somewhat agreed that they are “getting *worse* payment terms than [their] customers’ other suppliers,” and 62% agreed or somewhat agreed that their “customers have *worse* payment terms than other large

companies in [their] industry.” By contrast, only 11% of SMEs learned that they are getting *better* payment terms than other suppliers, and 14% learned that their customers have *better* payment terms than other large companies in the industry. This evidence reveals that the new disclosures were informative to SMEs. More specifically, SMEs learned (1) they were generally getting worse payment terms than other suppliers of the same customer and (2) their large customers’ payment terms were worse than those of industry peers.

Learning, however, is not a sufficient condition for obtaining faster repayment. Accordingly, we asked SMEs *how* they utilize the data and the effectiveness of potential uses of the data. SMEs’ responses are consistent with an increase in bargaining power. The most common uses for the data are to “negotiate better payment terms with customers” (67%) and to “identify potential customers with better payment practices” (66%). In terms of effectiveness, 49% of SMEs using the data to negotiate said this helps them obtain faster payment. In comparison, only 24% say that the data helps them identify potential better-paying customers. From the interviews, we learned that SMEs are still hesitant to confront their large customers, but the disclosed data allows them to start a conversation about payment terms. Interviewees described the importance of using a customer’s *own disclosed data* to renegotiate payment terms. SMEs also explained that expanding their customer base is difficult and time-consuming, switching costs are high, and losing an existing large customer is costly. As such, they are more likely to show their customers that other companies have more favorable payment practices (with the hope that this will change their behavior) than to drop the customer altogether.¹⁷

Another noteworthy use of the data by SMEs is to “threaten to, or actually pursue late payment action against customers” (44%). In our interviews, SMEs explained that filing late payment complaints (with the Small Business Commissioner, the Chartered Institute of Credit Management, or their trade

¹⁷ These results contrast with some of the findings in the banking literature that show that transparency leads to new banking relationships (e.g., Breuer et al., 2018; Saidi and Zaldokas 2023).

associations) has become more effective because they can use their customers' own disclosures to support and validate their claims. However, they prefer submitting anonymous complaints for fear of retribution.¹⁸

We also asked large companies how their SME suppliers use the data. Their responses are broadly consistent with what SMEs reported. Specifically, the most common uses of the data are to “renegotiate payment terms, practices and/or conditions” (57%) and to “threaten or actually pursue late payment action” (45%).

Changes in Large Companies' Payment Practices

We asked large companies why (if at all) they have changed their payment practices in response to the new disclosure requirements. The most prevalent reasons cited were reputational concerns, internal learning, and accountability, with reputational concerns being more likely to affect large firms' payment practices than internal learning and accountability.

Regarding reputation, 72% of large companies are “concerned about the reputational effects of [their] payment practices.” In our interviews, large firms conveyed three sources for these reputational concerns. First, they are concerned about how the PPDR data may affect their ESG reputation and, consequently, their ESG ratings, which are increasingly used in investment analysis and portfolio formation (e.g., Christensen *et al.*, 2021b; Gilbert, 2019). Interviewees noted that ESG data providers have inquired about their PPDR disclosures, which has made them concerned about how their payment terms are being externally perceived. Second, large firms fear negative publicity and seek to avoid being named and shamed. For instance, interviewees explained that media and trade associations use PPDR data to expose businesses with long payment durations. Third, firms are concerned about reputation loss that could result from being suspended from the PPC; our interviewees noted that the new disclosures help external parties

¹⁸ Anecdotal evidence suggests that actions to pursue late payment increased following PPDR. For instance, the Office of the Small Business Commissioner experienced an increase in the number of late payment complaints from small companies who, prior to PPDR, were reluctant to challenge their large customers (*The Guardian*, 2019).

audit large-firm compliance with the PPC, which has led to the suspension of over 30 companies since PPDR came into effect, including British American Tobacco, Diageo, and Unilever.

Some 62% of large company respondents cited internal learning as an impetus for changes to payment practices, specifically: “Having to publish our data is giving us insight into what *our* practices are and/or how to improve them” (emphasis added). For example, one of our large-company interviewees explained that the named officer signing off on PPDR disclosures was “shocked” at the company’s payment duration. Other interviewees conveyed similar reactions at their firms. Their surprise stems from management not having previously collected many of the metrics required under PPDR and not aggregating these metrics up to the firm level. Our interviewees explained that by collecting the data required under PPDR across all business units and consolidating it to the firm level, management became aware that their firms’ payment track record was not as good as they had thought.

In terms of the third reason, accountability, 61% of large companies indicate that the “regulation has raised the profile of payment practices to the Board level.” We learned from our interviews that because a named Officer of the company must sign off on the new disclosures and individual directors carry personal legal liability over PPDR reporting, payment durations have become a regular agenda item at Board of Directors and C-suite executive meetings. One interviewee mentioned that even though PPDR reporting is semi-annual, the company’s Board of Directors requests monthly internal reporting to track payment metrics disclosed under PPDR.

Finally, we asked large companies what changes (if any) they have made or will make in response to the new disclosure requirements. Of the respondents, 66% report “communicating more regularly with [their] suppliers” to resolve payment issues and delays. Consistent with this, SMEs noted in our interviews that they are receiving more calls from their customers regarding payment durations and are seeking to collaborate more effectively to process invoices promptly and efficiently.

Regarding other actions, 49% of large firms are “investing in improved technology, infrastructure, and other payment systems to prevent payment delays,” and 36% are “integrating procurement and finance to improve payment efficiency.” For example, a payment systems expert in the UK explained that, before PPDR, spending money on technology to manage invoicing and payments was rare. However, since PPDR, he has seen an increase in firms investing in system improvements, including invoice and payment automation, digitized payment systems, and two-way transparency infrastructure between customers and suppliers. Last, 34% of large companies responded that they are “providing incentives to departments/divisions for improved payment practices.” For example, one large company we interviewed disclosed that it conducts presentations at regional offices stressing the importance of prompt payment for maintaining a healthy supply chain and has implemented disciplinary measures to hold regional managers accountable for untimely payments.

4.4 Survey Timing and the COVID-19 Pandemic

Although the survey took place during the COVID-19 pandemic, it is unlikely that the timing confounded our findings. First, we draw our main inferences from survey questions that specifically focus on PPDR and how the PPDR disclosures are used, instead of asking respondents general questions about the late-payment issue, which could have worsened during the pandemic. Second, the pandemic likely attenuated our findings, given that large firms we interviewed conveyed that during the pandemic, they were *less* inclined to re-negotiate payment terms with suppliers or prioritize timely payments due to the unusual circumstances. Third, we conducted additional interviews and obtained additional survey responses (not included in our main analysis) from August-September 2021 (after most COVID-related restrictions had been lifted in the UK). We did not observe meaningful differences compared to the evidence we obtained earlier in 2021.

4.5. Linking Survey Evidence and Archival Tests

To complement the survey evidence, we use archival data to examine the two external channels for improved payment practices: bargaining power and reputation. On the bargaining channel, our survey evidence suggests that suppliers used the newly available disclosures to negotiate payment terms. Thus, if payment practices transparency increases bargaining power, we expect stronger effects among SMEs with lower *ex-ante* bargaining power. To test this, we conduct two tests. For the first test, we use financial data to measure the power imbalance between large and small firms within each industry during the pre-period. Specifically, we compute *PowerImbalance* as the difference between large firms' and SMEs' average accounts payables balances (scaled by sales) in the pre-period in each industry. We reason that larger differences in payment durations between large and small industry players indicate an imbalance of power because large firms can take longer to pay while small firms have to pay faster. We include the triple interaction term $SME \times Post \times PowerImbalance$ in our model. Consistent with our expectation, column 1 of Table 5 reports that the coefficient on the triple interaction term $SME \times Post \times PowerImbalance$ is negative and significant, indicating that the effect of PPDR on *A/R* strengthens as the pre-period power imbalance increases. In economic terms, a one-standard-deviation increase in pre-regulation *PowerImbalance* is associated with an additional 8.3% decrease in *A/R* for UK SMEs following PPDR.¹⁹

For the second test, we use firms' individual market shares to compute the pre-regulation Herfindahl-Hirschman Index (*HHI*) to measure industry market concentration. Since SMEs' overall bargaining power is lower in more concentrated industries (e.g., Inderst and Wey, 2007; Kale and Shahrur, 2007), we expect SMEs in industries with higher *HHI* to gain more from the increased disclosures. Column 2 of Table 5 reports the results. Consistent with our prediction, SMEs in more concentrated industries exhibit larger reductions in *A/R* following transparency on payment practices; economically, a one-standard-deviation increase in pre-regulation *HHI* is associated with an additional 3.0% reduction in *A/R*.

¹⁹ We compute the economic magnitude of the effect by multiplying the standard deviation of *PowerImbalance* by the coefficient on the triple interaction term. We estimate the economic magnitude of the effect of *HHI* and *RepRisk* in the same way.

On the reputation channel, large firms expressed concerns in the survey and interviews about the impact of their (now transparent) payment practices on ESG reputation. Accordingly, we examine whether faster repayment occurs in industries with higher exposure to ESG-related reputation risks. We measure exposure to ESG reputational risks using data from Reprisk, an ESG risk analytics and metrics provider. RepRisk screens tens of thousands of media, government, NGO, and third-party sources (including print and online media and news, social media, and other online sources) for controversies and criticisms related to firms' ESG practices and calculates a proprietary reputation risk index (RepRisk Index). The RepRisk Index captures the firms' exposure to negative ESG news and ranges from 0 to 100, with higher values denoting higher risk exposure. We calculate the industry average RepRisk Index in the pre-period scaled by 100 (*RepRisk*) and interact it with $SME \times Post$. As shown in column 3 of Table 5, the coefficient on the triple interaction term is negative and significant. A one-standard-deviation increase in pre-regulation *RepRisk* is associated with an additional 10.5% decrease in *A/R*. Thus, consistent with the reputational channel we observed in the survey responses, the effect of PPDR strengthens as industry-level exposure to ESG-related reputational risks increases.

5. Role and Effects of Financial Constraints

A central objective of the regulation was to alleviate SMEs' financial concerns, as late payments can often lead them to issue short-term debt to finance working capital (BEIS, 2018). Thus, we investigate the effects of the regulation on SMEs' financial constraints. Table 6 reports the results. In column 1, we estimate our model using *STD*, the natural logarithm of short-term debt, as the dependent variable. The coefficient on $SME \times Post$ is negative and significant, indicating that PPDR helped SMEs reduce their short-term obligations by approximately 15.6%. In column 2, we use Whited and Wu's (2006) *WW Index* as the dependent variable. The advantage of using the *WW Index* is that it is a comprehensive measure of firms' external financial constraints. Again, we find a negative and significant coefficient on $SME \times Post$; the coefficient estimate of -0.018 represents an 11.3% reduction relative to the *WW Index* of the average SME.

Overall, the results from columns 1 and 2 are consistent with PPDR loosening SMEs' financial constraints. Figure 2 shows the time dynamics of the effects on *STD* and *WW Index*.

The regulation was also intended to help firms that could become financially distressed due to late payments. The regulatory guidance states, "Late payment is a key issue for smaller businesses as it can adversely affect their cash flow and jeopardize their ability to trade. In the worst case, late payment can lead to insolvency" (BEIS, 2017, p. 3). However, PPDR did not include specific terms or provisions aimed at helping more financially-constrained SMEs; thus, it is unclear whether PPDR would differentially affect these firms. To ascertain whether this is the case, we examine whether more financially constrained firms derived greater benefits from PPDR. In columns 3 to 5, we interact leverage (debt/assets), short-term leverage (short-term debt/assets), and interest cost (interest expense/debt) with $SME \times Post$. While the coefficients of the three triple interaction terms are negative, only the coefficient on the term that includes short-term leverage is statistically significant (column 4). Overall, these results indicate that the effect of PPDR was not strongly dependent on firms' existing financial constraints, which is perhaps not surprising given how the regulation was formulated. In particular, we only find weak evidence suggesting the effect was stronger for firms with higher short-term leverage.

Overall, the results in this section suggest that faster repayment from large customers reduced SMEs' financial constraints following PPDR. It is important to note that although our analyses show benefits for SMEs associated with PPDR, we do not conduct a general equilibrium analysis to examine all the potential costs and benefits of this regulation. Thus, we cannot speak to its overall welfare effects.

6. Additional Tests

6.1. Brexit

In 2016, the UK voted to exit the European Union (EU), a decision commonly referred to as 'Brexit.' Although the UK was to remain part of the European Union until the leave date of January 31, 2020, a potential concern is whether Brexit affected accounts receivable balances. Brexit entailed the future rupture

of free trade agreements between the UK and other countries inside and outside the EU, potentially deteriorating firms' revenue generation opportunities. Therefore, the specific concern is that SMEs experienced a reduction in their receivable balance because of this negative economic shock, as opposed to Brexit causing an acceleration of payments and collections.

Although our models control for firm revenues, we conduct three robustness tests to mitigate the concern that Brexit may be an important driver behind the effects we document. First, we augment our base model by interacting $SME \times Post$ with $FracUKRev$, the fraction of a firm's revenues that originate from the UK, calculated using geographic segment sales data from S&P. We expect the effect to be more pronounced among firms with a greater fraction of their operations in the UK because PPDR does not cover contracts outside the UK. Empirically, we cannot observe the source of the accounts payable, so we assume that SME firms with higher UK-based revenues have more of their payables from UK customers. Therefore, the estimate on this triple-interaction term tests whether A/R declines more for firms with higher UK-based revenues, presumably because PPDR covers more of their customer-supplier contracts. Moreover, firms with greater UK-based revenues are likely less affected by Brexit, as local sales do not depend on trade agreements. Consistent with our expectation, the coefficient on $SME \times Post \times FracUKRev$ is negative and statistically significant (Table 7, column 1), indicating that the effect of PPDR intensifies as the fraction of firm revenues derived from UK sources increases. Specifically, the effect is approximately 2.5 times stronger (relative to the main effect from Table 2) for firms that generate all their revenues in the UK.

Our second and third tests investigate whether there is a differential effect for firms that export more to the EU. By rupturing trade agreements, Brexit affects the transfer of UK goods and services across borders, particularly to EU member countries. Thus, Brexit is more likely to harm firms that export more goods and services to the EU. If such firms confound our results, we expect to find differential results for high versus low EU exporters. Using statistics on UK-EU trade from the Office for National Statistics, we create two variables measuring the intensity of EU exports by industry. *Top Exporter* is an indicator variable equal to 1 if the firm belongs to a top EU exporting industry and 0 otherwise (Internet Appendix E lists the

Top EU Exporter industries). Our second variable, *Frac EU Export*, measures the fraction of EU exports by industry. As shown in columns 2 and 3 of Table 7, the coefficients on the triple interactions $SME \times Post \times Top\ Exporter$ and $SME \times Post \times FracEUExport$ are not significant, suggesting that the effect does not vary as a function of the impact of Brexit on the firm's industry.

Lastly, at least two of the tests in prior sections and the regression discontinuity design (RDD) tests described in subsection 6.2 help to mitigate concerns related to Brexit. First, the placebo cut-off test reported in Table 2, column 3 is inconsistent with Brexit being the main driver of our results. In particular, it is unlikely that Brexit affected firms' payment behavior precisely around the size thresholds defined by PPDR but not at the placebo cut-offs. Second, the evidence from Table 3 indicates that large reporting firms accelerated the payment of their invoices. We would expect Brexit to have the opposite effect on large firms, as Brexit should negatively affect firms' revenues, thus, reducing their ability to pay customers. Third, as explained in subsection 6.2, the RDD results are qualitatively and quantitatively similar to our main results, further confirming that the effects occurred specifically around the regulatory thresholds, which, from the perspective of Brexit should be arbitrary and irrelevant.

6.2. Regression Discontinuity Design

To bolster confidence in our results, we also employ an RDD approach, as illustrated in Figure 3. This graphical representation displays the average A/R alongside polynomial functions estimated separately for values on both sides of the discontinuity. The estimation relies on the "least distance to threshold," a one-dimensional measure combining the distances between assets and sales to their respective thresholds (Breuer, Hombach, and Muller, 2018). In addition, we estimate the effects of PPDR on SMEs' account receivable balances using a parametric RDD akin to the one employed by Breuer et al. (2018). Similar to that study, our setting has multiple running variables, so we use the full sample control function approach for the RDD estimation (e.g., Garmaise and Natividad, 2010; Reardon and Robinson, 2012). Specifically, we estimate the following model:

$$\begin{aligned}
A/R_{i,t} = & \alpha_0 + \alpha_1 SME_{i,t} + \alpha_2 Post_{i,t} + \alpha_3 SME_{i,t} \times Post_{i,t} + \alpha_4 I_{i,t}^A + \alpha_5 \tilde{X}_{i,t}^A + \alpha_6 I_{i,t}^A \tilde{X}_{i,t}^A + \alpha_7 I_{i,t}^S \\
& + \alpha_8 \tilde{X}_{i,t}^S + \alpha_9 I_{i,t}^A \tilde{X}_{i,t}^S + Sales_{i,t} + \alpha_i + \alpha_t + \epsilon, \quad (3)
\end{aligned}$$

where $I_{i,t}^A$ and $I_{i,t}^S$ are indicator variables that take the value of one if firm i exceeds the regulatory threshold for assets and sales, respectively. In addition, $\tilde{X}_{i,t}^A$ and $\tilde{X}_{i,t}^S$ capture firms' relative distance to the individual thresholds by taking the natural logarithm of the variable scaled by the relevant threshold (e.g., $\tilde{X}_{i,t}^A = \ln(\frac{Assets}{Threshold^A})$).²⁰

Table 8 reports the results. Column 1 shows the estimates from equation (3). In column 2, we fully interact the *Post* variable with the indicators and relative distance variables to allow for distinct slopes before and after the treatment. Column 3 includes polynomials of order two of the relative distance variables with their corresponding interactions, and column 4 augments this model with interactions of the *Post* variable. The coefficient of $SME \times Post$ is negative and significant across all models. Moreover, the economic magnitude of these coefficients (ranging from -0.113 to -0.079) is very similar to that of the main result from Table 2 (-0.083). Overall, the evidence from these tests is consistent with PPDR accelerating SMEs' receivable collections, specifically around the regulatory thresholds.

6.3. Customer-Supplier Relationships

In additional analyses, we examine whether our main result from Table 2 becomes stronger for SME firms more likely to be positioned upstream (i.e., suppliers) rather than downstream (i.e., customers) in the supply chain. Because granular data on firm-specific customer-supplier links are largely unavailable, we identify customer-supplier relationships at the 4-digit sub-industry level. Specifically, within each sub-industry, we form customer-supplier pairs. For example, within the oil and gas industry, exploration and production firms are positioned toward the top of the supply chain, acting as suppliers to other firms in the industry.

²⁰ Following prior work (e.g., D'Acunto et al., 2020), we test for treatment manipulation or bunching around the sales and assets thresholds set by PPDR using the local polynomial density estimators proposed by Cattaneo, Jansson, and Ma (2017). We do not find evidence of a discontinuity in the density of firms at the PPDR thresholds. Internet Appendix G provides the results of these tests.

By contrast, refining and marketing firms are located toward the bottom of the industry supply chain, acting as customers of most other firms in the industry. After identifying these links within each sub-industry, we classify a sub-industry as either upstream or downstream based on the frequency with which it appears as a supplier or a customer. In particular, if a sub-industry appears more often in a customer (supplier) role, we categorize it as a downstream (upstream) sub-industry (our list of customer-supplier relationships at the sub-industry level is detailed in Internet Appendix F). We then include the triple interaction term $SME \times Post \times Upstream$ in our model. We expect to find stronger effects for upstream SME firms supplying goods/services to their customers and benefitting from the PPDR requirements by reducing A/R . As reported in Internet Appendix F, the A/R of upstream SMEs declines by an additional 14.5% compared to non-upstream firms. Consistent with our expectation, this effect is approximately 1.75 times stronger (relative to the main effect from Table 2) for SMEs more likely to be positioned upstream in the supply chain.

6.4. Office of the Small Business Commissioner

The Office of the Small Business Commissioner (SBC) was launched one month after the first payment practices disclosure. The SBC allows micro and small businesses to submit formal complaints regarding payment disputes. Given the timing of its launch, the SBC could be a potential confound. However, the SBC uses smaller size thresholds to define this complaint system's eligibility. Specifically, eligible firms have fewer than £10.2 million in revenues and £5.1 million in total assets, thus only capturing a subset of PPDR's small firms. To examine this alternative explanation, we rerun our analyses excluding all observations from firms eligible to use the SBC complaint system. We obtain similar inferences in terms of statistical and economic significance (untabulated).

7. Conclusion

This paper examines whether transparency about payment practices is related to the duration of trade credit. We exploit the introduction of a regulation mandating large firms to disclose details about their payment practices. Using this setting, we show that the intended beneficiaries of the increased disclosures, SMEs,

exhibit a reduction of 8.3% in A/R. Further, using the disclosed data, we show that large firms increase the fraction of invoices paid within the agreed terms by increasing the fraction paid within 30 days.

To investigate the mechanisms driving the reduction in payment durations, we conducted a comprehensive set of interviews and obtained survey responses from 210 firms. The evidence from these analyses supports two external and two internal mechanisms. Externally, managers from SMEs and large firms report that both reputation concerns and a shift in bargaining power drive a change in customer-supplier interactions, leading to faster payments. Internally, large firms reveal that the regulation provided management with new information about the firm's on-average payment practices and raised the profile of payment practices to Board and executive meetings, ultimately resulting in internal learning and greater accountability.

Last, PPDR was intended to improve payment practices and ultimately ease financial constraints for SMEs. Our findings are consistent with PPDR relaxing financial constraints for SMEs. Specifically, following PPDR, SMEs reduce their short-term debt and lower their WW Index score. In addition, we find some evidence suggesting that the regulation was slightly more effective for highly levered firms.

Our study primarily contributes to the trade credit literature. Combining a robust empirical approach with interviews and a survey instrument provides novel insights into how transparency about payment practices can influence customer-supplier relationships. These results can also be useful to policymakers concerned that delayed payments put small firms at a competitive disadvantage. Policymakers around the globe have undertaken reforms aimed at accelerating payment to small firms to address this concern. For example, the QuickPay initiative in the United States requires federal agencies to pay within 15 days (Barrot and Nanda, 2020), and the Trade Credit Regulation Reform in France prevents trucking firms from extending credit to their customers beyond 30 days (Barrot, 2016b). Unlike these "command-and-control" regulations, PPDR imposes transparency, rather than restrictions, on payment terms. However, it is important to note that our study does not speak to the market-wide implications of the disclosure

mandate (e.g., Breuer 2021), and we urge other researchers to pursue this interesting avenue for future research.

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Appendix A. Variable Definitions

The following variables are constructed using data from S&P Global Capital IQ [SP], regulatory filings available as of February 2020 [RF], Reprisk [RR], and the Office of National Statistics [ONS].

Variable	Definition
Assets	Natural logarithm of one plus total assets (in thousands of GBP). ^a [SP]
Avg. Payment Time (days)	Average time taken to pay an invoice. [RF]
A/R	Natural logarithm of one plus accounts receivables (in thousands of GBP). ^a [SP]
FracUKRev	Fraction of revenues originating in the UK. [SP]
FracEUExport	Fraction of exports to the EU by industry. [ONS]
HHI	Industry-level variable equal to the sum of the squares of firms' market share (share of total industry sales) within each industry. [SP]
Int_Cost	Ratio of interest expense to total debt. ^a [SP]
Invoices Not Paid in Agreed Terms (%)	Percentage of invoices not paid within agreed terms. [RF]
Invoices Between 31 to 60 days (%)	Percentage of invoices paid in more than 30 days but less than 60 days. [RF]
Invoices < 30days (%)	Percentage of invoices paid within 30 days. [RF]
Invoices > 60days (%)	Percentage of invoices paid in more than 60 days. [RF]
Large	Indicator variable for large companies (required to disclose) as determined by the size thresholds set by PPDR. [SP]
Leverage	Ratio of total debt to total assets. [SP]
Post	Indicator variable for time periods after PPDR comes into effect (2018 onwards).
PowerImbalance	Industry-level variable equal to the average industry difference between Large and SME firms' ratio of accounts payable to sales, calculated in the pre-period. [SP]
Report_Number	Count variable. Equals n for the n^{th} report filed by a firm. [RF]
RepRisk	Industry-level variable equal to the average Reputation Risk Index from RepRisk (ranging from 0 to 100) for each industry, calculated in the pre-period and divided by 100. [RR]
Sales	Natural logarithm of one plus sales revenue (in thousands of GBP). ^a [SP]
SME	Indicator variable for small and medium-sized enterprises as determined by the size thresholds set by PPDR. [SP]
Standard Payment period (days)	Number of days to make payments, as set out in the standard payment terms. [RF]
STD	Natural logarithm of one plus short-term debt (in thousands of GBP). ^a [SP]
ST_Lev	Ratio of short-term debt to total assets. [SP]
TopEUExport	Indicator variable equal to 1 if the firm belongs to a top EU exporting industry (0 otherwise), per the Statistics on UK-EU trade from the House of Commons Library (see Internet Appendix E).
WW Index	Index computed as $-0.091*EBITDA - 0.062*dividend\ payer\ indicator + 0.021*long\ term\ debt\ scaled\ by\ assets - 0.044*natural\ logarithm\ of\ total\ assets + 0.102*industry\ sales\ growth - 0.035\ sales\ growth + 0.65$. ^a [SP]

^a We winsorize this variable at the 1 and 99 percentiles.

Table 1. Summary Statistics

This Table presents the summary statistics for the firm-year observations in our sample.

Variable	N	Mean	Std. Dev.	25 th	Median	75 th	Mean(SME)	Mean(Large)
A/R	15,572	9.29	2.65	7.53	9.25	11.11	7.80	10.66
Assets	15,572	12.38	2.35	10.68	12.30	13.98	11.04	13.59
Sales	15,572	11.37	2.47	9.75	11.29	13.07	9.71	12.91
Leverage	15,565	0.27	0.29	0.03	0.18	0.40	0.27	0.27
ST_Lev	10,604	0.08	0.13	0.01	0.03	0.08	0.09	0.06
Int_Cost	11,959	0.07	0.10	0.03	0.05	0.07	0.08	0.07
STD	10,015	9.28	3.07	7.28	9.09	11.11	7.83	10.26
WW Index	7,881	0.06	0.13	-0.02	0.06	0.15	0.16	0.01
FracUKRev	9,222	0.43	0.65	0.17	0.30	0.40	0.52	0.34
TopEUExport	15,572	0.11	0.31	0.00	0.00	0.00	0.11	0.10
FracEUExport	15,572	0.07	0.05	0.03	0.08	0.09	0.07	0.08
PowerImbalance	15,572	0.58	2.51	-0.53	-0.43	0.01	1.00	0.19
HHI	15,572	0.09	0.27	0.01	0.03	0.06	0.11	0.08
RepRisk	15,572	0.34	0.19	0.18	0.33	0.42	0.37	0.32

Table 2. Difference-in-differences

This table reports the estimation results from linear regressions of the following form:

$$Y_{i,t} = \alpha_0 + \alpha_1 SME_{i,t} + \alpha_2 Post_{i,t} + \alpha_3 SME_{i,t} \times Post_{i,t} + \alpha_i + \alpha_t + \epsilon.$$

The dependent variable is *A/R*. All models include firm and time fixed effects. All variables are defined in Appendix A, and the sample spans the period 2011-2020. The estimation in column 1 uses the full sample. Column 2 is estimated using the subsample of firms with revenues lower than £86m. Column 3 reports a placebo test whereby SMEs are defined as firms with sales revenues between £136m and £236m and assets between £118m and £218m; and large firms are defined as those with revenues and assets greater than £236m and £218m, respectively. Standard errors are clustered at the industry level and t-stats are reported in parenthesis below the coefficients. *, **, and *** indicate statistical significance at the two-tailed 10%, 5%, and 1% levels, respectively.

Test:	Full Sample	Narrow Window Revenues < £86m	Placebo
Dependent Variable:	A/R (1)	A/R (2)	A/R (3)
SME x Post	-0.083** (-2.16)	-0.122* (-1.77)	-0.015 (-0.22)
Sales	0.578*** (5.24)	0.548*** (5.09)	0.697*** (9.48)
Constant	2.730** (2.17)	2.474** (2.41)	1.844* (1.83)
Firm Fixed Effects	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes
Observations	15,572	7,871	6,174
Within R-squared	0.196	0.178	0.160

Table 3. Analysis on Payment Practices Reports

This table examines the information reported on the payment practices regulatory reports filed on <https://publish-payment-practices.service.gov.uk> as of December 31, 2019. Panel A provides summary statistics. Panel B reports the estimation results from a linear regression of the following form: $Y_i = \alpha_0 + \alpha_1 \text{Report Number}_i + \alpha_i + \epsilon$. The dependent variables are *InvoicesNotPaidinAgreedTerms*, *Standard Payment Period*, *Avg. Payment Time*, *Invoices < 30 days*, *Invoices between 31-60 days*, and *Invoices > 60 days*, in column 1 to 6, respectively. The main explanatory in all models is *Report_Number*. All variables are defined in Appendix A. Standard errors are clustered at the firm level and t-stats are reported in parenthesis below the coefficients. *, **, and *** indicate statistical significance at the two-tailed 10%, 5%, and 1% levels, respectively.

Panel A. Summary Statistics

	N	Mean	25 th	Median	75 th	Std. Dev.
Invoices Not Paid in Agreed Terms (%)	20,868	30.0	10	25	45	24.5
Standard Payment period (days)	20,868	21.5	1	21	30	26.0
Avg. Payment Time (days)	20,868	37.3	25	35	46	26.1
Invoices < 30days (%)	20,868	53.9	29	55	78	28.4
Invoices between 31 to 60days (%)	20,868	31.6	15	30	46	20.7
Invoices > 60days (%)	20,868	14.4	3	8	19	16.9

Panel B. Regression Results

Dep. Variables:	Invoices Not Paid in Agreed Terms (%)	Standard Payment period (days)	Avg. Payment Time (days)	Invoices < 30 days (%)	Invoices between 31 and 60 days (%)	Invoices > 60days (%)
	(1)	(2)	(3)	(4)	(5)	(6)
Report_number	-1.333*** (-10.86)	-0.274*** (-3.80)	-0.225** (-2.46)	0.666*** (6.48)	-0.451*** (-5.19)	-0.211*** (-3.40)
Constant	32.855*** (127.75)	22.047*** (145.78)	37.736*** (197.94)	52.550*** (244.28)	32.586*** (178.65)	14.849*** (114.02)
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	20,868	20,868	20,868	20,868	20,868	20,868
R-squared	0.818	0.939	0.869	0.898	0.860	0.887

Table 4. Survey Results

This table presents an excerpt of our full survey, which can be found in Internet Appendix D. Panel A reports the responses of 134 SMEs. Panel B reports the responses of 76 Large firms. We use a difference in proportions test (z-test) to examine the statistical significance of the difference across responses in columns 1 and 3 (or across “Yes” and “No” answers where applicable) and use *, **, and *** to indicate statistical significance at the 10%, 5%, and 1% levels, respectively. For conciseness, we only indicate the statistical significance of the first number.

Panel A. SMEs survey

Question	Answers		
To what extent is collecting payments from large customers a problem for the company?	A big problem 44%***	Somewhat of a problem 51%	Not a problem 5%
Why do your large customers not pay on time? Please indicate the extent to which you agree with the following reasons.	% Disagree or somewhat disagree	% Neither agree nor disagree	% Agree or somewhat agree
a) They take advantage of us because we are small	15%***	8%	77%
b) Their payment systems are outdated	46%***	28%	26%
c) Poor communication between us and our large customers	15%***	13%	72%
d) Our invoicing systems are outdated	58%***	18%	24%
e) We sometimes have invoicing errors that take time to resolve	49%***	19%	32%
f) They have many suppliers and cannot keep track	23%***	7%	70%
g) We disagree on when goods/services have been delivered	50%***	19%	31%
h) We disagree on payment terms even after contracts have been established	50%***	22%	28%
Does your company utilize the payment practices data reported by large UK companies under the Payment Practices and Reporting (PPR) Duty?	Yes 68%***	No 32%	Do not know 0%
What has your company learned, if anything, from the data reported by large UK companies under the PPR Duty? Please indicate the extent to which you agree with the following. We have learned...	% Disagree or somewhat disagree	% Neither agree nor disagree	% Agree or somewhat agree
a) ...that we are getting WORSE payment terms than our customer's other suppliers	22%***	14%	64%
b) ...that we are getting BETTER payment terms than our customer's other suppliers	63%***	26%	11%

c) ...that our customers have WORSE payment terms than other large customers in our industry	11%***	27%	62%
d) ...that our customers have BETTER payment terms than other large companies in our industry	71%***	15%	14%
e) ...not much from the data that we did not already know	61%***	17%	22%

How does your company use the data, if at all? Indicate whether the action is taken and if it helps your company obtain better payment terms or practices (e.g., faster payment).	We use the data to...		If yes: Does this improve payment terms or practices?	
	Yes	No	Yes	No
a) ...negotiate better payment terms with customers	67%***	33%	49%	51%
b) ...threaten to, or actually pursue late payment action against customers	44%*	56%	54%	46%
c) ...threaten to, or actually bring negative publicity to customers	17%***	83%	65%	35%
d) ...identify potential customers with better payment practices	66%***	34%	24%***	76%
e) ...threaten to no longer supply our customer and/or leave them	12%***	88%	50%	50%

Panel B. Large firms survey

Question	Answers			
To what extent is paying your SME suppliers a problem?	A big problem	Somewhat of a problem	Not a problem	
	1% ***	22%	76%	
Why do you not pay your SME suppliers on time, if at all? Please indicate the extent to which you agree with the following reasons.	% Disagree or somewhat disagree	% Neither agree nor disagree	% Agree or somewhat agree	
a) We use suppliers as a source of financing	77% ***	10%	13%	
b) Poor communication between us and our SME suppliers	37%	17%	46%	
c) Their invoicing systems are outdated	37%	34%	29%	
d) Our payment systems are outdated	49% ***	36%	15%	
e) They have invoicing errors	15% ***	16%	69%	
f) We have many suppliers and it is difficult to keep track of all invoices	46%	16%	38%	
g) We disagree on when goods/services have been delivered	20% ***	22%	58%	
h) We disagree on payment terms even after contracts have been established	42% ***	36%	22%	
i) We delay payment in case the quality of goods/services is lower than expected	25% **	32%	43%	
How do your suppliers use the data reported under the Payment Practices and Reporting (PPR) Duty, if at all? Indicate whether your suppliers take the following actions and if it changes your payment practices (e.g., paying more promptly). Do your suppliers use the data to...	Yes	No		
a) ...renegotiate payment terms, practices and/or conditions	57%	43%		
b) ...threaten to, or actually pursue late payment action against us	45%	55%		
c) ...threaten to, or actually refuse to supply us and/or leave us	16% ***	84%		
d) ...bring negative publicity to our payment practices	37% ***	63%		
Are there reasons why you have or will change your payment practices after publishing them under the Payment Practices and Reporting Duty? Indicate whether the reason has or will change your payment practices (e.g., paying more promptly).	Valid reason?		If yes: Does this affect your payment practices?	
	Yes	No	Yes	No

a) The media is using the data to name-and-shame companies	26%***	74%	69%*	31%
b) We are concerned about the reputational consequences of our payment practices	72%***	28%	94%***	6%
c) We are concerned about future regulations relating to prompt payment resulting from the published data	25%***	75%	64%	36%
d) We anticipate difficulty forming new partnerships with suppliers owing to the published data	25%***	75%	76%**	24%
e) We anticipate losing customers owing to the published data	30%***	70%	70%**	30%
f) The regulation has raised the profile of payment practices to the Board level	61%***	39%	84%***	16%
g) Having to publish our data is giving us insight into what our practices are and/or how to improve them	62%***	38%	79%***	21%
h) The data are being used by the Prompt Payment Code to suspend signatories	45%	55%	76%***	24%
i) We want to pay our suppliers faster than our competitors do	33%***	67%	85%***	15%

What changes have or will be made at the company as a result of the PPR Duty? (Select all that apply)

Selected

a) We are investing in improved technology, infrastructure and/or other payment systems to prevent payment delays	49%
b) We are integrating procurement services and finance to improve payment efficiency	36%
c) We are providing incentives to departments/divisions for improved payment practices	34%
d) We are communicating more regularly with our suppliers	66%

Table 5. Archival Evidence for Mechanisms

This table reports the estimation results from linear regressions of the following form:

$$Y_{i,t} = \alpha_0 + \alpha_1 SME_{i,t} + \alpha_2 Post_{i,t} + \alpha_3 SME_{i,t} \times Post_{i,t} + \alpha_3 SME_{i,t} \times Post_{i,t} \times Characteristic_i + Characteristic_i \times Post_{i,t} + \alpha_i + \alpha_t + \epsilon,$$

where Characteristic is *PowerImbalance*, *HHI*, or *RepRisk*.

The dependent variable is *A/R*. All models include firm and time fixed effects. All variables are defined in Appendix A, and the sample spans the period 2011-2020. Standard errors are clustered at the industry level and t-stats are reported in parenthesis below the coefficients. *, **, and *** indicate statistical significance at the two-tailed 10%, 5%, and 1% levels, respectively.

Dependent Variable:	A/R	A/R	A/R
Characteristic:	<i>PowerImbalance</i>	<i>HHI</i>	<i>RepRisk</i>
	(1)	(2)	(3)
SME x Post x Characteristic	-0.033*** (-3.66)	-0.113*** (-2.92)	-0.553*** (-3.15)
SME x Post	-0.061 (-1.48)	-0.075* (-1.88)	0.118 (1.69)
Post x Characteristic	0.017** (2.76)	0.145*** (5.84)	0.150 (1.52)
Sales	0.577*** (5.22)	0.578*** (5.24)	0.576*** (5.24)
Constant	2.739** (2.18)	2.723** (2.16)	2.733** (2.19)
Firm Fixed Effects	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes
Observations	15,572	15,572	15,572
Within R-squared	0.197	0.196	0.197

Table 6. Role and Effects of Financial Constraints

This table reports the estimation results from linear regressions of the following form:

$$Y_{i,t} = \alpha_0 + \alpha_1 SME_{i,t} + \alpha_2 Post_{i,t} + \alpha_3 SME_{i,t} \times Post_{i,t} + \alpha_3 SME_{i,t} \times Post_{i,t} \times Characteristic_i + Characteristic_i \times Post_{i,t} + \alpha_i + \alpha_t + \epsilon,$$

where Characteristic is *Leverage*, *ST_Lev*, or *Int_Cost*.

All models include firm and time fixed effects. All variables are defined in Appendix A, and the sample spans the period 2011-2020. Standard errors are clustered at the industry level and t-stats are reported in parenthesis below the coefficients. *, **, and *** indicate statistical significance at the two-tailed 10%, 5%, and 1% levels, respectively.

Dependent Variable: Characteristic:	STD	WW Index	A/R Leverage	A/R ST_Lev	A/R Int_Cost
	(1)	(2)	(3)	(4)	(5)
SME x Post	-0.156** (-2.71)	-0.018*** (-3.32)	-0.055 (-1.08)	-0.068* (-1.77)	-0.074* (-1.73)
SME x Post x Characteristic			-0.112 (-1.27)	-0.323* (-1.81)	-0.268 (-0.92)
Post x Characteristic			-0.063 (-0.88)	-0.098 (-0.65)	0.063 (0.74)
Characteristic			0.053 (0.54)	-0.193** (-2.41)	-0.123** (-2.67)
Sales	0.342*** (4.24)		0.576*** (5.19)	0.666*** (8.57)	0.587*** (4.90)
Constant	5.249*** (5.49)	0.060*** (125.09)	2.745** (2.20)	1.938** (2.09)	2.658* (1.87)
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes
Observations	12,897	7,881	15,565	10,604	11,959
Within R-squared	0.022	0.003	0.196	0.230	0.197

Table 7. Brexit

This table reports the estimation results from linear regressions of the following form:

$$Y_{i,t} = \alpha_0 + \alpha_1 SME_{i,t} + \alpha_2 Post_{i,t} + \alpha_3 SME_{i,t} \times Post_{i,t} + \alpha_3 SME_{i,t} \times Post_{i,t} \times Characteristic_i + Characteristic_i \times Post_{i,t} + \alpha_i + \alpha_t + \epsilon,$$

where Characteristic is *FracUKRev*, *TopEUExport*, or *FracEUExport*.

The dependent variable is *A/R*. All models include firm and time fixed effects. All variables are defined in Appendix A, and the sample spans the period 2011-2020. Standard errors are clustered at the industry level and t-stats are reported in parenthesis below the coefficients. *, **, and *** indicate statistical significance at the two-tailed 10%, 5%, and 1% levels, respectively.

Dependent Variable:	A/R (1)	A/R (2)	A/R (3)
SME x Post	-0.025 (-0.51)	-0.091** (-2.52)	-0.111* (-1.77)
SME x Post x FracUKRev	-0.208*** (-3.11)		
SME x Post x TopEUExport		0.074 (0.62)	
SME x Post x FracEUExport			0.004 (0.52)
Post x FracUKRev	0.330*** (6.51)		
FracUKRev	0.017 (0.38)		
Post x TopEUExport		0.013 (0.19)	
Post x FracEUExport			-0.005 (-1.29)
Sales	0.594*** (5.53)	0.578*** (5.24)	0.578*** (5.23)
Constant	2.432* (2.03)	2.729** (2.17)	2.741** (2.18)
Firm Fixed Effects	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes
Observations	9,222	15,572	15,572
Within R-squared	0.188	0.196	0.196

Table 8. Regression Discontinuity Design

This table reports the estimation results from linear regressions of the following form:

$$A/R_{i,t} = \alpha_0 + \alpha_1 SME_{i,t} + \alpha_2 Post_{i,t} + \alpha_3 SME_{i,t} \times Post_{i,t} + \alpha_4 I_{i,t}^A + \alpha_5 \tilde{X}_{i,t}^A + \alpha_6 I_{i,t}^A \tilde{X}_{i,t}^A + \alpha_7 I_{i,t}^S + \alpha_8 \tilde{X}_{i,t}^S + \alpha_9 I_{i,t}^A \tilde{X}_{i,t}^S + Sales_{i,t} + \alpha_i + \alpha_t + \epsilon.$$

The dependent variable is A/R . All models include firm and time fixed effects. $I_{i,t}^A$ and $I_{i,t}^S$ are indicator variables that take the value of one if firm i exceeds the regulatory threshold for assets and sales, respectively. $\tilde{X}_{i,t}^A$ and $\tilde{X}_{i,t}^S$ capture firms' relative distance to the threshold for assets and sales, respectively. All other variables are defined in Appendix A, and the sample spans the period 2011-2020. Standard errors are clustered at the industry level and t-stats are reported in parenthesis below the coefficients. *, **, and *** indicate statistical significance at the two-tailed 10%, 5%, and 1% levels, respectively.

Dependent Variable:	A/R	A/R	A/R	A/R
	(1)	(2)	(3)	(4)
SME x Post	-0.091** (-2.29)	-0.113** (-2.41)	-0.079* (-1.85)	-0.110* (-2.04)
I^A (Assets > Threshold ^A)	Yes	Yes	Yes	Yes
I^S (Sales > Threshold ^S)	Yes	Yes	Yes	Yes
$\tilde{X}_{i,t}^A$	Yes	Yes	Yes	Yes
$\tilde{X}_{i,t}^S$	Yes	Yes	Yes	Yes
$\tilde{X}_{i,t}^A \times I^A$	Yes	Yes	Yes	Yes
$\tilde{X}_{i,t}^S \times I^S$	Yes	Yes	Yes	Yes
$Post \times I^A$	No	Yes	No	Yes
$Post \times I^S$	No	Yes	No	Yes
$Post \times \tilde{X}_{i,t}^A$	No	Yes	No	Yes
$Post \times \tilde{X}_{i,t}^S$	No	Yes	No	Yes
$Post \times I^A \times \tilde{X}_{i,t}^A$	No	Yes	No	Yes
$Post \times I^S \times \tilde{X}_{i,t}^S$	No	Yes	No	Yes
$(\tilde{X}_{i,t}^A)^2$	No	No	Yes	Yes
$(\tilde{X}_{i,t}^S)^2$	No	No	Yes	Yes
$(\tilde{X}_{i,t}^A)^2 \times I^A$	No	No	Yes	Yes
$(\tilde{X}_{i,t}^S)^2 \times I^S$	No	No	Yes	Yes
$Post \times (\tilde{X}_{i,t}^A)^2$	No	No	No	Yes
$Post \times (\tilde{X}_{i,t}^S)^2$	No	No	No	Yes
$Post \times (\tilde{X}_{i,t}^A)^2 \times I^A$	No	No	No	Yes
$Post \times (\tilde{X}_{i,t}^S)^2 \times I^S$	No	No	No	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes
Observations	15,572	15,572	15,572	15,572
Within R-squared	0.271	0.271	0.272	0.272

Figure 1. Dynamic Effects

This figure reports coefficients and 90% confidence intervals of OLS regressions estimating the effect of PPDR on A/R (defined in Appendix A). We estimate model (1) but replace $SME \times Post$ with time indicators, each representing time periods relative to when PPDR came into effect.

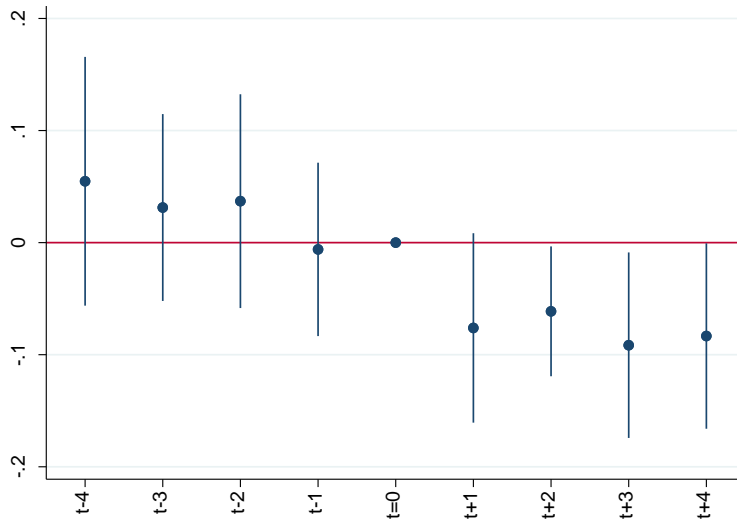


Figure 2. Financial Constraints: Dynamic Effects

This figure reports coefficients and 90% confidence intervals of OLS regressions estimating the effect of PPDR on *STD* and *WW Index* (defined in Appendix A). We replace *SME x Post* with time indicators, each representing time periods relative to when PPDR came into effect.



Figure 3. Regression Discontinuity Design

This figure illustrates our regression discontinuity design. The graph displays the within-bin average A/R with respect to the “least distance to threshold” and presents polynomial functions of order three estimated separately for values to the left and right of the post-period discontinuity. The solid line represents the fitted polynomial without covariates, while the dashed line represents the polynomial incorporating the covariates from our main specification.

