Cash Collateral, Creditor Rights, and the Provision of Trade Credit

March 2021

Abstract

U.S. bankruptcy code classifies receivables as cash collateral and provides strong creditor protection over such collateral. We show that strong creditor rights over cash collateral incentivize firms to extend trade credit to customers. We use the staggered adoption of anti-recharacterization laws as shocks enhancing the creditor rights of non-cash collateral, rendering receivables a less attractive collateral choice. Firms incorporated in treated states reduce trade credit provision and borrow less through receivable-backed loans. This effect is not explained by selling receivables to SPVs and is robust to customer-supplier-pair fixed effects. Reduced trade credit leads to reductions in investment and increased borrowing by customers.

Cash Collateral, Creditor Rights, and the Provision of Trade Credit

Matthew T. Billett
Indiana University
mbillett@indiana.edu

Kayla M. Freeman
University of Georgia
kayla.freeman@uga.edu

Janet Gao
Indiana University
janetgao@indiana.edu

March 2021

Abstract

U.S. bankruptcy code classifies receivables as cash collateral and assigns strong creditor protection over such collateral. We show that the difference between cash and non-cash collateral protection inside bankruptcy affects firms' incentive to extend trade credit. We use the staggered adoption of anti-recharacterization laws as shocks enhancing the creditor rights of non-cash collateral, rendering receivables a less attractive collateral choice. Firms incorporated in treated states reduce trade credit provision and borrow less through receivable-backed loans. This effect is not explained by selling receivables to SPVs and is robust to customer-supplier-pair fixed effects. Reduced trade credit leads to reductions in investment and increased borrowing by customers.

1. Introduction

Trade credit frequently serves as collateral for bank loans, backing 17% of bank loans to small and medium sized businesses in recent years (Calomiris et al. 2017). U.S. bankruptcy law classifies trade credit as "cash collateral" with particularly strong creditor control rights. Under Chapter 11 protection, debtors can freely use non-cash collateral assets in the ongoing operations of the firm. These assets remain under the control of the debtor until late in the restructuring process and could depreciate during the bankruptcy process. In contrast, debtors must obtain explicit consent from creditors or a court order prior to using cash collateral.[1] Given that creditor protection in bankruptcy directly affects creditors' recovery value upon default (see, e.g., Liberti and Mian (2010) and Vig (2013)), it is plausible that differences in the creditor rights across asset categories may generate implications for the type of assets being pledged. Firms may pledge more (less) trade credit collateral if other assets are associated with weaker (stronger) creditor rights. If the relative strength of creditor protection affects firms' decision to pledge trade credit, it can also influence firms' decision to extend trade credit and ultimately generates implications for downstream firms' financial and operating policies.

We examine how creditor rights in bankruptcy for non-cash collateral affect the provision of trade credit by industrial firms. While the importance of trade credit as a source of corporate liquidity is extensively studied, less is known regarding how bankruptcy frictions affect the tradeoffs firms face in providing liquidity to their customers. Recent evidence suggests that granting trade credit to customers can be costly because it limits the funds available to make profitable investments (Klapper, Laeven, and Rajan, 2012, and Murfin and Njoroge, 2015). As

---

[1] Creditors can generally control/gain access to cash collateral early in the bankruptcy process, given the likelihood that cash collected from receivables could easily be consumed while operating under chapter 11. Assets like PP&E and intangibles are typically so unique to operating the business that creditors are not able to gain control over them unless liquidation occurs, typically much later when the restructuring process proves unsuccessful.

such, firms' decisions to extend trade credit should be at least partly driven by the tradeoff between the collateral value of trade credit and the cost of foregone investment opportunities. We find that as the creditor rights protection over non-cash assets improves (causing the relative value of trade credit as collateral to fall), firms reduce the amount of trade credit extended to customers. This collateral substitution effect reduces the availability of trade credit to downstream firms, leading to a reduction in the investment and an increase in the leverage ratios of these downstream firms.

We exploit the staggered passage of state-level anti-recharacterization laws (ARLs) as a quasi-exogenous shock that enhances the creditor rights for non-cash collateral (like PP&E, patents, etc.) in bankruptcy. The passage of anti-recharacterization laws thereby reduces the relative strength of creditor protection for trade credit collateral over the protection for other collateral assets. We follow Favara et al. (2020) and exploit the ARLs passed in seven states from 1997 to 2005, which eventually affect nearly 60% of all US publicly traded firms. Anti-recharacterization laws are targeted at enhancing creditor rights when firms have the option to create Special Purpose Vehicles (SPVs) to borrow against assets contained in those SPVs. The sponsor firm sells assets to the SPV, which in turn borrows against the assets and transfers the proceeds back to the firm. In the case where the sponsor firm files for Chapter 11 bankruptcy, the SPV remains "bankruptcy remote": It allows creditors to seize collateral without being subject to automatic stay. Prior to the passage of ARLs, bankruptcy judges frequently recharacterized the asset transferred from the sponsor to the SPV as a standard loan, subjecting the asset to the automatic stay. The anti-recharacterization laws prohibit such recharacterization, thus solidifying creditors' access to those assets. The passage of the ARLs was, to a large degree, driven by the lobbying efforts of financial firms, and not by the local industrial firms (Janger 2004; Kettering

3

2008 and 2011). This alleviates the concern that the enactment of ARLs might be endogenous to local firms' trade credit policies.

Given that cash collateral (e.g., trade credit) already garners favorable bankruptcy treatment, we posit that ARLs have a greater impact on the collateral value of noncash assets (such as plants, building, and patents) than trade credit. This narrows the gap in credit rights between noncash assets and trade credit, causing firms to pledge more noncash assets, all else equal. [2] Consequently, the ARLs make trade credit less valuable to firms, potentially leading them to extend a lower level of trade credit. Our empirical strategy follows a difference-in-difference framework, defining firms incorporated in states that adopted the ARLs as the treated group and those in states without the ARLs as the control group. We compare the changes in accounts receivable between the treated and control firms following the adoption of the laws.

For a broad sample of Compustat firms, we document that the passage of ARLs leads to a statistically significant reduction in the extension of trade credit, consistent with the notion that ARLs reduce the desirability of using accounts receivable as collateral relative to other assets. Our estimates suggest that treated firms their accounts receivable by 3.6% more compared to control firms after the passage of the laws. Using the Compustat sample allows us to detect the empirical relation between ARLs and accounts receivables for a broad set of firms. Yet, it also admits concerns such as our findings may capture changes in the demand for trade credit by major customers, which could also be affected by ARLs.

To sharpen our identification of the effect of ARLs on trade credit extension and to control for customer demand effects, we use a novel dataset that allows us to explore trade credit extension

---

[2] Note that we do not claim that accounts receivable is less attractive to lenders in absolute terms. Rather, that other assets become relatively more attractive when firms/lenders choose what to post as collateral. Consistent with this notion numerous studies document the rise of patents and other assets as collateral in debt agreements following the law changes (see for example Mann, 2018, and Calomiris et. al., 2017).

to the same customer-firm from multiple suppliers in both treated and untreated states at the same time. This dataset allows us to observe the amount of trade credit extended by a supplier to a specific customer. The matched customer-supplier pair data allow us to control for customer-year fixed effects, thus holding fixed the customer's demand for trade credit. Comparing the trade credit extended by treated and control suppliers to the same customer at the same time, we find that treated suppliers reduce accounts receivable by 26.3% following the passage of ARLs.

We conduct a host of robustness checks. To start, we estimate specifications that include a variety of fixed effects, including supplier industry-year and customer-supplier-pair fixed effects and find similar results. The former set of fixed effects help remove potentially confounding effects originating from time-varying conditions related to the customer or the supplier's industry. The latter helps eliminate the possibility that our effect is driven by the dynamic matching between customers and suppliers. Next, given that ARLs promote the use of SPVs and securitization of assets, we ensure that the reduction in trade credit we observe is not driven by firms selling receivables to SPVs. We design three analyses to address this concern. First, we show that our results remain robust when we exclude firms that report using an SPV or securitized accounts receivable. Second, our results are virtually unchanged when we exclude firms in Texas and Louisiana, which passed ARLs with an emphasis on the securitization of accounts receivable. Finally, we analyze changes in accounts payable for customer firms and compare such changes across the customers of treated firms and those of control firms. This test is motivated by the fact that accounts payable remain on customers' balance sheet regardless of whether it is transferred to an SPV. We find a significant reduction in customer accounts payable following the passage of the laws in the supplier's state. Taken together, these findings suggest that our results are unlikely to be driven by receivable securitization.

We corroborate the economic mechanisms underlying our finding by looking at the likelihood of firms pledging trade credit as collateral around the adoption of ARLs. If our results are driven by the collateral substitution effect, firms should be less likely to pledge accounts receivable following the ARLs. We collect information from LPC Dealscan to determine whether a firm uses its accounts receivable as a borrowing base for a bank line of credit. We find that following the passage of ARL in a state, firms incorporated in that state are 7% less likely to use accounts receivable to secure bank lines of credit, versus other types of borrowing bases.

We further corroborate the "collateral substitution effect" by exploring the cross-sectional heterogeneity related to industry-level innovation. Mann (2017) shows that the ARLs strengthened creditor rights and increased firms use of patents as collateral, suggesting that the collateral substitution effect will be stronger for firms that possess more patents. To alleviate the concern that a firm may choose its innovation jointly with trade credit usage, we measure patent intensity at the industry level and scale the number of patents filed within an industry by the number of firms or employees. We find that the negative effect of ARL on trade credit is absent in industries with low patenting intensity and only present for medium and high patent intensity industries.

We explore how the reduction of trade credit induced by collateral substitution affects downstream (customer) firms. As firms extend less trade credit to downstream firms, this reduces those downstream firms' liquidity. In response, those downstream firms may be forced to borrow from alternative sources at a higher cost and reduce investment. We find consistent results with this conjecture. Our evidence on customer payables validates the argument that downstream firms more exposed to suppliers incorporated in ARL states ("upstream ARL exposure") receive less liquidity from those suppliers. Such reductions in trade credit are associated with declines in customer investment and increases in leverage. Our estimates suggest that a one-standard-

deviation increase in a firm's upstream ARL exposure is associated with a 9.7% reduction in investment and 15.5% increase in leverage. These results indicate that the protection of creditor rights generates negative spillover effects for downstream firms, leading to reduction in real economic activity.

This study contributes to three streams of literature. First, we add to the large literature on determinants of trade credit extension. Prior literature documents that firms extend more trade credit when facing powerful customers (e.g., Wilner, 2000, Cunat, 2007, and Fabbri and Klapper, 2016), to deter competition (e.g., Barrot, 2016), when they have more private information about customers (Biais and Gollier, 1997, Burkart and Ellingsen, 2004, Smith, 1987, and Antras and Foley, 2015), to impose price discrimination (Brennan, Maksimovic, and Zechner, 1988), and when they face lower concentration of credit risk (Freeman, 2020). We document the role of receivable collateralizability in trade credit decisions. Our paper best fits into a subset of trade credit studies on the benefits and costs of trade credit extension (see, e.g., Petersen and Rajan, 1997, Klapper, Laeven, and Rajan, 2012, and Murfin and Njoroge, 2015). We contribute to this literature by showing that the collateral value of trade credit enhances a firm's willingness to extend trade credit. The collateral value of trade credit likely offsets some of costs documented by prior studies, such as foregone investment opportunities (Murfin and Njoroge 2015). Related to our findings, Liu, Mao, and Nini (2018) analyze firms with receivable securitizations and find that firms whose customers are of lower credit quality have lower financing capacity.[3] Other studies

___

[3] Costello (2019) examines how a *supplier's* rights to goods sold as collateral against customers affects trade credit provision but does not consider the use of receivables themselves as collateral.

focus on factoring, a related but distinct method of using receivables to access external financing (e.g. Klapper, 2005; Udell, Bakker, and Klapper, 2004).[4]

Our results also relate to the literature discussing trade credit as a type of "moveable" collateral assets. Existing studies often rely on cross-country comparisons or the setting of a European country. Their findings suggest that in foreign countries, creditor rights on "moveable" assets, such as accounts receivable, are not as protected as immovable assets, such as land. Such a difference in creditor protection makes movable assets a less desirable type of collateral (e.g., Calomiris et al., 2017; Campello and Larrain, 2015). Giannetti, Serrano-Velarde, and Tarantino (2020) use the approval of laws against recharacterization in Italy as a positive shock to the pledgeability of firm receivables, showing that trade credit increases after the approval. Our study is the first to investigate the protection over cash collateral in the U.S. bankruptcy court. We note that the U.S. bankruptcy code is unique in that it provides a stronger protection over cash collateral compared to other assets. We thus contribute to this literature by documenting how strong creditor protection in bankruptcy courts affects firms' decision to extend trade credit.

Finally, our study is related to the burgeoning literature documenting the effect of anti-recharacterization laws. Vig (2013) explores a law reform in India that increases creditor protection and shows that firms use less secured debt after the reform. Li et al. (2016) show that ARLs increase firm leverage. Chu (2020) finds that ARLs reduce corporate leasing. Ersahin (2017) shows that ARLs improve firm productivity and foster technology adoption. Favara et al. (2020) document that firms in ARL states are more resilient to uncertainty shocks. We complement the

---

[4] Under a factoring arrangement, receivables are sold to a financial institution (not an SPV). In the case of bankruptcy, there is no question of creditor rights in a factoring arrangement, as the receivables are the property of the factor and not the firm (Klapper, 2005). This arrangement differs significantly from receivables-backed loans.

findings of the existing literature by showing that ARLs differentially affect firms' collateralizable assets and reduce firms' incentive to extend and pledge trade credit.

The rest of the paper is as follows. Section 2 introduces institutional background related to the study. Section 3 describes data sources and sample construction. Section 4 presents main results. Section 5 discusses robustness analyses. Section 6 concludes.

2. Institutional Background

2.1 U.S. Bankruptcy Code and Cash Collateral

Under the U.S. Chapter 11 bankruptcy code, secured creditors face automatic stay. Automatic stay is an automatic injunction that, with certain exceptions, halts creditors' action to collect debts from a firm who has declared bankruptcy (11 U.S. Code §362). Automatic stay is designed to preserve the going-concern value of the entity in Chapter 11 by preventing creditors from seizing collateral assets essential for ongoing operations. It also helps ensure an equitable distribution among creditors (Ayer, Bernstein, and Friedland, 2004) of equivalent classes. In practice, automatic stay significantly delays creditors' seizure of collateral assets, particularly for assets deemed critical to firms' operations such as equipment, warehouse, and patents. Automatic stay thus induces a high degree of uncertainty regarding whether and when secured creditors can obtain collateral and how assets will be divided among various groups of creditors and other stakeholders of the firm. Moreover, the value of collateral assets may diminish during the stay, given the severity of agency conflict during the bankruptcy proceedings (e.g., under-investment in asset maintenance, asset diversion, risk-shifting, etc.).

Precisely due to the potential agency conflict, cash collateral receives special protection inside Chapter 11 bankruptcy court. Cash collateral includes cash and cash equivalents, a subset

of assets that are "as good as cash" because they can be converted to cash easily without much loss of value. Such assets include credit card receivables, certain lease and rental receivables, and – importantly in the context of this paper – trade receivables. Different from other types of collateralized assets, proceeds generated from cash collateral are well protected under the bankruptcy code from misappropriation and cannot be easily accessed by the debtor-in-possession. If a debtor-in-possession (DIP) wants to use proceeds from cash collateral, it must obtain the explicit consent of secured creditors or apply for a court order.

Secured creditors have a relatively strong control over whether debtors can access proceeds from cash collaterals. In cases where such proceeds are vital to a firm's continuing operations, the firm files for an emergency motion to request access from secured creditors. Secured creditors may allow the firm to use cash proceeds and in exchange, obtain concessions from the firm (Ayer et al. 2004). Such concessions commonly include items such as restrictions on the use of cash collateral, roll-ups of pre-petition debt, and creditor control of bankruptcy deadlines (Bussell and Klee 2009). Additionally, anecdotal evidence suggests cash collateral creditors often garner the lucrative role as the debtor-in-possession (DIP) financier, since debtors must obtain permission from existing secured creditors before priming existing collateral.[5] Taken together, relative to other types of collateral assets, cash collateral such as accounts receivable offer secured creditors greater protection and stronger rights in U.S. bankruptcy court.

2.2 Special Purpose Vehicles and Anti-recharacterization Laws

While the automatic stay applies to all assets of the debtor (with the caveats for cash collateral discussed above), the stay generally does not apply to assets owned by a firm's special

---

[5] Eckbo, Li, and Wang (2020) document that DIP loans earn superior returns while simultaneously being virtually risk-free due to their super-priority status.

purpose vehicles (SPVs). An SPV is a subsidiary of a firm to which the firm can transfer assets and carry out specific activities or transactions (Gorton and Souleles, 2007). For example, a firm can raise capital by selling assets to an SPV, which then issues loans backed by those assets. In the case that the sponsor firm files for Chapter 11 bankruptcy, the SPV remains "bankruptcy remote," so that secured creditors can seize their collateral without having to face automatic stay. Put shortly, SPV financing benefits creditors by facilitating their access to collateral during bankruptcy.

In some cases, a bankruptcy court judge may recharacterize the asset sale to the SPV as a loan rather than a true sale. If a transaction is recharacterized, the collateralized assets are considered owned by the sponsor firm (debtor-in-possession) and are thus subject to the automatic stay. In other words, recharacterization revokes the creditor benefits of SPV financing.

Since the 1990s, several states have enacted anti-recharacterization laws (ARLs), which prevent judges from recharacterizing assets sold to an SPV as assets of the sponsor firm. ARLs thus enhance creditor rights and reduce the impact of automatic stay on secured lenders. ARLs were enacted in seven states: Louisiana and Texas in 1997, Alabama in 2001, Delaware in 2002, South Dakota in 2003, Virginia in 2004, and Nevada in 2005. Anti-recharacterization laws increase firms' debt capacity because firms headquartered in ARL states have the option to borrow through a "better protected" SPV in the future (Li et al. 2016; Favara et al. 2020). Consequently, the passage of ARLs promotes investments in intangible assets that can be used as collateral, such as innovation and technology adoption (Mann 2018; Ersahin 2017).

Given that cash collateral already associates with stronger creditor rights in Chapter 11 bankruptcy without ARLs, creditors of receivable-backed loans should benefit less from ARLs than other secured creditors. Accordingly, ARLs should affect firms' incentive to maintain

receivables to a lesser extent than the incentive to acquire other collateralizable assets. We thus conjecture that, after the passage of ARLs, firms rebalance their asset structure and maintain less receivables.

We empirically examine how the passage of ARLs influences a firm's provision of receivables to its customers. If the ARLs reduce the advantage of using receivables as collateral relative to other assets, we expect firms to reduce receivables following the enactment of ARLs. However, if firms' decisions to extend trade credit are based on supply-chain considerations and not related to its collateral value, the passage of an ARL should not affect receivables. Alternatively, if ARLs improve the collateral value of all assets equally, including cash collateral, we expect the enactment of ARLs to increase receivables.

3. Empirical Framework

3.1 Data and Sample

We rely on two data sources to collect information regarding firms' extension of trade credit. First, we collect receivables information from Compustat (i.e., the "Compustat sample"). We exclude firms in the financial industry (SIC from 6000 to 6999) and the utility industry (SIC from 4900 to 4999) and require sample firms to have available information on receivables, sales, and total assets. Second, we manually collect information on the amount of trade credit extended by each firm based on their 10K disclosure to the SEC (i.e., the "SEC sample"). In this process, we start by sampling firms that report at least one major customer according to the SFAS No.14.[6] Following the procedures outlined in Freeman (2020), we read each firm's annual financial statements and record the amount of trade credit the firm extends to each of its major customers

---

[6] SFAS No. 14 requires firms to report customers comprising 10% or more of their sales. Firms also often voluntarily disclose major customers falling below this threshold.

for each fiscal year. This results in a unique dataset that contains the trade credit used between each pair of customer and supplier in a given year.

Our main identification strategy relies on the staggered passage of anti-recharacterization laws across states during the years 1997 to 2005. We limit our sample period to 1992-2010 to allow five years prior to the passage of the first law and five years after the passage of the last one. The Compustat sample thus contains 108,142 firm-year observations, and the SEC sample contains 5,068 observations with 1,671 customer-supplier pairs.

Our variable of interest is *Receivables*. In the Compustat sample, this variable is calculated as the ratio of account receivables over the total sales for a given firm-year. In the SEC sample, it is defined as the receivables extended by a supplier to a customer scaled by the sales that the supplier makes to the customer. The amount of sales between a customer and a supplier is obtained from Compustat Segment database.

3.2 Empirical Strategy

We take advantage of the state-level passage of anti-recharacterization laws that affect the pledgeability of non-cash collaterals. Using a generalized difference-in-difference (DID) design, we estimate the following regression model:

$$Receivables_{i,t} = \alpha_i + \eta_{j,t} + \beta Law_{i,t} + Controls_{i,t} + \epsilon_{i,t} \tag{1}$$

Where i indicates a firm, j indicates the industry of the firm, and t indicates a year. *Law* is an indicator that equals to one if firm i is incorporated in a state that has passed anti-recharacterization laws by year t. *Controls* includes a set of firm and industry characteristics. In the Compustat firm-year panel, we control for firm fixed effects (α_i) and 2-digit SIC industry-year fixed effects ($\eta_{j,t}$).

Firm fixed effects help us remove firm-specific determinants of trade credit usage and track the variation in trade credit extension by the same firm over time. Using industry-year fixed effects allows us to remove industry-level determinants that may drive the variation of trade credit in the industry.

The SEC sample is structured as a customer-supplier-year panel, with each observation reflecting the amount of trade credit a firm extends to each of its customers. We thus employ the following regression model:

$$Receivables_{i,j,t} = \mu_{i,j} + \tau_t + \beta Supplier\ Law_{i,t} + \gamma Customer\ Law_{j,t} + Controls_{i,j,t} + \epsilon_{i,t} \quad (2)$$

Where i indicates a (supplier) firm, and j indicates a customer of firm j. $Supplier\ Law_{i,t}$ is our variable of interest, which indicates whether the supplier's state of incorporation has implemented the anti-recharacterization laws. We also control for whether customers are also affected by the laws ($Customer\ Law_{j,t}$). In this analysis, we control for customer-supplier-pair fixed effects ($\mu_{i,j}$) and year fixed effects (τ_t). This fixed effect structure helps remove unobservable traits that may affect supply-chain matching, focusing the comparison to how trade credit varies over time within a fixed pair of customer and supplier. $Controls_{i,j,t}$ include the firm characteristics of both the supplier and the customer, as well as some characteristics of the customer-supplier relationship described in the next section.

3.3 Control Variables

We include firm-level controls that prior literature suggests may affect trade credit usage (e.g., Petersen and Rajan, 1997, Giannetti et al., 2011, and Klapper et al., 2012): *Size,* the logarithm of firm assets; *Log age,* measured as the log number of years since a firm's first appearance in

Compustat; *Q,* the firm's market-to-book ratio; *Tangibility,* defined as plant, property, and equipment as a percentage of total assets; *Book Leverage*, the leverage ratio of the firm; *Profitability,* operating income scaled by total assets; *HHI,* the Herfindahl index based on sales by firms in a 4-digit SIC industry; and *Market share,* the firm's industry sales share. For the SEC sample, we control for these characteristics both for the customer and supplier.

Given that analyses using the SEC sample tracks customer-supplier pairs over time, we include additional characteristics in our regression to control for heterogeneity across customer-supplier pairs, and those describing firms' supply-chain features. To start, we control for relationship-specific characteristics between a pair of customer and supplier. This includes *Relationship length,* the logarithm of the number of years since the supplier first reported sales to the customer and *Sales dependence,* the percentage of sales that a firm makes to a customer. We also control for the breadth of a firm's customer base and supplier base. This includes the log number of major customers reported by a firm (i.e., *Log(Customers)*) and the log number of firms reporting the firm of interest as a major customer (i.e., *Log(Suppliers)*). *Leverage* is restricted to between 0 and 1. All other continuous variables are winsorized at the 1st and 99th percentiles.

3.4 Descriptive Analyses

Table 1 reports the summary statistics for the key variables in this study. Panel A reports the statistics related to the Compustat sample; while Panel B reports the statistics related to the SEC sample. In the Compustat sample, 29.1% of firm-year observations are subject to anti-recharacterization laws. In the SEC sample, 48.5% of supplier-year observations and 39.6% customer-year observations are subject to ARLs. *Receivables* has a mean (median) value of 0.19 (0.15) in the Compustat sample and 0.17 (0.13) in the SEC sample. Supplier firms identified in the

SEC sample are similar to Compustat firms in terms of size, age, Q, and industry concentration (HHI). Suppliers in the SEC sample use lower leverage and have fewer tangible assets. They are also more profitable on average than Compustat firms, though the median profitability is similar across both samples. Customers in the SEC panel tend to be larger, more dominant firms, being larger, older, more profitable and with higher market shares than the average Compustat firm.

[Table 1 About Here]

4. Main Results

4.1 Trade Credit and Anti-Recharacterization Laws

We examine the effect of anti-recharacterization laws on firms' incentives to extend trade credit. Table 2 reports the main results of our study. Panel A presents results from estimating Equation (1) using the Compsutat sample, and Panel B presents results from estimating Equation (2) using the SEC sample. In each panel, we present results in stages. For the Compustat sample, we first present univariate evidence, where we only control for firm and year fixed effects (Column (1)). We next add firm characteristics as controls (Column (2)) and impose industry-year interactive fixed effects in the regression (Column (3)). Across all specifications, *Law* generates a negative and significant coefficient for receivables, suggesting that firms extend less trade credit following the passage of anti-recharacterization laws. The economic magnitude is meaningful: estimates in Column (3) suggests that after the passage of the laws, firms decrease trade credit by 3.6% relative to the sample average ($= -0.007/0.194$).

[Table 2 About Here]

For the SEC sample, we also present results from several specifications. We start by showing univariate evidence. In this first test, we only control for customer *Law* and fixed effects

16

including supplier, customer, and year fixed effects (Column (1)). In Column (2), we control for time-varying characteristics for the customer and the supplier firms. In Column (3), we augment the model by adding both supplier industry-year fixed effects and customer industry-year fixed effects. Finally, we show in Column (4) the results from imposing customer-supplier-pair fixed effects. Across all specifications, *Law* generates a negative and statistically significant coefficient with highly consistent magnitudes. From the strictest specification (Column (4)), the estimates suggest that the anti-recharacterization laws are associated with a 26.3% reduction in the provision of trade credit from a supplier to a major customer ($= -0.044/0.171$). The estimates from the SEC sample imply much higher economic magnitudes than those from the Compustat sample. This is likely because the SEC sample allows us to track granular, within-trade-pair variation in trade credit agreement. Our stringent fixed effect structure also allows us to better remove noises generated by other determinants of trade credit policies and identify the changes in trade credit usage due to the enactment of ARLs.

One concern with the above result is that changes in a firm's receivables can be driven by its customers' demand for trade credit. If firms incorporated in states with anti-recharacterization laws happen to also face a decline in trade credit demand from their customers, our estimated effect of the laws could be confounded. To address this concern, we design an additional test using the SEC sample where we focus on customers with at least two suppliers at the same time. In this test, we control for customer-year fixed effects to purge out determinants at the customer side. This fixed effect structure thus allows us to compare the changes in receivables of two different suppliers selling to the same customer, where one of the suppliers is incorporated in a state that has enacted the laws and the other is in a state that has not. Panel C shows results from this analysis. *Supplier Law* continues to generate a negative and significant coefficient with similar magnitudes

as shown in the baseline test (Panel B). This result suggests that anti-recharacterization laws generate variation in the trade credit provision across suppliers of the same firm at the same time.

Taken together, our baseline results suggest that firms provide less trade credit to their customers following anti-recharacterization laws. This is consistent with our argument that ARLs increase the pledgeability of other assets for industrial firms, while affecting the pledgeability of their cash collaterals to a limited degree. The change in the relative pledgeability across assets reduces firms' incentives to provide trade credit. In the next section, we provide some suggestive evidence regarding the extent to which firms use receivables as collaterals in bank loans and how such collateral choice changes around the passage of the anti-recharacterization laws. We also show that the effects of ARLs on trade credit are concentrated on firms that are most likely to benefit from the increased pledgeability of intangible assets.

4.2 Economic Mechanisms

Receivables are most often used as collateral to secure bank lines of credit, which is central to firms' liquidity management policies (Sufi 2009). If our results reflect firms replacing trade credit with other types of assets as loan collateral after the passage of ARLs, we expect that firms should be less likely to take out lines of credit, or less likely to use trade credit as collateral for credit lines. To investigate the economic mechanisms underlying our findings, we examine the degree to which firms pledge accounts receivable as collateral backing their bank lines of credit.

We obtain information from LPC Dealscan, which provides information on whether a line of credit is secured by accounts receivable. This database also contains detailed data regarding pricing and non-pricing contract terms and borrower identities. Following previous studies (e.g., Acharya et al. 2013), we classify as credit lines the loans whose types are specified as "Revolvers"

or "364-day facilities." We define two indicator variables: *Credit Line*, which is an indicator variable equal to one if a new loan is a credit line, and zero otherwise; and *Receivable Collateral,* which is equal to one if a bank line of credit is backed by account receivables, and zero otherwise.

We regress both *Credit Line* and *Receivable Collateral* on the passage of ARL in the borrower's incorporation state, controlling for borrower characteristics and loan contract terms (i.e., loan spreads, loan maturity, loan covenants). We expect that firms should rely less on lines of credit following the enactment of ARLs, and conditional on taking out a line of credit, firms should be less likely to secure it with accounts receivable.

Table 3 reports the results. In Columns (1) and (2), we examine the effect of ARLs on the probability of taking out a new credit line. The sample contains all firm-year observations whereby a firm initiates a loan in a given year. We next examine the effect of ARLs on the probability of a firm using receivables to secure a line of credit. In Columns (3) and (4), the sample contains all firm-year observations whereby a firm initiates a new credit line with a borrowing base in a year. In Columns (5) and (6), we utilize a loan-level panel, which consists of individual contracts of lines of credit. For each sample, we present results with and without industry-year fixed effects. Across both sampling choices and fixed effect specifications, *Law* bears a negative coefficient in both *Credit Line* and *Receivable Collateral* regressions. The negative coefficients suggest after the implementation of ARLs, firms are less reliant on bank lines of credit. Conditional on firms taking out a credit line, they are less likely to secure the credit line with accounts receivable. Our evidence provides further support to the argument that ARLs enhance the collateral value of other, non-trade credit assets and firms substitute other assets with trade credit as collateral.

[Table 3 About Here]

19

We provide further corroborating evidence in support of the "collateral substitution effect," i.e., the pledgeability of non-cash assets increased relative to cash collateral assets following the enaction of ARLs. This argument suggests that the reduction of trade credit reduction should be stronger for firms that benefit more from the increased pledgeability of non-cash assets, such as patents. Mann (2018) shows that the passage of anti-recharacterization laws significantly improved the pledgeability of patents as collateral. This means that, following the implementation of ARLs, firms with more patents have more flexibility in choosing which assets to pledge. Moreover, trade credit may become an even less desirable source of collateral for firms with higher growth opportunities, like patent intensive firms, where the opportunity cost of extending liquidity to customers is heightened. For both reasons, high-patent firms should reduce their trade credit provision to a greater extent following the passage of ARLs than low-patent firms.

We measure patenting intensity at the industry level to help address the concern that innovation and trade credit may be jointly determined at the corporate level. We count the number of patents filed by the industry in the previous year and scale it both by the number of firms and the total number of employees in the industry. We then create an indicator *Low Patent* for whether an industry belongs to the bottom tercile of patenting intensity across sample industries. This indicator is then interacted with *Law* in our baseline framework. Table 4 reports the results. Panel A reports the results when we scale industry patents by firm, and Panel B reports the results for patents scaled by employees. In each panel, we report three columns each, with varying fixed effect specifications for the Compustat sample and the SEC sample. The negative effect of ARLs on trade credit remains strong in all specifications, but the interaction term is positive and statistically significant in almost all specifications. Results from the Compustat sample suggests that the effect of *Law* is not present for low-patent industries, as the coefficient of the interaction term *Law*Low*

Patent bears a similar magnitude as the main effect of *Law*. From the SEC sample, the interactive coefficient offsets about half of the main effect, suggesting that the effects of ARLs dwindles to about a half for low-patent industries compared to other industries. Taken together, this analysis indicates that low-patenting firms have fewer assets benefiting from increased creditor protection and thus have less incentive to switch away from receivable collateralization.

[Table 4 about here]

4.3 Implications for Downstream Firms

4.3.1 Customers' Payables

We examine the changes in downstream firms' payables around the implementation of ARLs in the state of their suppliers (i.e., "upstream ARLs"). A firm's payables reflect the total amount of trade credit it receives from all of its suppliers. If some suppliers face ARLs and reduce the amount of trade credit they grant to the firm, this should lead to a reduction in the firm's payables. Critically, this argument relies on the assumption that the firm cannot switch its orders to alternative suppliers without cost. If the firm can easily switch to suppliers that offer more trade credit, its payables will not be affected by upstream ARLs. We argue that switching is likely to be costly when the supplier accounts for a large percentage of inputs purchased by the firm. As such, we expect that upstream ARLs should only have a meaningful effect on the firm's payables if the affected suppliers provide a substantial portion of the firm's inputs.

We measure a firm's exposure to upstream ARLs using *Upstream ARL Exposure*, which is defined as its purchases from suppliers in ARL states divided by the firm's total cost of goods sold. We regress a firm's payables (defined as the ratio between accounts payable over total cost of goods sold, COGS) on its *Upstream ARL Exposure*, and expect a negative coefficient. In this

analysis, we control for a selection effect, i.e., firms with many traceable suppliers in the Compustat Segment database may be intrinsically different from those with few traceable suppliers. To account for this selection effect, we control for *Traceable Suppliers*, the percentage of cost of goods sold that can be traced to any supplier. This analysis is conducted at a firm-year panel and includes controls for firm and year fixed effects.

Figure 1 presents the results from this analysis. Consistent with our conjecture, a firm's exposure to upstream ARL is associated with a reduction in payables. As discussed above, we expect that suppliers' exposure to ARLs should only affect a firm's payables when the suppliers we observe account for a significant portion of firm's input. We thus narrow down the sample in stages. We first consider all customers with at least one reported supplier (>0% attributable COGS threshold). Next, we gradually increase this threshold to requiring that observed suppliers account for 5%, 10%, 15%, and 20% of firm COGS. In this figure, the dots represent coefficient estimates of *Upstream ARL Exposure*, and the corresponding intervals suggest 90% confidence intervals of each estimate. The horizontal axis indicates the sampling criteria. The figure shows that coefficients of *Upstream ARL Exposure* are negative across all tests. Importantly, the effects of supplier ARLs on customer payables increase monotonically with the amount of inputs that can be traced back to major suppliers. As we focus on firms with at least 10% traceable suppliers, effects become significantly both economically and statistically. For firms with 10% (15%) traceable inputs, a one-standard deviation increase in supplier exposure is associated with a 4.46% (6.92%) reduction in firm payables, relative to subsample means.[7] Overall, results from this analysis confirms our previous results that the passage of anti-recharacterization laws leads firms to provide less trade credit to their customers.

---

[7] For the >10% subsample, the effect is -4.46%% relative to the subsample average level (=0.1117 x -0.1001/0.2509). For the >15% subsample, the effect is computed as -6.92% (=0.1292 x -0.1456/0.2718).

[Figure 1 About Here]

4.3.2 Customers' Financial and Operational Policies

If the enactment of ARLs reduces the amount of liquidity firms provide to their customers, does it generate any real effect on customers' financial and operating policies? We investigate this question by tracing downstream firms' investment and debt levels around the implementation of ARLs. Following the design of Section 4.3.1, we regress the investment and leverage of a firm on its exposure to anti-recharacterization laws through suppliers, *Upstream ARL Exposure*. Consistent with the previous section, we also control for the total percentage of inputs that can be traced to suppliers.

Table 5 provides the results. Following the passage of anti-recharacterization laws in a state, downstream firms of those incorporated in the law state experience a significant decline in investment levels and an increase in total debt. A one standard deviation increase in *Upstream ARL Exposure* corresponds to a 15.4% increase in leverage and a 9.7% reduction in investment, relative to the sample means.[8] This suggests that the reduction in supply-chain liquidity provision has a negative impact on downstream firms' operations. Downstream firms scale back their operations and substitute external financing for supply-chain financing.

[Table 5 About Here]

5. Robustness

5.1 Controlling for the Securitization of Receivables

---

[8] For leverage, the effect is 15.4% relative to the subsample average level (=0.129 x 0.283/0.237). For investment, the effect is computed as -9.7% (=0.129 x -0.078/0.104).

One remaining concern with the baseline analyses is that the results could be driven by firms securitizing their receivables to an unconsolidated SPV following the passage of anti-recharacterization laws. If the anti-recharacterization laws make it more desirable for firms to sell receivables off their balance sheets to an unconsolidated SPV, the observed decline in receivables can reflect mechanically the securitization of receivables.

Note that such an argument is inconsistent with results in Section 4.3.1, i.e., downstream firms' accounts payable are affected by ARLs. This result suggests that the decline in receivables is unlikely to be solely driven by securitization. We conduct two analyses to further alleviate this concern. First, we directly gauge firms' SPV usage and exclude firms that report having an SPV for securitization purposes. Data regarding firms' SPV usage come from Lemmon et al. (2014).[9] Lemmon et al. collect detailed data from firms' SEC filings regarding whether a firm has a special purpose entity or mentions specifically that its securitizes (sells) its accounts receivable. Based on this information, we restrict both the Compustat sample and the SEC sample by removing observations where a firm reports having an SPV outstanding or that it securitizes receivables. We repeat the baseline tests using those restricted samples. Columns (1) and (2) of Table 6 shows that our results continue to hold.

[Table 6 About Here]

Next, we exclude from our sample the implementation of ARLs whereby the laws focus on the securitization of accounts receivable. This includes the anti-recharacterization laws passed in Texas and Louisiana. If our findings are mechanically driven by the securitization of trade credit, effects should weaken with the exclusion of these two states. In Columns (3) and (4) of Table 6 we find that the baseline results persist in the restricted sample and the coefficients of *Law* generate

---

[9] We thank Laura Li and Mike Mao for sharing the data on firms' SPV usage.

similar magnitudes as those from Table 2 (Column (3) of Panel A and Column (4) of Panel B).[10] This evidence further suggests that our results are unlikely to solely be driven by increased securitization of receivables.

5.2 Testing Parallel Trends Assumptions

In the last step of our analyses, we verify whether the parallel-trend assumption holds in our setting. This assumption states that firms in treated states should not change their receivables prior to the passage of ARLs to a significantly different level compared to firms in states that never passed the law. To test this assumption, we code separate indicator variables for whether a firm's state of incorporation is passes the ARLs in the following year (*Law (t-1)*), in two years (*Law (t-2)*), and in three years (*Law (t-3)*). We include all of these indicators into the baseline regression. If these variables generate statistically significant coefficients in the same direction as the effect of *Law*, it suggests that firms in that state may anticipate the passage of the law and change their receivables ahead of the implementation. Table 7 shows the results from this analysis. Columns (1) and (2) report results from the Compustat sample, and Columns (3) and (4) report results from the SEC sample. We do not find a significant change in receivables prior to the passage of the laws. This evidence further bolsters the baseline findings that our results are not driven by unobservable firm characteristics that affect trade credit usage outside the effect of anti-recharacterization laws.

[Table 7 About Here]

6. Conclusion

---

[10] In untabulated results, we confirm that the borrowing base tests of Table 4 are also robust to excluding Texas and Louisiana.

We examine how the creditor rights protection in U.S. bankruptcy courts affects firms' provision of trade credit. One benefit of extending trade credit is that receivables can be used as cash collateral to pledge against bank loans. The U.S. bankruptcy code offers superior protection over creditors entitled to cash collateral, stipulating that debtor-in-possession cannot use proceeds from these assets without explicit consent from secured creditors. We show that such strong creditor rights protection makes receivables a more desirable type of collateral compared to other assets, which in turn incentivizes firms to extend trade credit to their customers.

The anti-recharacterization laws increase the protection over creditors of non-cash collateralizable assets inside bankruptcy courts. These laws decrease the relative collateral value of trade credit compared to non-cash assets. We find that the passage of ARLs reduces firms' incentives to extend and pledge trade credit, which leads to negative real consequences for their customers. Downstream firms reduce investment and borrow more through non-working capital channels.

We are the first to establish that creditor rights protection in bankruptcy affects trade credit extension. Our findings shed light on how firms balance their holdings of a menu of collateralizable assets and acquire more assets that provide higher collateral value.

References

Acharya, V. V., Almeida, H., & Campello, M. (2013). Aggregate risk and the choice between cash and lines of credit. The Journal of Finance, 68(5), 2059-2116.

Ayer, J. D., Bernstein, M. L., & Friedland, J. (2004). Obtaining DIP financing and using cash collateral. American Bankruptcy Institute Journal, 23(7), 16.

Ayer, J. D., Bernstein, M., & Friedland, J. (2003). What every secured creditor (and its lawyer) should know about Chapter 11. American Bankruptcy Institute Journal, 22(9), 22.

Bussel, D. J., & Klee, K. N. (2009). Recalibrating Consent in Bankruptcy. Am. Bankr. LJ, 83, 663.

Calomiris, C. W., Larrain, M., Liberti, J., & Sturgess, J. (2017). How collateral laws shape lending and sectoral activity. Journal of Financial Economics, 123(1), 163-188.

Campello, M., & Larrain, M. (2016). Enlarging the contracting space: Collateral menus, access to credit, and economic activity. The Review of Financial Studies, 29(2), 349-383.

Chu, Y. (2020). Collateral, ease of repossession, and leases: Evidence from antirecharacterization laws. Management Science, 66(7), 2951-2974.

Costello, A. M. (2019). The value of collateral in trade finance. Journal of Financial Economics, 134(1), 70-90.

Eckbo, B. E., Li, K., & Wang, W. (2020). Rent extraction by super-priority lenders. Working paper, (3384389).

Ersahin, N. (2017). Creditor rights, technology adoption, and productivity: Plant-level evidence. The Review of Financial Studies.

Favara, G., Gao, J., & Giannetti, M. (2020). Uncertainty, access to debt, and firm precautionary behavior. Working paper.

Freeman, K. (2020). The Economics of Trade Credit: Risk and Power. Kelley School of Business Research Paper, (18-77).

Giannetti, M., Burkart, M., & Ellingsen, T. (2011). What you sell is what you lend? Explaining trade credit contracts. The Review of Financial Studies, 24(4), 1261-1298.

Giannetti, M., Serrano-Velarde, N. A. B., & Tarantino, E. (2020). Cheap trade credit and competition in downstream markets. Working paper.

Gorton, G. B., & Souleles, N. S. (2007). Special purpose vehicles and securitization. In The risks of financial institutions (pp. 549-602). University of Chicago Press.

Janger, E. J. (2004). The death of secured lending. Cardozo L. Rev., 25, 1759.

Kettering, K. C. (2008). True sales of receivables: A purpose analysis. Am. Bankr. Inst. L. Rev., 16, 511.

Kettering, K. C. (2011). Harmonizing choice of law in article 9 with emerging international norms. Gonz. L. Rev., 46, 235.

Klapper, L. (2005). The role of factoring for financing small and medium enterprises. The World Bank.

Klapper, L., Laeven, L., & Rajan, R. (2012). Trade credit contracts. The Review of Financial Studies, 25(3), 838-867.

Lemmon, M., Liu, L. X., Mao, M. Q., & Nini, G. (2014). Securitization and capital structure in nonfinancial firms: An empirical investigation. The Journal of Finance, 69(4), 1787-1825.

Li, S., Whited, T. M., & Wu, Y. (2016). Collateral, taxes, and leverage. The Review of Financial Studies, 29(6), 1453-1500.

Liu, L. X., Mao, M. Q., & Nini, G. (2018). Customer risk and corporate financial policy: Evidence from receivables securitization. Journal of Corporate Finance, 50, 453-467.

Mann, W. (2018). Creditor rights and innovation: Evidence from patent collateral. Journal of Financial Economics, 130(1), 25-47.

Murfin, J., & Njoroge, K. (2015). The implicit costs of trade credit borrowing by large firms. The Review of Financial Studies, 28(1), 112-145.

Petersen, M. A., & Rajan, R. G. (1997). Trade credit: theories and evidence. The Review of Financial Studies, 10(3), 661-691.

Sufi, A. (2009). Bank lines of credit in corporate finance: An empirical analysis. The Review of Financial Studies, 22(3), 1057-1088.

Udell, G. F., Bakker, M. R., & Klapper, L. (2004). Financing small and medium-size enterprises with factoring: Global growth and its potential in Eastern Europe. The World Bank.

Vig, V. (2013). Access to collateral and corporate debt structure: Evidence from a natural experiment. The Journal of Finance, 68(3), 881-928.

Table 1: Summary statistics

This table reports the summary statistics of the key variables in the study. Panel A reports summary statistics for the Compustat sample of US-incorporated firms with non-missing values for total assets, receivables, and sales in years 1992-2010. Panel B reports summary statistics for the SEC panel with customer-supplier level trade credit data, in years 1993-2010 (1992 is not excluded intentionally, but due to the 1990's introduction of electronic reporting via SEC Edgar). *Law* is an indicator for the firm being incorporated in a state that has adopted an anti-recharacterization law. *Receivables* is defined as accounts receivable scaled by sales, measured at the firm level in the Compustat sample, and at the customer-supplier pair level in the SEC sample. Other variable definitions are available in Appendix A. All continuous variables are winsorized at the 1st and 99th percentiles.

Panel A: Compustat Sample

Variable	N	Mean	Std. Dev.	25th Pctl.	Median	75th Pctl.
Law	108,142	0.291	0.454			
Receivables	108,142	0.194	0.249	0.091	0.151	0.218
Size	108,093	4.544	2.408	2.927	4.547	6.185
Log age	108,142	2.287	0.936	1.609	2.303	2.996
Q	93,606	2.594	5.947	1.052	1.703	3.081
Tangibility	107,912	0.264	0.233	0.080	0.189	0.385
Book Leverage	108,093	0.320	0.532	0.026	0.200	0.408
Profitability	107,734	-0.094	0.804	-0.040	0.093	0.162
HHI	108,142	0.227	0.175	0.102	0.177	0.290
Market Share	108,142	0.050	0.122	0.000	0.004	0.324

Panel B: SEC Sample

Variable	N	Mean	Std. Dev.	25th Pctl.	Median	75th Pctl.
Pair-level characteristics:						
Receivables	5,068	0.171	0.157	0.081	0.133	0.207
Sales Dependence	5,065	0.257	0.203	0.126	0.19	0.310
Relationship Length	5,053	1.361	0.869	0.693	1.386	2.079
Supplier characteristics:						
Law	5,068	0.485	0.500			
Log(Customers)	5,068	0.619	0.551	0.000	0.693	1.099
Size	5,068	4.944	1.829	3.725	4.87	6.122
Log(Age)	5,068	2.494	0.707	1.946	2.485	2.300
Q	5,068	2.682	3.534	1.134	1.806	3.168
Tangibility	5,066	0.190	0.179	0.057	0.132	0.266
Book Leverage	5,068	0.190	0.241	0.001	0.107	0.293
Profitability	5,066	0.018	0.262	-0.033	0.086	0.151
HHI	5,068	0.231	0.185	0.097	0.178	0.301
Market share	5,068	0.037	0.110	0.001	0.003	0.017
Customer characteristics:						
Law	5,068	0.396	0.489			
Log(Suppliers)	5,068	2.308	1.425	1.099	2.398	3.367
Size	5,067	9.783	1.814	8.781	10.063	11.018
Log(Age)	5,068	3.232	0.743	2.708	3.401	3.892

Q	5,068	2.815	2.311	1.407	2.144	3.399
Tangibility	5,067	0.253	0.184	0.106	0.204	0.374
Book Leverage	5,067	0.233	0.159	0.113	0.220	0.314
Profitability	5,061	0.131	0.080	0.081	0.131	0.171
HHI	5,068	0.270	0.194	0.122	0.223	0.35
Market Share	5,068	0.295	0.248	0.088	0.233	0.416

Table 2: Baseline results

This table shows the effect of the anti-recharacterization laws on firms' extension of trade credit. The dependent variable is *Receivables,* defined as accounts receivable scaled by sales. *Law* is an indicator for the firm being incorporated in a state with an ARL. Panel A reports baseline results for the Compustat sample and Panel B reports baseline results for the SEC sample. In Panel C, we continue to use the SEC sample and include customer-year fixed effects in the estimation. All regressions in Panel C include the same control variables as in Column (4), Panel B. Variable definitions are available in Appendix A. All continuous variables are winsorized at the 1st and 99th percentiles. Industry fixed effects are captured by 2-digit SIC codes. *t*-statistics are shown in parentheses, calculated from standard errors clustered by state of incorporation. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Compustat Sample			
Dep. Var.: *Receivables*	(1)	(2)	(3)
Law	-0.011***	-0.007**	-0.007**
	(-3.53)	(-2.40)	(-2.58)
Size		0.020***	0.021***
		(12.66)	(12.97)
Log(Age)		-0.026***	-0.023***
		(-5.30)	(-4.35)
Q		0.001***	0.001***
		(3.39)	(3.17)
Tangibility		-0.192***	-0.193***
		(-11.03)	(-11.69)
Book Leverage		-0.015**	-0.014**
		(-2.27)	(-2.29)
Profitability		-0.008***	-0.009***
		(-4.16)	(-4.13)
HHI		0.020*	0.018
		(1.83)	(1.64)
Market Share		-0.115***	-0.118***
		(-8.62)	(-7.69)
Year FEs	Yes	Yes	
Firm FEs	Yes	Yes	Yes
Ind x year FEs			Yes
Adjusted R^2	0.411	0.424	0.424
N	107427	92334	92301

Dep. Var.: *Receivables*	(1)	(2)	(3)	(4)
Supplier Law	-0.037***	-0.040***	-0.039***	-0.044***
	(-3.27)	(-3.65)	(-3.21)	(-3.79)
Customer Law	0.013	0.009	0.005	0.025**
	(0.94)	(0.62)	(0.44)	(2.17)
Sales Dependence		-0.172***	-0.171***	-0.210***
		(-10.67)	(-10.44)	(-10.88)
Relationship Length		-0.013***	-0.011**	-0.022***
		(-3.68)	(-2.67)	(-4.10)
Log(Customer)		-0.020***	-0.020**	-0.019**
		(-3.10)	(-2.64)	(-2.67)
Log(Supplier)		-0.002	0.003	-0.004
		(-0.39)	(0.57)	(-0.79)
S Log(Age)		-0.027*	-0.046*	-0.029
		(-1.72)	(-1.89)	(-1.52)
S Size		0.018***	0.022***	0.020***
		(4.87)	(4.46)	(7.80)
S Q		0.001***	0.001	0.002***
		(4.23)	(0.75)	(5.36)
S Tangibility		-0.100**	-0.047	-0.098**
		(-2.07)	(-1.03)	(-2.09)
S Book Leverage		0.035***	0.020	0.037***
		(3.12)	(1.05)	(3.25)
S Profitability		0.005	0.005	0.007
		(0.54)	(0.50)	(0.98)
S HHI		0.009	-0.006	0.006
		(0.35)	(-0.15)	(0.22)
S Market Share		-0.160***	-0.199***	-0.204***
		(-4.18)	(-2.87)	(-7.12)
C Log(Age)		-0.009	0.030	-0.013
		(-0.40)	(0.83)	(-0.41)
C Size		0.011	0.015*	0.005
		(1.68)	(1.90)	(0.83)
C Q		0.002**	0.003***	0.001*
		(2.71)	(3.10)	(2.02)
C Tangibility		0.023	0.000	0.005
		(0.48)	(0.01)	(0.10)
C Book Leverage		-0.010	-0.031*	0.011
		(-0.51)	(-1.95)	(0.55)
C Profitability		0.012	0.001	0.034
		(0.50)	(0.02)	(1.62)
C HHI		0.072*	0.132**	0.147***
		(1.69)	(2.15)	(3.93)

	(1)	(2)	(3)	(4)
C Market Share		-0.046	-0.067	-0.062
		(-0.99)	(-1.09)	(-1.04)
Year FE	Yes	Yes		Yes
Supplier FE	Yes	Yes		
Customer FE	Yes	Yes	Yes	
Supplier Industry-Year FE			Yes	
Customer Industry-Year FE			Yes	
Pair FE				Yes
Adjusted R^2	0.433	0.461	0.431	0.510
N	4776	4744	4378	4500

Panel C: Controlling for Customer-Year FE

Dep. Var.: *Receivables*	(1)	(2)	(3)	(4)
Supplier Law	-0.037***	-0.046***	-0.041**	-0.058***
	(-2.74)	(-3.08)	(-2.36)	(-2.78)
Controls	No	Yes	Yes	Yes
Supplier FE	Yes	Yes	Yes	
Customer-Year FE	Yes	Yes	Yes	Yes
Supplier Industry-Year FE			Yes	
Pair FE			Yes	Yes
Adjusted R^2	0.496	0.522	0.523	0.522
N	2978	2958	2777	2749

Table 3: Borrowing base

This table provides results regarding firms' usage of trade credit as collateral following the adoption of the anti-recharacterization laws. The dependent variable in Columns (1) and (2) is *Credit Line*, an indicator for the firm taking out a new credit line, conditional on the firm taking out a new loan. The dependent variable in Columns (3) through (6) is *Receivable Collateral*, an indicator for the firm taking on a credit line backed by accounts receivable, conditional on the firm taking out a new credit line with a borrowing base. *Law* is an indicator for the firm being incorporated in a state with an ARL. Columns (1) through (4) use a firm-year panel, and Columns (5) and (6) use a loan panel, so the dependent variable reflects the probability of a particular borrowing base credit line being backed by receivables. Variable definitions are available in Appendix A. All continuous variables are winsorized at the 1st and 99th percentiles. Industry fixed effects are captured by 2-digit SIC codes. *t*-statistics are shown in parentheses, calculated from standard errors clustered by state of incorporation. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3) Receivable Collateral	(4) Receivable Collateral	(5) Receivable Collateral	(6) Receivable Collateral
Dep. Var.:	*Credit Line*	*Credit Line*	*Collateral*	*Collateral*	*Collateral*	*Collateral*
Law	-0.013**	-0.012**	-0.072**	-0.063**	-0.070**	-0.048*
	(-2.35)	(-2.17)	(-2.26)	(-2.30)	(-2.17)	(-1.75)
Sample:	Firm-year	Firm-year	Firm-year	Firm-year	Loan	Loan
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Loan characteristics	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes		Yes		Yes	
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry-Year FE		Yes		Yes		Yes
Adjusted R^2	0.179	0.183	0.458	0.500	0.476	0.514
N	15623	15525	2112	1878	2443	2249

Table 4: Innovation effects

This table shows how the effect of anti-recharacterization laws on firms' extension of trade credit varies by patenting intensity. The dependent variable is *Receivables,* defined as accounts receivable scaled by sales. *Law* is an indicator for the firm being incorporated in a state with an ARL. *Low patents* is an indicator variable for the firm belonging to an industry (SIC-3) in the lowest tercile of patent intensity, and is interacted with *Law* in each specification. In Panel A, patent intensity is measured by industry patents per firm and in Panel B by industry patents per employee. Panel A reports baseline results for the Compustat sample and Panel B reports baseline results for the SEC sample. Control variables match those in Table 2. Variable definitions are available in Appendix A. All continuous variables are winsorized at the 1st and 99th percentiles. Industry fixed effects are captured by 2-digit SIC codes. *t*-statistics are shown in parentheses, calculated from standard errors clustered by state of incorporation. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Industry patents/firm

Dep. Var.: *Receivables*	(1)	(2)	(3)	(4)	(5)	(6)
Law	-0.014***	-0.009***	-0.009***	-0.046***	-0.046***	-0.052***
	(-4.39)	(-3.41)	(-3.42)	(-3.86)	(-4.07)	(-4.17)
Low patents	-0.008***	-0.008***	-0.012***	-0.008	-0.010	-0.009
	(-3.02)	(-2.79)	(-3.51)	(-0.80)	(-1.07)	(-1.18)
Law x low patents	0.010***	0.010***	0.007*	0.032***	0.023***	0.027***
	(6.06)	(6.11)	(1.70)	(4.21)	(3.16)	(3.86)
C law				0.013	0.008	0.025**
				(0.89)	(0.60)	(2.14)
Sample	Compustat	Compustat	Compustat	SEC	SEC	SEC
Full controls	No	Yes	Yes	No	Yes	Yes
Year FE	Yes	Yes		Yes	Yes	Yes
Firm FE	Yes	Yes	Yes			
Industry-Year FE			Yes			
Supplier FE				Yes	Yes	
Customer FE				Yes	Yes	
Pair FE						Yes
Adjusted R^2	0.411	0.424	0.424	0.433	0.461	0.510
N	107427	92334	92301	4776	4744	4500.

Panel B: Industry patents/employee

Dep. Var.: *Receivables*	(1)	(2)	(3)	(4)	(5)	(6)
Law	-0.014***	-0.008***	-0.007**	-0.045***	-0.046***	-0.053***
	(-4.32)	(-3.03)	(-2.26)	(-3.60)	(-3.93)	(-4.18)
Low patents	0.003	0.002	0.004	-0.020*	-0.018*	-0.027**
	(0.85)	(0.71)	(1.29)	(-1.95)	(-1.77)	(-2.59)
Law x low patents	0.008**	0.006**	-0.001	0.024**	0.020**	0.028***
	(2.64)	(2.44)	(-0.29)	(2.64)	(2.26)	(3.19)
C law				0.013	0.008	0.025**
				(0.87)	(0.58)	(2.10)
Sample	Compustat	Compustat	Compustat	SEC	SEC	SEC

Full controls	No	Yes	Yes	No	Yes	Yes
Year FE	Yes	Yes		Yes	Yes	Yes
Firm FE	Yes	Yes	Yes			
Industry-Year FE			Yes			
Supplier FE				Yes	Yes	
Customer FE				Yes	Yes	
Pair FE						Yes
Adjusted R^2	0.411	0.424	0.424	0.433	0.461	0.510
N	107427	92334	92301	4776	4744	4500

Table 5: Effects on downstream firms

This table shows the effect of the adoption of the anti-recharacterization laws on downstream firms' investment and leverage. Panel A shows the effect for customer investment (CapEx scaled by beginning-of-year assets), and Panel B shows the effect for customer leverage. The sample is a customer-year panel, including observations in which a firm is reported as a major customer by at least one supplier from the Compustat Segment database. *Upstream ARL exposure* is defined as the percentage of customer COGS that can be traced to suppliers in ARL states. *Traceable suppliers* is the percentage of customer COGS that can be traced to any supplier. Other controls are included but suppressed for presentation. Variable definitions are available in Appendix A. All continuous variables are winsorized at the 1st and 99th percentiles. *t*-statistics are shown in parentheses, calculated from standard errors clustered at the firm level. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Customer Investment

Dep. Var.: *Investment*	(1)	(2)	(3)	(4)	(5)
Sample: Traceable Purchase/COGS	All	>5%	>10%	>15%	>20%
Upstream ARL Exposure	-0.072**	-0.065*	-0.045	-0.078*	-0.089*
	(-2.51)	(-1.77)	(-1.02)	(-1.77)	(-1.87)
Traceable Suppliers	0.036***	0.027**	0.014	0.026	0.004
	(3.07)	(2.15)	(0.67)	(1.55)	(0.25)
Controls	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.641	0.664	0.678	0.687	0.672
N	9248	2439	1409	905	646

Panel B: Customer Leverage

Dep. Var.: *Leverage*	(1)	(2)	(3)	(4)	(5)
Sample: Traceable Purchase/COGS	All	>5%	>10%	>15%	>20%
Upstream ARL Exposure	0.130**	0.181**	0.270***	0.283**	0.234*
	(2.00)	(2.21)	(2.77)	(2.55)	(1.96)
Traceable Suppliers	-0.037*	-0.032	-0.038	-0.038	-0.022
	(-1.70)	(-1.37)	(-1.25)	(-1.08)	(-0.56)
Controls	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.722	0.780	0.791	0.807	0.811
N	9373	2468	1425	910	648

Table 6: Addressing the effect of receivable securitization

This table presents evidence that the baseline results are not driven by the increase in the securitization of receivables following anti-recharacterization laws. The dependent variable is *Receivables,* accounts receivable scaled by sales. *Law* is an indicator for the firm being incorporated in a state with an ARL. In Columns (1) and (2), we remove observations of firms with known securitization programs (Lemmon, Liu, Mao, and Nini (2014)). In Columns (3) and (4), we exclude firms incorporated in Texas or Louisiana. Columns (1) and (3) use the Compustat sample while Columns (2) and (4) use the SEC sample. Control variables are included but suppressed for presentation. Variable definitions are available in Appendix A. All continuous variables are winsorized at the 1st and 99th percentiles. Industry fixed effects are captured by 2-digit SIC codes. *t*-statistics are shown in parentheses, calculated from standard errors clustered by state of incorporation. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

| Dep. Var.: *Receivables*	(1)	(2)	(3)	(4)
Law	-0.006*	-0.054***	-0.009***	-0.039***
	(-1.94)	(-3.91)	(-3.11)	(-3.60)
Sample	Compustat	SEC	Compustat	SEC
Controls	Yes	Yes	Yes	Yes
Year FE		Yes		Yes
Firm FE	Yes		Yes	
Industry-Year FE	Yes		Yes	
Pair FE		Yes		Yes
Adjusted R^2	0.407	0.520	0.424	0.510
N	89468	3212	90416	4422

Table 7: Parallel-trend analysis

This table reports results from the parallel-trend analyses. The dependent variable is *Receivables,* accounts receivable scaled by sales. *Law* is an indicator for the firm being incorporated in a state with an ARL. Columns (1) and (2) use the Compustat sample while Columns (3) and (4) use the SEC panel. $Law_{(t-1)}$, $Law_{(t-2)}$, and $Law_{(t-3)}$ are indicator variables for the firm being incorporated in an ARL state 1, 2, or 3 years, respectively, before enactment. Control variables are included but suppressed for presentation. Variable definitions are available in Appendix A. All continuous variables are winsorized at the 1st and 99th percentiles. t-statistics are shown in parentheses, calculated from standard errors clustered by state of incorporation. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Dep. Var.: *Receivables*	(1)	(2)	(3)	(4)
Law	-0.012**	-0.008**	-0.042**	-0.046***
	(-2.64)	(-2.13)	(-2.42)	(-2.74)
$Law_{(t-1)}$	-0.009	-0.006	-0.016	-0.005
	(-1.32)	(-0.98)	(-0.99)	(-0.36)
$Law_{(t-2)}$	-0.003	0.001	0.012	0.008
	(-0.65)	(0.15)	(0.54)	(0.40)
$Law_{(t-3)}$	0.006	0.003	-0.008	-0.015
	(1.00)	(0.62)	(-0.71)	(-1.29)
Sample	Compustat	Compustat	SEC	SEC
Controls	No	Yes	No	Yes
Year FE	Yes		Yes	Yes
Firm FE	Yes	Yes		
Industry-Year FE		Yes		
Supplier FE			Yes	
Customer FE			Yes	
Pair FE				Yes
Adjusted R^2	0.411	0.423	0.433	0.509
N	107427	92301	4776	4500

Figure 1. Effects on customer payables

This figure plots the coefficient estimates from regressions of *Customer payables* (customer payables scaled by customer COGS) on *Upstream ARL Exposure,* the percentage of customer COGS that can be traced to suppliers in ARL states. A full set of controls are included in these regressions, including *Traceable suppliers,* the percentage of customer COGS that can be traced to any supplier. The x-axis reflects thresholds from sequentially limiting customer-years to those with a specified level of *Traceable suppliers.* Point estimates are marked, with 90% confidence intervals.

Accounts Payable and Customer Exposure
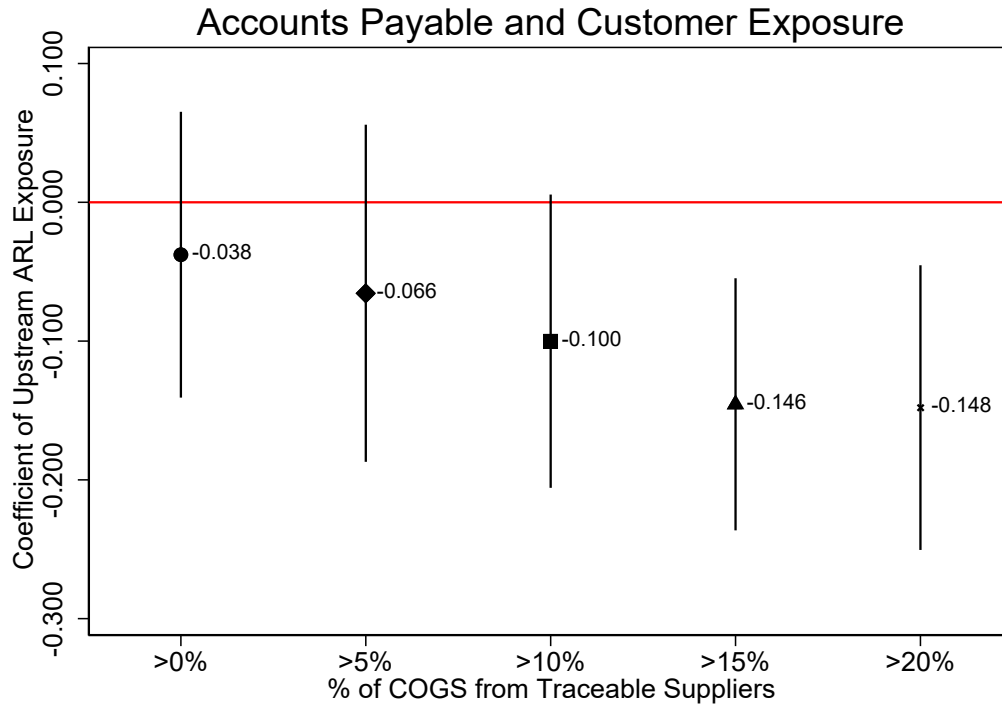
Appendix A: Variable Definition

Variable	Definition
Law	Indicator for firm being incorporated in state with ARL
Receivables	Receivables scaled by sales
Size	Logarithm of total assets
Log age	Logarithm of number of years firm has appeared in Compustat
Q	Tobin's Q, defined as (market cap + long-term debt)/(book equity + long-term debt)
Tangibility	Plant, property, and equipment scaled by total assets
Book Leverage	Long-term debt scaled by total assets
Profitability	Operating income before depreciation scaled by total assets
HHI	Herfindahl index for 4-digit SIC industry
Market Share	Market share, proportion of sales within 4-digit SIC industry
Sales Dependence	Sales to customer as proportion of total supplier sales
Relationship Length	Logarithm of the number of years since the supplier first reported the customer as a major client
Log(Customers)	Logarithm of the number of customers the supplier reports as major clients
Log(Suppliers)	Logarithm of the number of suppliers reporting the customer as a major client
Customer Payables	Accounts payable scaled by COGS
Upstream ARL Exposure	Percentage of customer COGS that can be traced to suppliers in ARL states
Traceable Suppliers	Percentage of customer COGS that can be traced to any supplier
Leverage	Short-term debt + long-term debt scaled by total assets
Investment	Capital expenditures scaled by beginning-of-year assets