Beyond Financial Intermediation: Common Lender Monitoring as a Substitute for Supply Contract Covenants

Ting Dai[a]

[a] *The Hong Kong University of Science and Technology*
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Abstract

Monitoring supply contracts can be particularly costly for customers and suppliers lacking specialized expertise; however, when both customers and suppliers borrow from a common lender, that lender may use its monitoring expertise and information about the parties to provide cost-effective monitoring of supply chain relationships. This paper examines the common lender monitoring effect on supply contract designs. Analyzing data from publicly disclosed supply contracts, I find that supply partners that share common lenders are less likely to include covenants, and that this effect varies with hold-up risks and communication challenges. Further, suppliers are also more likely to offer longer trade credit terms and cite customers' patents when common lenders are involved. I use exogenous shocks to the formation of a common lender and focus on initial supply contracts formed after establishing a common lender to demonstrate the robustness of the common lender monitoring effect. These results highlight the critical role that common lenders play in reducing contracting frictions and enhancing supply chain efficiency beyond traditional financing functions.

Keywords: Common Lender Monitoring, Supply Contract Design, Covenant Substitution
JEL Classification Codes: G21, L14, D86

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Email address: ting.dai@connect.ust.hk (Ting Dai)

1. Introduction

Suppliers and customers traditionally rely on contract covenants to deter opportunistic behaviors and secure business objectives (Costello, 2013; Bushee et al., 2020). Given banks' superior monitoring capabilities compared to other market participants (Gustafson et al., 2021), an important empirical question arises when banks lend to both customers and suppliers: whether the common lender's monitoring can substitute the covenants between their clients in the same supply chain?[1] This question is particularly relevant as banks nowadays increasingly seek to differentiate themselves from emerging fintech firms and new market entrants by offering value-added services (Mastropietro and Haines, 2021).[2]

Existing research has documented the cross-monitoring mechanisms among product, credit, and bond market monitoring systems. Through delegated monitoring to senior lenders or government entities, these governance strategies collectively reduce oversight duplication while enhancing operational flexibility (e.g., Booth, 1992; Ma et al., 2019; Bharath and Hertzel, 2019). However, lender monitoring typically prioritizes its own interests, potentially at the expense of other stakeholders (e.g. Jensen and Meckling, 1976; Bulow and Shoven, 1978; Ayotte and Bolton, 2011; Down et al., 2024), whereas supply partners' monitoring tends to be relationship-specific and operationally focused. These divergent monitoring pri-

[1] I term this phenomenon the "common lender monitoring effect." Throughout this paper, the terms "bank" and "lender" are used interchangeably.

[2] Banks increasingly adopt strategies to play more proactive roles in client's supply chain management. For instance, HSBC (2023) provides loans to both Walmart and its suppliers, enabling Walmart to leverage HSBC's monitoring infrastructure to oversee the carbon emissions of those suppliers. Similarly, Standard Chartered (2023) organizes an annual Treasury Leadership Forum designed to facilitate business opportunities and enhance business information exchange among clients. HSBC, China Construction Bank and Citi all launched supply chain matchmaking platforms to provide value-added services, see more details in section 2.2.

orities in supply chains suggest that common lender monitoring may not necessarily translate into effective substitutes for contractual covenants in supply chain relationships.

Despite this tension, two compelling mechanisms suggest that common lenders may indeed serve distinctive roles in supply chain management. First, the operational collapse of strategically critical supply partners—particularly those disclosed in SEC filings[3]—can materially impact the financial obligations of both suppliers and customers to lenders (Lee et al., 2015). Therefore, common lenders have substantial incentives to incorporate the operational viability and financial interests of significant supply chain participants within their comprehensive monitoring framework. Second, substantial empirical evidence indicates that suppliers and customers frequently lack credible private communication and monitoring channels (e.g., Bateman and Bonanni, 2019; Chiu et al., 2019; Chawla and Kim-Gina, 2023; Bourveau et al., 2024). In contrast, the frequent and detailed top-down monitoring conducted by syndicated loan lenders potentially renders their oversight more comprehensive and efficient (Gustafson et al., 2021; Bushman and Wittenberg-Moerman, 2012). Therefore, the common lender's monitoring activities may outperform the direct monitoring between supply chain counterparties.

This motivates three research questions about the "common lender monitoring effect" on supply contract design. First, I examine whether supply contracts exhibit fewer covenants when suppliers and customers share common lenders when the supply contract is negotiated, hypothesizing that common lender monitoring facilitates more streamlined contractual ar-

[3] Regulation S-K Section 10(ii)(b) mandates firms to file material business contracts as exhibits in their SEC submissions, with each exhibit representing a distinct contractual arrangement. Material contracts typically include supply agreements representing 10–15% of the filer's total sales or purchases, meeting a significant threshold to require disclosure (Costello, 2020).

rangements. Second, I investigate whether the common lender monitoring effect is amplified when suppliers and customers encounter elevated opportunism risks or potential hold-up problems.[4] Third, I analyze whether the common lender monitoring effect intensifies when suppliers and customers face significant communication barriers, building on the evidence that firms employ alternative channels such as public disclosures to enhance credibility when direct communication is constrained (Ferreira and Rezende, 2007; Bourveau et al., 2024).

To empirically test these predictions, I construct a comprehensive dataset of material supply contracts extracted from firms' SEC filings (10-K, 10-Q, 8-K, and S-Forms) following established methodologies in the literature (Costello, 2013; Bushee et al., 2020; Hui et al., 2024). The final sample encompasses 1,157 supply contracts spanning from year 2003 to 2022, for which I have successfully identified both supplier and customer entities and systematically extracted various categories of supply chain covenants.

To examine governance mechanisms within supply chain management contexts, I focus specifically on two fundamental types of monitoring covenants that directly oversee counterparty behavior: the ***sales audit covenant*** and the ***product quality covenant***.[5] These monitoring covenant categories serve as contractual mechanisms to oversee two essential dimensions of supply chain relationships: financial reporting accuracy and product quality assurance. They serve fundamentally different objectives compared to the *forecast-sharing*

[4] For instance, opportunism may manifest when a supplier reduces product quality after contract establishment, while hold-up problems can emerge when a buyer invests in adapting its products to better utilize a supplier's offerings, after which the supplier may strategically increase prices.

[5] The *sales audit covenant* addresses potential opportunistic behavior where suppliers might manipulate price information following buyer-specific investments. The *product quality covenant* mitigates the risk of suppliers compromising product quality after contract formation. Following Costello (2013), the *product quality covenant* includes requirements for ISO certification, FDA Current Good Manufacturing Practices (CGMP), and quality assurance provisions. For detailed examples, please see Appendix A.

covenants examined by Bushee et al. (2020) (monitoring purpose versus information sharing purpose).[6] I leverage the observed variation in these contractual monitoring mechanisms to isolate the relationship between common lender oversight and explicit contractual monitoring covenants.

Given the predominantly financial nature of lender-borrower relationships, I first examine the effect of common lender monitoring on suppliers' *sales audit covenant*. Using linear regression analysis, I find that supply contracts between suppliers and customers sharing common lenders within five years before contract formation are significantly less likely to include the *sales audit covenant*. This common lender monitoring effect extends to the *product quality covenant* as well. Lenders possess privileged access to borrowers' non-financial information, including detailed product market intelligence—information typically costly or impossible for other market participants to obtain (Barney, 1986; Nelson and Winter, 1982; Gustafson et al., 2021). Since the stability of these relationships directly affects suppliers' and customers' loan repayment prospects, lenders have substantial incentives to monitor product quality within specific supply relationships. My results demonstrate that common lender monitoring reduces both the explicit requirement and intensity of the *product quality covenant* in supply contracts. This evidence substantiates that common lender monitoring functions as a substitute for covenants in supply contracts and supports the arguments of Bushman and Wittenberg-Moerman (2012) that the benefits of lender monitoring extend beyond the immediate lending relationship.

While common lender monitoring reduces contractual covenants through substitution,

[6] Therefore, I do not expect that the common lender effect would reduce information-sharing requirements in supply chain management. The results presented in Appendix D1 substantiated this distinction.

this impact likely varies with hold-up problems faced by supply chain counterparties. Testing my second hypothesis, I examine how this common lender monitoring effect varies across three dimensions of hold-up risk: (1) geographic proximity between supplier and customer headquarters, affecting direct monitoring costs (Costello, 2013); (2) supplier financial constraints, measured by operating cash flow levels (Tsai, 2008); and (3) relationship specificity, captured by average supplier relationship duration (Joskow, 1987; Cen et al., 2016). Consistent with my prediction, the common lender monitoring effect is significantly stronger when supply partners face more severe hold-up risks, suggesting common lender provides valuable monitoring benefits where direct monitoring is costly or inefficient.

My third hypothesis suggests the common lender monitoring effect is greater when supply chain counterparties face communication frictions. I also test this using three proxies for communication frictions: (1) supplier's accounting quality (Armstrong et al., 2010; Minnis and Sutherland, 2017), (2) contract type (origination or amendment),[7] and (3) supplier's firm age (Bourveau et al., 2024). The results confirm the common lender monitoring effect is significantly stronger with greater communication frictions. Specifically, covenant reductions associated with common lenders are more pronounced when suppliers have poor accounting quality, when contracts are newly originated, and when suppliers are young. These findings suggest common lenders enhance communication trust between supply chain counterparties by reducing the need for strict control covenants when traditional communication channels are impaired.

To clarify the underlying mechanisms of common lender monitoring on supply contract

[7] Whether the contract is originated or an amendment can affect the level of scrutiny and negotiation required, with new contracts typically demanding more extensive due diligence and communications.

governance, I investigate the relationship between loan covenant intensity and supply contract covenants in section 6. Since Christensen and Nikolaev (2012) documented asymmetric effects between loan *capital* and *performance* covenants, I examine the differential monitoring effects of these two loan covenant types imposed on suppliers within the five-year period preceding each supply contract formation, interacted with the common lender effect. My empirical results reveal significant differences in their impacts: When suppliers are monitored through loan *capital* covenants in conjunction with a common lender presence, there is a reduction in both the *sales audit covenant* and the *product quality covenant*. In contrast, loan *performance* covenants show no significant interaction effect with common lender status. These findings demonstrate that the common lender monitoring effect stems from the common lender's monitoring activities, particularly when reinforced through loan *capital* covenant structures.

In additional analyses, I first examine the non-contractual benefits that common lenders confer upon supply chain relationships. My results indicate that suppliers with common lenders are more likely to extend longer trade credit terms and exhibit a higher propensity to cite customer patents in their own patent applications. I second examine whether high agency conflicts between lenders and clients in the supply chain influence the effectiveness of common lender monitoring to establish the robustness of the common lender effect. I find that the reduction in supply contract covenants associated with the common lender effect persists even for clients with high financial risk, unlike the U-shaped relationship between credit covenant strictness and client financial risk documented in bondholder-lender conflicts (Ma et al., 2019; Houston et al., 2014; Li et al., 2018).

Finally, I implement three complementary identification strategies to address potential

endogeneity concerns: (1) I examine initial supply contracts formed within 180 days following business cooperation announcements, targeting relationships that developed after the formation of the common lenders (Bodnaruk et al., 2013). (2) I conduct a survival analysis demonstrating that the common lender effect is associated with enhanced relationship longevity, addressing potential right-censoring concerns. (3) I exploit quasi-exogenous variation from financial institution mergers (He and Huang, 2017; Freeman, 2023; Giacomini et al., 2024), wherein a financial institution serving one supply chain firm merges with an institution serving its supply chain counterparty, creating a plausibly exogenous common lender scenario.[8] These complementary approaches collectively reinforce the finding that common lender monitoring significantly influences supply chain relationships through the common lender's monitoring capabilities rather than through reverse causality mechanisms, strengthening the causal interpretation of the documented common lender effect.

This paper makes significant contributions to several key areas of the literature. First, the evidence of common lender monitoring effects in supply chain contracts advances the corporate governance literature. Prior research has documented mechanisms reducing supply chain frictions: common ownership in supply chain innovations Chemmanur et al. (2025), trade credits Giacomini et al. (2024), product market coordination (He and Huang, 2017), relationship longevity (Freeman, 2023), and common auditor bullwhip effects in supply chain monitoring (Su et al., 2024). While Frattaroli and Herpfer (2023) illustrates how common lenders function as matchmakers reducing information asymmetries, my research extends

[8] A more direct empirical test would involve examining contract amendments following financial institution mergers. However, given the extended duration of supply contracts (Naidu and Ranjeeni, 2024) and limited temporal variation in contractual terms, such amendments are infrequently observable in the data, precluding a more granular analysis of post-merger contractual adjustments.

this literature by providing novel evidence that lender involvement transcends matchmaking functions, offering continuous monitoring that materially enhances supply chain stability and efficiency.

Second, my results document fundamental differences in agency conflict structures between supply chain firms and bondholders vis-à-vis lenders. While Cohen et al. (2022); Ma et al. (2019); Houston et al. (2014) document that lenders, bondholders, and government can alleviate each other's monitoring burden through cross-monitoring, they also find a U-shaped relationship between credit covenant strictness and target firm's financial risk. This indicates that lenders may exploit other stakeholders' interests when agency conflicts between different stakeholders are high (Li et al., 2018). My results reveal a different scenario: when supply chain business generates more immediate operational impacts that may directly affect common lender financial performance, common lenders do not prioritize their institutional interests at the expense of supply chain business, and the common lender monitoring effect persists when agency conflict is high.

Finally, this paper contributes to the literature on trade credit. Ersahin et al. (2024), Breza and Liberman (2017), and Beaumont and Lenoir (2023) have documented how business independence, contractual constraints, and financial constraints affect trade credit policies in supply chain management. My paper extends this research by demonstrating that common lender monitoring also impacts trade credit terms. This study also advances the discussion of loan *capital* and *performance* covenants initiated by Christensen and Nikolaev (2012), revealing that these distinct types of loan covenants exert differential impacts on supply chain management. These findings underscore the positive effect of common lenders' involvement in supply chain relationships, as the lender's monitoring and assurance create a

more supportive environment for credit extensions and supply chain investment.

2. Background and Literature Reviews

2.1. Monitoring Inefficiencies in Supply Chain Management

Agency theory proposes that detailed contractual covenants can address potential opportunistic behavior in supply chains (e.g. Jensen and Meckling, 1976; Maksimovic and Titman, 1991; Cachon and Lariviere, 2001; Costello, 2013; Chen and Lee, 2017; Shen et al., 2019). However, the efficacy of such covenants is constrained by incomplete information, monitoring costs, renegotiation frictions, and macroeconomic uncertainty (Dyreng et al., 2023). Smith and Warner (1979) articulates this as a fundamental tradeoff: firms must balance the benefits of reducing agency costs against the costs of decreased operational flexibility when implementing contractual covenants.

A critical limitation in supply contract monitoring stems from the parties' inherent monitoring capabilities. Unlike specialized financial intermediaries (Blickle et al., 2023; Gustafson et al., 2021), neither customers nor suppliers possess sophisticated monitoring expertise or infrastructure. Resources allocated to contract enforcement could be more productively directed toward value-enhancing projects that align with core business objectives (Beneish and Press, 1993; Chen and Wei, 1993; Tan, 2013). The experimental literature further complicates this picture, documenting that excessive monitoring can signal distrust and trigger negative reciprocity behaviors that undermine collaborative relationships (see Frey, 1993; Falk and Kosfeld, 2006; Belot and Schröder, 2016, for comprehensive reviews).

The credibility of information exchange presents another significant challenge. The information shared between suppliers and customers is typically disaggregated—tailored to each

transactional relationship—rather than presented at the comprehensive firm level (Bushee et al., 2020). Furthermore, information sharing among supply chain counterparties is susceptible to strategic misalignment of incentives (Cachon and Lariviere, 2001; Chiu et al., 2019; Chawla and Kim-Gina, 2023), leading to potential distortions. For example, suppliers may overestimate product costs, inducing customers to adjust their selling prices, or overstate product quality to encourage customers to increase promotional capacity (Cachon and Lariviere, 2001; Özer and Raz, 2011). Bourveau et al. (2024) document that firms often rely on third-party channels to verify the credibility of private communications with supply chain counterparties, further highlighting the inefficiencies inherent in direct monitoring arrangements.

These structural limitations collectively suggest a more efficient approach to contract design: when alternative monitoring channels are available such as through common lenders' monitoring, reducing monitoring covenants in supply contracts can enhance operational efficiency while lowering transaction costs. This perspective aligns with theoretical frameworks developed by Cachon and Zhang (2006) and Cohen et al. (2022), who demonstrate that streamlined contracts generally improve efficiency for all parties, particularly when monitoring is already provided by specialized stakeholders such as financial intermediaries with established monitoring infrastructure and expertise.

2.2. Lender Monitoring Advantages

The literature establishes that lenders engage in sophisticated governance activities, including monitoring and screening, to mitigate borrowers' opportunistic behaviors (e.g. Diamond, 1984; Fama, 1985; Boyd and Prescott, 1986; Diamond, 1991). Through channels such

as conference calls, onsite visits, and due diligence, lenders systematically collect and analyze comprehensive business information (Uzzi and Lancaster, 2003; De Franco et al., 2021).

Lenders' information acquisition protocols range from periodic financial statement reviews to daily accounts receivable monitoring, and even require initial possession of all receivables to maintain rigorous loan supervision.[9] These comprehensive monitoring mechanisms and resulting informational advantages typically remain proprietary to lenders, largely inaccessible to other stakeholders, including supply partners (Carrizosa and Ryan, 2017; Demerjian et al., 2020).

Lenders maintain oversight throughout the loan's duration and often extend beyond the formal loan period (Bushman and Wittenberg-Moerman, 2012). This sustained relationship distinguishes lenders from other capital facilitators like underwriters, who provide minimal post-issuance monitoring. The governance benefits from lender monitoring potentially persist for years and generate positive externalities for other stakeholders (Houston and James, 1996).

These structural advantages suggest that when sophisticated monitoring channels are available through common lenders, lenders possess significant monitoring advantages compared to supply chain counterparties, and lenders will leverage these advantages to play a more proactive role in clients' supply chains in order to deliver a high-quality customer service

[9] Gustafson et al. (2021) documents that syndicated loans typically begin with investment bankers, loan officers, and subject matter experts determining optimal contract structure. Throughout the loan lifecycle, bank employees and third-party auditors systematically assess loan performance and business stability quarterly, while maintaining regular communication with borrower management. This monitoring extends beyond public information to proprietary data including new customer contracts, monthly pro forma statements, auditor communications, and advance notifications of adverse developments (Mester et al., 2001; Carrizosa and Ryan, 2017). These comprehensive insights position lenders advantageously compared to borrowers' supply chain counterparties (Smith and Warner, 1979; Roberts and Sufi, 2009).

experience (Uzzi and Lancaster, 2003; Jones et al., 2022; Frattaroli and Herpfer, 2023). The above reasoning explains the behavior we observe in banking practice. For instance, many banks have introduced platforms to facilitate supply chain business among their clients.[10] This evolution not only helps lenders expand their services beyond credit provision but also fosters stronger long-term relationships with their clients. By establishing common lending relationships, banks gain unique insights about both ends of clients' businesses while enhancing clients' dependencies. Recent reports from EY (Mastropietro and Haines, 2021) document that leading banks have embraced long-term value creation as their pathway to sustainable growth. Major banks (e.g., HSBC, Citi, JP Morgan Chase, and Wells Fargo) consistently emphasize their commitment to building long-term business relationships with clients for future growth in their strategic communications.

3. Hypotheses Development

3.1. Substitution Between the Common Lender Effect and Supply Contract Covenants

Lender monitoring generates benefits beyond immediate lending relationships, creating significant substitution effects for firm stakeholders. Stulz (1990) and Bharath and Hertzel (2019) document that lender oversight reduces managerial agency costs, allowing firms to substitute internal governance with external mechanisms. Booth (1992), Datta et al. (1999), and Park (2000) demonstrate that additional lenders or strong covenants reduce borrowing costs and subsequent monitoring intensity, while Beatty et al. (2012) find reduced monitoring

[10]HSBC (2017) provides a digital portal, the HSBC Connections Hub, allowing the bank's business customers to create profiles of their brands since 2017. This platform highlights potential buyers or sellers for customers; China Construction Bank has offered matchmaking solutions since 2019 with "CCB Matchmaker Plus" for clients with cross-border needs (Yuan, 2024); Citi Group launched a pilot service in 2021 to digitally match U.S. small- and medium-sized businesses with local and regional banks (Henry, 2021).

costs in multiple-lender relationships through information spillovers.

When a common lender monitors both suppliers and customers, each party may reduce their monitoring of the other, as both already benefit from the lender's oversight. This common lender effect becomes valuable as excessive contractual provisions constrain value-enhancing corporate policies and diminish expected surplus from supply relationships. Supply chain contracts, thus, further streamline contractual arrangements by removing redundant covenants. Drawing on the institutional advantages of common lender monitoring, I formulate the following prediction:

H1: *Supply contracts exhibit a reduced likelihood of incorporating covenants when the supplier and customer share common lenders at the time of contract formation.*

3.2. Hold-up Risks and the Common Lender Effect

Hold-up problems emerge when supply chain businesses create bilateral dependencies between supply chain counterparties (Williamson, 1985). In supply chain relationships, hold-up risks can be characterized by several key dimensions: Geographic distance between suppliers and customers increases coordination costs, information asymmetry, and monitoring difficulties (Costello, 2013); Financially constrained suppliers face vulnerability in supply relationships as limited financial flexibility reduces their bargaining power and may drive opportunistic misconduct when navigating stringent customer requirements (Tsai, 2008; Cunat, 2007); Finally, greater supplier business specificity involves customized processes and specialized investments that deepen bilateral dependencies and elevate potential hold-up costs (Joskow, 1987). These hold-up problems expose parties to opportunistic behavior and necessitate contractual safeguards (Krishnan and Winter, 2012).

While traditional governance approaches involve detailed contractual covenants (Jensen and Meckling, 1976), these introduce significant transaction costs. Common lender monitoring offers an efficient alternative governance mechanism in contexts with severe hold-up risks. Financial intermediaries can observe potential opportunistic behavior, effectively mitigating hold-up concerns while preserving operational flexibility (Cachon and Zhang, 2006; Cohen et al., 2022).

The value of common lender monitoring increases with hold-up risk severity, as supply chain counterparties facing acute hold-up problems encounter greater potential losses from opportunistic behavior and higher contractual enforcement costs. This reasoning leads to the following hypothesis:

H2: *The common lender effect on supply contracts is stronger when suppliers and customers face more severe hold-up risks.*

3.3. Communication Frictions and the Common Lender Effect

This section further explores the significance of having common lenders in situations where suppliers and customers struggle to communicate credibly with each other (Ferreira and Rezende, 2007; Bourveau et al., 2024). Research indicates that when direct communication is difficult, these parties often rely on other credible channels, such as public disclosures, to facilitate interaction. Although supply chain counterparties can exchange information privately (e.g., about sales expectations, new product developments, etc.), this information is often disaggregated and tailored (Bourveau et al., 2024). In contrast, the common lender, who routinely reviews strategic and operational information from firms, receives more credible and comprehensive information than what is typically exchanged between supply chain

counterparties.

Common lender monitoring enhances trust between supply chain counterparties by providing active, third-party verification, thereby reducing the need for complex contractual provisions (Dyer and Singh, 1998; Adler, 2001). This verification mechanism becomes particularly valuable when partners struggle to establish credible communication channels. By simultaneously monitoring both parties, common lenders foster mutual confidence and facilitate reliable information exchange between partners who would otherwise find it challenging to verify each other's claims independently. Therefore, I predict:

H3: *The common lender effect on supply contracts is stronger when suppliers and customers face significant challenges in establishing credible communication channels.*

4. Data and Sample Construction

4.1. Supply Contracts and Variables

The supply chain setting provides a unique opportunity to examine the common lender effect for several reasons: First, unlike the bond market where monitoring primarily focuses on financial aspects, supply relationships require monitoring of both financial and operational dimensions. Second, the interdependent nature of supply chain relationships means that one party's failure can substantially impact the entire supply chain, directly affecting lenders' loan security. This creates strong incentives for lenders to monitor both financial health and operational efficiency. Third, supply contracts often involve relationship-specific investments and complex performance metrics that external parties find difficult to verify, making the common lender's comprehensive monitoring particularly valuable.

I construct a comprehensive dataset of material supply contracts from Securities and

Exchange Commission (SEC) filings following established methodologies (Costello, 2013; Bushee et al., 2020; Hui et al., 2024).[11] Regulation S-K Section 10(ii)(b) requires firms to file material business contracts as exhibits in their SEC submissions, with each exhibit representing a distinct contractual arrangement. I obtain 5,186 unique contract URLs from 2003-2022. From this initial set, I implement a systematic filtering process, excluding contracts with fewer than 4,000 characters and combining amended contracts issued on the same day, yielding 4,410 refined contract records. I determine contract dates using filing dates for Forms 10-K, 10-Q, and 8-K, as these filings require timely disclosure (normally within 40/60 days after fiscal quarter/year-end for 10-Q/K and within 4 days of events for 8-K). For S-form filings (IPO prospectus forms) that may contain historical arrangements, I employ a large language model to extract contract dates directly from the contract text.

Finally, I require both supplier and customer firms to have relevant financial information to be included in our sample. Firm-level characteristics are obtained from the Compustat/CRSP merged database. Following the previous literature, I exclude firms in utility (SIC codes 4900-4999), financial (SIC codes 6000-6999), and governmental entities (SIC codes 9000-9999). I also limit the sample to non-singleton observations. The final analysis sample comprises 1,157 unique contracts spanning the period from the year 2003 to 2023.

I examine two primary categories of contractual covenants in this paper: the *sales audit covenant* and the *product quality covenant*.[12] Following prior literature (Costello, 2013; Hui

[11]For detailed procedures, please refer to Appendix C.1.

[12]In contrast to my focus on monitoring covenants, Bushee et al. (2020) examine private forecast-sharing covenants and their relationship to customers' public disclosures. Such information sharing covenants serve fundamentally different objectives than monitoring covenants. While the common lender aims to facilitate business cooperation and enhance operational efficiency through matchmaking and monitoring activities within supply chains for their clients, they maintain strict confidentiality protocols regarding client-specific

et al., 2024), I employ a dictionary approach to identify these provisions.[13] The *sales audit covenant* measures the financial accuracy requirement as it addresses potential opportunistic behavior where suppliers might manipulate price information following buyer-specific investments. The *product quality covenant* measures the requirement for suppliers business operations as it mitigates the risk of suppliers compromising product quality after contract formation. The *product quality covenant* includes requirements for ISO certification, FDA Current Good Manufacturing Practices (CGMP), and quality assurance provisions.

To identify common lenders between supply chain partners, I first match both customers and suppliers from the supply contracts with syndicated loan data from LPC DealScan, following Cohen et al. (2021). Then, I identify banks serving as lead lenders for credit facilities to both parties. A lender is classified as "common" if it has provided loan facilities to both the customer and supplier within the five-year window preceding the supply contract formation date.

4.2. Trade Credit and Innovation Cross-Citations

I also use ChatGPT 4.0 to identify and analyze sections containing key terms such as "invoice" and "payment."[14] This approach enables the extraction of trade credit terms from the relevant paragraphs. Through this methodological process, I successfully identify trade credit parameters for 588 contracts from the total sample of 1,157 supply agreements.

hard information. My consultations with professional bankers at leading international financial institutions confirm that banks maintain a fiduciary duty to preserve client confidentiality, which precludes direct hard information transfer between supply chain partners. Thus, I do not anticipate that the common lender effect would reduce information-sharing requirements between suppliers and customers. The empirical evidence presented in Appendix D1 substantiates this distinction, demonstrating no significant substitution effects for information-sharing covenants.

[13]For detailed procedures, please refer to Appendix C.2.

[14]For detailed procedures, please refer to Appendix C.3.

To measure relationship-specific innovation output, I utilize patent data from Kogan et al. (2017). Following the methodological approach of Dasgupta et al. (2021), I identify instances where suppliers produce patents that cite their customers' patent portfolios. These cross-citations serve as empirical indicators that suppliers are aligning their research and development activities with their customers' technological trajectories (Jaffe et al., 2000), representing tangible evidence of relationship-specific innovation investments.

4.3. Sample Description

The sample encompasses 1,157 unique material supply contracts spanning from year 2003 to 2023. Table 1 presents the industrial composition of suppliers and customers within this dataset. The unit of observation is at the supplier-customer-contract level. Manufacturing entities predominate, constituting 65.43% of suppliers and 62.40% of customers, followed by service-oriented firms, which represent 15.64% of suppliers and 11.84% of customers. Panel B delineates contractual classifications, indicating that 54.71% of agreements are supply and procurement contracts, while 47.28% are service agreements. Notably, 15.81% of contracts exhibit hybrid characteristics, integrating multiple contractual modalities within a single contract.

Table 2 Panel A presents descriptive statistics for the primary variables in the contract-level sample. Common lenders are present in approximately 9.2% of supply contracts, while 36% of suppliers maintain banking relationships with financial institutions and 27% of suppliers do not share a common lender with their customers. Regarding covenants, 13.1% of contracts incorporate the *sales audit covenant*, while 40.4% include the *product quality covenant*. The mean trade credit duration is 33.9 days, though this parameter is observable

for only 588 contracts. With respect to structural characteristics, 48.0% of contracts represent amendments to existing agreements, and 25.6% involve parties headquartered in the same state, with suppliers and customers maintaining an average geographic distance of 940 miles (5.51 log-transform miles) between their headquarters.

Suppliers in the sample exhibit median total assets of $12.9 billion. Due to substantial skewness in the asset distribution, I log-transform this variable (measured in millions) for regression analyses, yielding a median of 7.2. The median supplier demonstrates an ROA of 2.9%, leverage ratio of 56.8%, asset-scaled sales of 64.8%, and an industry concentration measure (HHI) of 0.15. Customers display comparable financial characteristics, with median total assets of $12.0 billion. The log-transformed customer assets (measured in millions) yield a median of 7.1. The median customer exhibits leverage of 54.8%, asset-scaled sales of 59.0%, and an industry concentration measure of 0.15. Table 2 presents comprehensive summary statistics for all variables used in the analysis.

Table 2 Panel B provides descriptive statistics for the survival analysis and cross-citation innovation measures. The observation is at the supplier-customer-year level. Within the supplier-customer-year observations, 10% supplier-customer-year observations have common lenders, and 25% represent relationship termination years (*End Relationship*). Approximately 4% of suppliers have generated at least one patent that cites their customer's patent portfolio in the subsequent year (Cross Cite$_{t+1}$).

5. Empirical Results

5.1. The Common Lender Effect

To examine how common lender monitoring affects the use of supply covenants, I estimate the following linear probability model at the supply contract level:

$$\begin{aligned} \text{pr}(\text{Has Covenant}_{\text{l,t,s,c}} = 1) = \alpha_l + \beta \text{Common Lender}_{l,t\in[0,-5]} \\ + \mathbf{S}_{s,t} + \mathbf{C}_{c,t} + \mathbf{L}_{l,t} \\ + \Omega_l + \Lambda_t + \Theta_i + \Psi_d + \varepsilon_t \end{aligned} \tag{1}$$

The dependent variable, $Has\ Covenant_{l,t,s,c}$ is a dummy variable equal to one if the supply contract l between the supplier s and the customer c in year t requires the supplier s to audit sales-related financial information (*sales audit covenant*) or provide product quality assurance (*product quality covenant*), and zero otherwise. $Common\ Lender_{l,t\in[0,-5]}$ equals one if both the supplier and the customer have loans from at least one common lender within the five years before the negotiation of their supply contract.

Following Naidu and Ranjeeni (2024), I include comprehensive time-varying controls for both supplier and customer characteristics. Supplier controls ($\mathbf{S}_{s,t}$) include the natural logarithm of total assets (*Supplier* $Ln(AT)$), leverage ratio (*Supplier Leverage*), return on assets (*Supplier ROA*), asset-scaled sales (*Supplier Sale*), and industry concentration (*Supplier HHI*). Customer controls ($\mathbf{C}_{c,t}$) cover the same characteristics. To account for supply relationship characteristics ($\mathbf{L}_{l,t}$), I control for the geographic distance between supplier and customer headquarters, as proximity affects monitoring costs (Costello, 2013), and include an indicator for whether the contract is an amendment to an existing agreement to capture differences in established relationships. Detailed variable definitions are provided

in the Appendix B.

The specification includes multiple effects to account for unobserved heterogeneity. Ω_l captures contract type fixed effects, as different contract purposes (e.g., sales, services) may influence the use of covenants. Λ_t represents year effects based on the supply contract's inception year to control for time trends affecting all sample firms. Θ_i represents supplier-customer paired industry fixed effects based on two-digit SIC codes, absorbing all time-invariant industry-level heterogeneity. Ψ_d represents supplier-customer paired state fixed effects. Given these multiple high-dimensional fixed effects, I employ linear probability as the main estimation method (Wooldridge, 2016). Standard errors are clustered at the supplier-customer pair level to account for within-pair correlation following Freeman (2023).

Table 3 reports the estimated associations between the common lender effect and the use of covenants. In Columns (1) and (2), I estimate the comment lender effect with/out fixed effects. I find that the common lender monitoring is associated with a significant reduction in the likelihood of including *sales audit covenant* after controlling the fixed effects. The coefficient of -0.090 in column (2) is statistically significant at the 5% level. Given the unconditional mean of 13.1% for sales auditing covenants in my sample, this represents an economically significant decrease in the probability of having the *sales audit covenant* by 20% over the unconditional mean likelihood. Similarly, Column (4) shows that the coefficient of common lender presence is -0.147 and statistically significant at the 5% level. Relative to the sample mean of 40.4%, this represents an 11% decrease over the unconditional mean likelihood. These results provide strong support for H1, suggesting that monitoring by common lenders substitutes supply covenants, thereby reducing the use of contractual covenants in supply relationships.

To provide more granular evidence of the common lender effect, I examine the intensive margin of product quality covenants in supply contracts. Given the count nature of the dependent variable, *Product Covenant Count*, and the prevalence of zero observations in the data, I employ multiple estimation approaches following past literature (e.g. Rock et al., 2000; Silva and Tenreyro, 2006, 2022). Specifically, I estimate the model using: (1) OLS as a baseline specification, (2) Zero-inflated Poisson (ZIP) regression given the high proportion of zero observations, and (3) Poisson pseudo-maximum likelihood (PPML) to accommodate high-dimensional fixed effects in Table 4.[15] The results in all three models consistently show that common lender presence is associated with a reduction in the number of the *product quality covenant*. The coefficient in column (2) shows a decrease of about 0.27 units (0.71×0.39), decreasing the expected count from 0.71 to 0.43 (39% decrease) at the mean value.

5.2. Hold-up Risks and the Common Lender Effect

I conduct cross-sectional analyses to examine how the effects of monitoring substitutions vary with hold-up risks. Following prior literature, I explore three sources of heterogeneity: (1) geographic proximity between supplier and customer headquarters, which affects direct monitoring costs (Costello, 2013); (2) supplier financial constraints, measured by operating cash flow levels (Tsai, 2008); and (3) relationship specificity, captured by the supplier's average partnership duration across all its customers (Joskow, 1987). For each source of hold-up risk, I estimate equation 1 separately for subsamples split based on the severity of

[15]Among these specifications, PPML emerges as the preferred estimation method for several reasons. First, while the data exhibits slight overdispersion (variance of 0.90 versus mean of 0.70), PPML remains consistent regardless of the variance-mean relationship (Silva and Tenreyro, 2006, 2010). Second, PPML performs well with a high proportion of zero values and accommodates high-dimensional fixed effects, which pose convergence challenges for zero-inflated models (Silva and Tenreyro, 2010, 2011; Correia et al., 2020; Silva and Tenreyro, 2022).

the hold-up problem.

Table 5 presents the results. Panel A splits the sample based on whether suppliers and customers are headquartered in the same state. Geographic distance increases hold-up risk because it makes direct monitoring and verification more costly and difficult, increasing information asymmetry between supply chain partners (Costello, 2013). Common lender monitoring significantly reduces the probability of including the *sales audit covenant* by 10.3% at the 5% significance level for counterparties located in different states, while showing no significant effect for same-state pairs. To test whether the difference in coefficients between these two subsamples is statistically significant, I implement a bootstrap test with 500 replications (Lian, 2016; Lu et al., 2019).[16] The bootstrap test confirms that the common lender effects differ significantly between the two subsamples. This suggests that the common lender effect is particularly valuable when geographic distance impedes direct monitoring. A similar but statistically weaker pattern emerges for the *product quality covenant*.

Panel B examines how supplier financial constraints influence the substitution effect of common lender monitoring by splitting the sample based on operating cash flow levels. Low operating cash flow indicates higher hold-up risk, as financially constrained suppliers have stronger incentives to manipulate sales and pricing information to improve their cash position (Tsai, 2008). The results show that the monitoring substitution effect of common lenders varies with suppliers' financial constraints. Specifically, the reduction in contractual covenants associated with common lender presence is more pronounced for suppliers with low cash flow. The coefficient magnitude for the *sales audit covenant* is -0.138 in the low-cash-

[16]This bootstrap test is used for all subsequent coefficient difference tests.

flow subsample compared to -0.074 in the high-cash-flow subsample, and both are statistically significant at 10% level. For the *product quality covenant*, the effect is notably larger in the low-cash-flow subsample (-0.302 significant at 1% level) than in the high-cash-flow subsample (-0.073). The common lender effect in the high-low cash-flow subsample also has significant differences. These findings suggest that the monitoring substitution effect of common lenders becomes particularly important when suppliers face cash flow constraints, precisely when the risk of opportunistic behavior is highest.

Panel C examines relationship specificity through suppliers' average supply chain business duration. Longer average duration indicates that suppliers operate in business segments that are more specialized and tailored to their customers' needs, thus signifying greater relationship specificity (Joskow, 1987). This specificity, reflected in suppliers' specialized products or services, inherently creates higher hold-up risk in the relationship. Notably, the common lender monitoring effect is significant only for suppliers characterized by relatively long business durations (over 5 years based on the reported relationship duration from Cen et al. (2016)) , a pattern consistent across both the *sales audit covenant* and the *product quality covenant*.

These findings support my second prediction that the common lender effect is stronger when supply chain counterparties face more severe hold-up risks, suggesting that the common lender effect provides particularly valuable contracting benefits in these settings.

5.3. Communication Frictions and the Common Lender Effect

Beyond hold-up risks, effective communication between supply partners plays a crucial role in contract design. To examine whether common lender monitoring becomes more valu-

able when supply partners face communication challenges, I explore three dimensions where information frictions typically arise: (1) supplier's accounting quality (Armstrong et al., 2010; Minnis and Sutherland, 2017); (2) contract origination status (new versus amended agreements); and (3) supplier's firm age (Bourveau et al., 2024). For each source of communication friction, I also estimate equation 1 separately for subsamples split on the severity of the communication frictions.

Table 6 presents the results. Panel A splits the sample based on supplier's accounting quality. Poor accounting quality increases communication frictions as it reduces the reliability and verifiability of financial information shared between partners (Armstrong et al., 2010; Chen et al., 2021). The common lender effect on the *sales audit covenant* is significantly negative for suppliers with low accounting quality but insignificant for those with high accounting quality, with the difference being statistically significant. Both subsamples show significant reductions in *product quality covenant*: approximately 17% for suppliers with low accounting quality versus 21% for those with high accounting quality. While this difference is not statistically significant, bootstrap results indicate that about 70% of bootstrap samples still showed differences, suggesting a potential effect that warrants further investigation.

As previously discussed, new origination contracts involve greater information uncertainty and verification needs compared to amendments of existing agreements (Bourveau et al., 2024). Panel B examines the role of contract origination status. The common lender effect is stronger for originated contracts compared to amendments, both for the *sales audit covenant* and the *product quality covenant*. The results show that common lender monitoring reduces the likelihood of using the *sales audit covenant* by approximately 10% and the *product quality covenant* by 19%, statistically significant at the 10% and 5% levels, respectively. Bootstrap

test also indicates that over 70% of samples showed differences between the origination and amendment.

Panel C explores the role of supplier age. Younger firms typically face greater challenges in establishing credible communication due to limited track records and reputational capital (Bourveau et al., 2024). The common lender effect is significantly negative for young suppliers in both the *sales audit covenant* and the *product quality covenant*, but insignificant for older firms. These results are consistent with the prediction that common lender monitoring is more valuable when dealing with less established suppliers.

These findings support my third prediction that the common lender effect is stronger when supply chain counterparties face greater communication frictions. The results further suggest that common lenders serve as valuable monitoring intermediaries, particularly when traditional communication channels are impaired when accounting quality is poor, when the supply contract is new, or when the firm is young.

6. Mechanism Analysis

To clarify the underlying mechanisms through which common lender monitoring influences supply contract governance, I investigate the relationship between loan covenant intensity and supply contract covenants. This analysis is motivated by the theoretical framework established by Christensen and Nikolaev (2012), who thoroughly documented the distinct implications of two loan covenant types: *capital* covenants, which control agency problems by aligning debt holder–shareholder interests, and *performance* covenants, which serve as trip wires that transfer control to lenders when the value of their claim is at risk. I hypothesize that these two covenant types play different roles in supply chain governance.

Regarding loan *capital* covenants, since they establish constraints on capital structure and resource utilization—elements integral to daily operational activities—they likely promote efficient resource allocation aligned with strategic financial objectives, thereby fostering operational stability throughout the supply chain. Conversely, loan *performance* covenants primarily function as "tripwires" that transfer control rights to lenders upon financial performance deterioration. While these mechanisms prove effective during periods of financial distress, they exert minimal influence over supplier behavior during normal operational conditions, potentially rendering them less effective substitutes for dedicated supply governance provisions.

To empirically test these hypotheses, I measure lender monitoring intensity by calculating the average number of performance and capital covenants across all loans received by suppliers within the five-year period preceding each supply contract formation. By interacting this measure with the common lender, I assess whether the common lender monitoring effect stems from the lender's monitoring activities and whether different loan covenant types exert differential impacts. I examine the following linear probability model:

$$\begin{aligned}\text{pr}(\text{Has Covenant}_{\text{l,t,s,c}} = 1) = {} & \beta_1 \text{Supplier Loan Covenants Intensity}_{t\in[0,-5]} \times \text{Common Lender}_{t\in[0,-5]} \\ & + \beta_2 \text{Supplier Loan Covenants Intensity}_{l,t\in[0,-5]} \\ & + \beta_3 \text{Common Lender}_{l,t\in[0,-5]} \\ & + \mathbf{S}_{s,t} + \mathbf{C}_{c,t} + \mathbf{L}_{l,t} + \Omega_l + \Lambda_t + \Theta_i + \varepsilon_t\end{aligned} \tag{2}$$

The dependent variable, *Supplier Loan Covenants Intensity*, is either the averaged number of *Supplier Avg C-Cov* or *Supplier Avg P-Cov* across all loans received by the supplier within the five years before the supply contract was made. *Supplier Avg C-Cov* and *Supplier Avg P-Cov* are the average count number of the capital and performance covenants. The control

variables are consistent with those in Table 3. The regressions absorb contract type effects (Ω_l) and include year and supplier-customer paired industry (Λ_t, Θ_i). Standard errors are clustered at the supplier-customer pair level fixed effects.

The empirical result in table 7 substantiates my theoretical predictions, revealing a significant differential impact between loan capital and performance covenants in their interaction with common lender monitoring. When suppliers are subject to loan capital covenants in conjunction with common lender presence, there is a 10% probability reduction in the inclusion of the *sales audit covenant* at statistically significant 10% level and 30% probability reduction of the *product quality covenant* at statistically significant 1% level. In contrast, loan performance covenants exhibit no statistically significant interaction effect with common lender status. These findings suggest that loan capital covenants address not only the traditional agency problems between lenders and borrowers but also mitigate potential conflicts between suppliers and customers by establishing baseline operational parameters. Consequently, the results demonstrate that common lender monitoring, particularly when reinforced through loan capital covenant structures, can effectively substitute for explicit supply contract covenants.

7. Additional and Robustness Tests

7.1. Non-contractual Benefits: Trade Credits and Relationship Specific Innovations

In subsequent analyses, I examine the non-contractual benefits that common lenders confer upon supply chain relationships, specifically investigating whether their presence facilitates longer trade credit terms and greater relationship-specific innovations. Suppliers typically demonstrate reluctance to extend longer credit terms or invest in customer-specific

innovations due to concerns about financial stability and relationship continuity (Smith, 1987; Costello, 2020; Freeman, 2023). As documented by Mester et al. (2001), bank loan officers maintain granular visibility into borrowers' operational activities through their management of operating accounts, which reinforces collaborative dynamics and engenders trust for sustaining supplier-customer relationships (Ersahin et al., 2024). Consequently, I hypothesize that common lenders' comprehensive monitoring of liquidity positions and operational activities effectively attenuates suppliers' risk exposure, thereby incentivizing longer credit terms and relationship-specific investments.

I first investigate whether common lender monitoring influences trade credit terms in supply contracts. Table 8 presents empirical findings regarding common lender influence on trade credit terms. Column (1), focused on supply agreements, reveals that common lender presence is associated with an 18.3-day extension in payment periods, significant at 1% level. Column (2), which isolates newly originated contracts, documents a consistent though slightly attenuated effect of 12.7 days, significant at the 1% level. While the coefficient in the full sample (Column 3) maintains a positive direction but lacks statistical significance, the pronounced and statistically significant effects observed specifically in supply contracts suggest that common lender monitoring provides particularly salient value in pure supply relationships where trade credit terms constitute critical operational parameters of the business relationship.

Table 9 captures the relationship-specificity of supplier innovation activities through pair-year-level measures that reflect the degree to which suppliers align their innovation trajectories with customers' technological needs. Leveraging the granular nature of patent data, I construct metrics measuring the presence of cross-citations between suppliers and cus-

tomers—a widely accepted indicator of knowledge transfer and innovation complementarity (Dasgupta et al., 2021). Results from the Poisson Pseudo-Maximum Likelihood estimation demonstrate that suppliers monitored by common lenders exhibit approximately 16% higher probability of producing patents that cite customer patent portfolios in both the subsequent year and the year thereafter (Columns 1 and 2), relative to suppliers lacking common lender monitoring.

These findings provide robust support for the broader common lender effect by demonstrating that common lender monitoring facilitates not merely more flexible covenants, but also extended trade credit terms and enhanced innovation alignment when a common lender oversees the relationship.

7.2. Robustness Test: Agency Conflicts and the Common Lender Effect

To further establish the robustness of the common lender effect, I examine how agency conflicts between lenders and supply chain counterparties might influence monitoring effectiveness. Prior literature suggests that agency conflicts between lenders and other stakeholders could potentially impair monitoring effectiveness, particularly when target firms face financial distress (Ma et al., 2019; Houston et al., 2014; Li et al., 2018). If a lender experiences similar agency conflicts with either side of the supply chain, traditional theory would predict a U-shaped relationship in monitoring effectiveness.

To investigate this possibility, I conduct a robustness test exploring the interaction between common lender monitoring and supplier financial risk. Table 10 examines whether the common lender effect varies with supplier financial risk using three distinct measures: (1) low Tobin's Q (below sample first quartile of *Supplier TobinQ*), (2) high leverage (above sample

third quartile of *Supplier Leverage*), and (3) high expected default frequency (above sample third quartile of *Supplier EDF*). The model includes interaction terms between *Common Lender* and each financial risk indicator (*Low Supplier TobinQ*, *High Supplier Leverage*, and *High Supplier EDF*).

Across all specifications, I find no evidence that supplier financial distress weakens the monitoring substitution effects. The interaction terms between the common lender and financial risk measures remain statistically insignificant for both the *sales audit covenant* and *product quality covenant*. Moreover, the common lender effect maintains its negative significance, suggesting that the reduction in contractual provisions persists even when suppliers face financial difficulties.

These findings contrast with traditional bondholder-lender conflicts, where monitoring typically weakens during financial distress. Common lenders maintain effective supply chain oversight even when borrowers face financial difficulties, likely because supply chain stability directly affects loan recovery prospects. This highlights the unique nature of common lender monitoring in supply chain relationships.

7.3. Addressing Endogeneity

The analyses so far show a strong correlation between common lender monitoring and reduced supply contract covenants. This effect strengthens with greater hold-up risk and communication frictions. While suggestive, these results cannot prove causality. Banks might lend to both firms in a supply chain because these firms already have strong relationships, suggesting reverse causality.

To address endogeneity concerns and strengthen causal inference, I use three identification

strategies. First, I examine only relationships formed after common lender establishment. Second, I conduct a survival analysis to study the common lender effect over time. Third, I use bank mergers as quasi-exogenous events that create common lenders. Together, these approaches provide stronger evidence of causality between the common lender effect and supply contract designs.

7.3.1. First Alliance Relationships

My first approach focuses on supply relationships formed after common lender establishment. Following methods from alliance literature (Bodnaruk et al., 2013; Frattaroli and Herpfer, 2023), I use data from the Securities Data Corporation (SDC) Platinum database, covering U.S. firm alliances from the year 2003 to 2023. I restrict the sample to supply contracts formed within 180 days after alliance announcements, yielding 244 observations where relationships began after common lender formation. This timing restriction reduces the chance that governance patterns reflect pre-existing relationships rather than common lender influence.

Table 11 Panel A demonstrates that the common lender effect reduces the probability of including the *product quality covenant* by 26%, with this effect being statistically significant at the 5% level. The effect on the *sales audit covenant* maintains a negative direction but lacks statistical significance, potentially attributable to the constrained sample size.

Panel B refines the analysis by focusing exclusively on newly originated agreements (non-amendments), isolating the impact of common lenders on distinct supply orders. This expanded sample of 575 observations provides more robust evidence of the monitoring substitution effect. Common lender effect significantly reduces the probability of including the

sales audit covenant by approximately 10.3%, significant at the 10% level. Similarly, the common lender effect reduces the likelihood of including the *product quality covenant* by approximately 18%, with this effect being significant at the 5% level. Consistent with Costello (2013), a limitation of this approach is that I only observe new business projects that meet Regulation S-K disclosure requirements, while earlier spot or non-material contracts remain unobservable.

7.3.2. Survival Analysis and Financial Institution Mergers

I further establish causality through survival analysis and bank mergers, using pair-year level data from Factset. Survival analysis could help to address right-censoring concerns. Bank mergers as quasi-exogenous events (He and Huang, 2017; Freeman, 2023; Giacomini et al., 2024), where a bank serving one supply chain partner merges with a bank serving the counterparty, could create an exogenous common lender scenario.[17]

Table 12 Panel A uses duration analysis to examine relationship persistence (Dasgupta et al., 2021; Freeman, 2023). It treats ongoing relationships at sample end as right-censored and adjusts for left-truncation of pre-existing relationships. The dependent variable, *End Relationship*, indicates the final year of a customer-supplier relationship. Results are consistent across all methods: linear probability model (Column 1), Cox proportional hazards model (Column 2), and Weibull distribution model (Column 3). All show statistically significant negative coefficients, indicating the common lender effect reduces relationship termination

[17]A more direct empirical test would involve examining contract amendments following financial institution mergers. However, given the extended duration of supply contracts (Naidu and Ranjeeni, 2024) and limited temporal variation in contractual terms, such amendments are infrequently observable in the data, precluding a more granular analysis of post-merger contractual adjustments.

probability.

Panel B uses a difference-in-differences approach with bank mergers as quasi-exogenous events (He and Huang, 2017; Freeman, 2023; Giacomini et al., 2024). I focus on mergers that created incidental common lender relationships for reasons unrelated to the firms themselves, mainly the acquisitions of Westcap Investors by Transamerica (2005), Lehman Brothers by Barclays (2008), and Merrill Lynch by Bank of America (2008).

The model in Column (1) includes year, supplier, customer, and Bank M&A event fixed effects. Column (2) uses more rigorous fixed effects (supplier $\times$ Bank M&A event, customer $\times$ Bank M&A event) to control for time-invariant entity-specific characteristics related to specific merger events. The interaction term (Treat $\times$ Post) shows significant negative coefficients in both specifications (-0.077 and -0.116, significant at 5% and 1% levels). This indicates that supply relationships experiencing an exogenous increase in common lender effect due to bank mergers show enhanced stability after mergers.

A caveat to this bank merger identification strategy is the absence of direct examination of contractual amendments following financial institution mergers. Supply contracts typically remain stable with limited changes to core covenants (Naidu and Ranjeeni, 2024). This makes formal amendments too infrequent for robust analysis of post-merger contractual changes. Therefore, I focus on relationship persistence rather than contract modification as the main outcome.

These complementary analyses provide strong evidence for a causal link between the common lender effect and supply chain stability. They show that common lender monitoring not only affects contract design but also enhances relationship durability through effective governance mechanisms.

7.4. Other Tests

I conduct several additional robustness tests to further validate the common lender monitoring effect. In Appendix D2, I verify that the monitoring substitution effect is uniquely associated with common lenders, persisting even when controlling for suppliers' non-common lenders' monitoring or general banking relationships. These results underscore the distinctive contribution of common lenders relative to single-sided banking relationships.

Additionally, I address concerns regarding differential incentives stemming from relative lending exposure to customers versus suppliers. Empirical evidence in Appendix D3 provides modest support that common lenders with greater customer exposure may intensify the implementation of the *product quality covenant*. Nevertheless, the aggregated effect continues to demonstrate a substitution relationship between the common lender effect and supply contract covenant utilization, further reinforcing the robustness of the primary findings.

Finally, an alternative mechanism potentially driving the observed effect is the certification role of common lenders (Diamond, 1991; Ross, 2010; Bushman and Wittenberg-Moerman, 2012), whereby supply covenants are reduced due to reliance on lender reputation. Testing this hypothesis, however, is constrained by limited variation in lender reputation within my sample, as most paired supply partners share at least one common lender from among the five largest U.S. financial institutions. This limitation presents an opportunity for future research to disentangle monitoring and certification effects in supply chain relationships.

8. Conclusion

This study demonstrates that common lender monitoring serves as an effective substitute for explicit covenants in supply chain contracts. Supply chain contracts between firms sharing common lenders contain significantly fewer monitoring covenants, suggesting that lenders' sophisticated oversight infrastructure diminishes the need for rigid contractual safeguards. Cross-sectional analyses reveal this effect is most pronounced when supply chain counterparties face elevated hold-up risks or significant communication frictions, indicating that common lender monitoring generates substantial efficiency gains precisely where traditional governance mechanisms would otherwise impose significant covenants.

The benefits of common lender monitoring extend beyond contractual design to operational dynamics. Suppliers extend longer trade credit terms and invest more in relationship-specific innovations when common lenders monitor both ends of the supply chain. These findings, robust across multiple identification strategies addressing endogeneity concerns, establish that common lender monitoring influences persist beyond immediate lending relationships and permeate broader supply chain interactions.

This research contributes to the literature by illuminating how banks generate positive externalities in product markets through their monitoring activities. By demonstrating that common lenders' oversight significantly influences supply contract design, this study advances our understanding of how common lenders shape supply chain relationships. The findings have significant implications for corporate governance research, financial contracting theory, and supply chain management practice, underscoring the multifaceted role of financial institutions in facilitating efficient economic exchange.

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Tables

Table 1. Distribution of Supply Contracts by Type and Industry

Panel A: Supply Contract Type

	Percent	Frequency
Supply, Buy, Procurement Contract	54.71	633
Manufacturing, Construction Contract	13.83	160
Service Contract	47.28	547
Total Contract[18]	100.00	1,157

Panel B: Distribution of Firms by Industry

	Supplier		Buyer	
SIC Code	**Percent**	**Frequency**	**Percent**	**Frequency**
01 - Agricultural Production - Crops			0.43	5
10 - Metal Mining			0.17	2
12 - Coal Mining			0.69	8
13 - Oil & Gas Extraction	4.49	52	4.67	54
14 - Nonmetallic Minerals, Except Fuels	0.61	7		
16 - Heavy Construction, Except Building	0.17	2		
20 - Food & Kindred Products	1.82	21	1.56	18
21 - Tobacco Products	0.17	2		
23 - Apparel & Similar Materials	0.17	2	0.17	2
24 - Lumber & Wood Products	0.26	3		
26 - Paper & Allied Products	0.26	3	0.43	5
27 - Printing Industries	0.17	2		
28 - Chemicals & Allied Products	30.34	351	34.57	400
29 - Petroleum Refining	4.24	49	3.11	36
30 - Rubber & Plastic Products	1.30	15	0.43	5
32 - Stone & Concrete Products	0.61	7	0.69	8
33 - Primary Metal Industries			0.52	6
34 - Fabricated Metal Products	0.17	2	0.52	6
35 - Computer Equipment	2.77	32	2.68	31
36 - Electronic & Electrical Equipment	7.61	88	6.31	73
37 - Transportation Equipment	1.90	22	1.73	20
38 - Instruments & Related Products	13.66	158	9.33	108
39 - Miscellaneous Manufacturing			0.26	3
40 - Railroad Transportation	0.17	2		
45 - Transportation by Air	1.12	13	1.82	21
46 - Pipelines, Except Natural Gas	2.85	33	2.07	24
47 - Transportation Services			0.43	5
48 - Communications	5.19	60	6.66	77
50 - Wholesale Trade - Durable Goods	0.52	6	0.86	10
51 - Wholesale Trade - Nondurable Goods	2.94	34	2.94	34

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[18]One contract may be classified under multiple types if it includes more than one business activity (e.g., "Supply and Service Agreement" would be classified as the Supply agreement and the Service agreement). There are a total of 183 contracts with multiple types.

52 - Building Materials			0.26	3
53 - General Merchandise Stores	0.35	4	0.17	2
54 - Food Stores			0.43	5
55 - Automotive Dealers	0.35	4	1.56	18
56 - Apparel & Accessory Stores	0.17	2	0.61	7
57 - Home Furniture Stores			0.35	4
59 - Miscellaneous Retail			1.73	20
70 - Hotels, Rooming Houses	0.17	2	0.17	2
72 - Personal Services	0.17	2	0.26	3
73 - Business Services	11.24	130	7.43	86
75 - Automotive Repair & Parking	0.26	3	0.35	4
78 - Motion Pictures	0.95	11	0.17	2
79 - Amusement Services			0.17	2
80 - Health Services	1.04	12	2.94	34
87 - Management Services	1.82	21	0.35	4
Total	100.00	1,157	100.00	1,157

This table presents the sample distribution of supplier and customer industries and contract types. Panel A reports the distribution of contract types. Panel B reports the industry distribution of suppliers and customers based on SIC 2-digit codes.

Table 2. Summary Statistics

Panel A: Contract Level Sample						
	N	μ	σ	25^{th}%ile	50^{th}%ile	75^{th}%ile
Relationship with Lender						
Common Lender	1,157	0.092	0.290	0.000	0.000	0.000
Supplier Banked By Non-Common Lender	1,157	0.273	0.446	0.000	0.000	1.000
Supplier Banked	1,157	0.366	0.482	0.000	0.000	1.000
Supplier Avg C-Cov	1,157	0.101	0.384	0.000	0.000	0.000
Supplier Avg P-Cov	1,157	0.297	0.662	0.000	0.000	0.000
More Loan Exposure to Customer	1,157	0.045	0.207	0.000	0.000	0.000
Governance Covenants						
Sales Audit Covenant	1,157	0.131	0.337	0.000	0.000	0.000
Product Quality Covenant	1,157	0.404	0.491	0.000	0.000	1.000
Product Covenant Count	1,157	0.710	0.964	0.000	0.000	2.000
Forecast Covenant	1,157	0.465	0.499	0.000	0.000	1.000
Trade Credit (Days)	588	33.913	18.706	30.000	30.000	30.000
Contract Characteristics						
Supply Agreement	1,157	0.547	0.498	0.000	1.000	1.000
Service Agreement	1,157	0.473	0.499	0.000	0.000	1.000
Construction Agreement	1,157	0.138	0.345	0.000	0.000	0.000
Hold-up & Credible Communication						
Amended	1,157	0.480	0.500	0.000	0.000	1.000
Distance	1,157	5.513	2.509	4.617	6.558	7.441
Same State	1,157	0.256	0.437	0.000	0.000	1.000
Supplier Operation Cash Flow	1,157	0.004	0.392	0.002	0.080	0.130
Supplier Business Duration	1,133	6.311	2.632	4.350	6.000	7.764
Supplier Accounting Quality	1,080	0.025	0.379	-0.028	0.030	0.109
Supplier Age	1,031	23.570	19.846	8.000	17.000	39.000
Supplier TobinQ	1,040	2.536	2.137	1.340	1.900	2.901
Supplier Exp. Default Freq	885	3.186	11.332	0.000	0.000	0.024
Supplier Controls						
Supplier Ln(AT)	1,157	7.144	2.627	5.102	7.162	9.103
Supplier Leverage	1,157	0.611	0.476	0.368	0.568	0.738
Supplier ROA	1,157	-0.101	0.457	-0.085	0.029	0.078
Supplier Sale	1,157	0.896	0.853	0.392	0.648	1.088
Supplier HHI	1,157	0.183	0.145	0.073	0.149	0.216
Customer Controls						
Customer Ln(AT)	1,157	7.153	2.773	5.038	7.096	9.403
Customer Leverage	1,157	0.609	0.600	0.333	0.548	0.757
Customer ROA	1,157	-0.198	0.750	-0.219	0.017	0.076
Customer Sale	1,157	0.855	1.008	0.268	0.590	0.966
Customer HHI	1,157	0.184	0.142	0.074	0.148	0.216
Panel B: Customer-Supplier Pair-level Sample						
	N	μ	σ	25^{th}%ile	50^{th}%ile	75^{th}%ile
End Relationship	311,984	0.252	0.434	0.000	0.000	1.000
Cross Cite$_{t+1}$	311,984	0.042	0.201	0.000	0.000	0.000
Cross Cite$_{t+2}$	311,984	0.040	0.197	0.000	0.000	0.000
Common Lender	311,984	0.125	0.331	0.000	0.000	0.000

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Distance	311,984	6.319	1.675	5.838	6.772	7.485
Supplier Controls						
Supplier Ln(AT)	311,984	7.232	2.565	5.438	7.099	8.837
Supplier Leverage	311,984	0.558	8.054	0.352	0.541	0.709
Supplier ROA	311,984	-0.042	1.732	-0.035	0.027	0.070
Supplier Sale	311,984	0.146	0.442	0.041	0.089	0.175
Supplier HHI	311,984	0.225	0.207	0.087	0.160	0.273
Customer Controls						
Customer Ln(AT)	311,984	9.073	2.442	7.472	9.284	10.802
Customer Leverage	311,984	0.652	3.234	0.485	0.631	0.796
Customer ROA	311,984	0.007	0.833	0.006	0.044	0.082
Customer Sale	311,984	0.146	0.709	0.041	0.083	0.166
Customer HHI	311,984	0.261	0.224	0.096	0.192	0.331

Panel C: Bank M&A Test Sample

	N	μ	σ	25^{th}%ile	50^{th}%ile	75^{th}%ile
End Relationship	5,704	0.206	0.404	0.000	0.000	0.000
Treat	5,704	0.260	0.439	0.000	0.000	1.000
Post	5,704	0.527	0.499	0.000	1.000	1.000
Distance	5,704	6.434	1.509	5.852	6.815	7.592
Supplier Controls						
Supplier Ln(AT)	5,704	6.137	2.723	4.111	5.342	8.030
Supplier Leverage	5,704	0.567	0.589	0.330	0.516	0.737
Supplier ROA	5,704	-0.062	0.354	-0.088	0.018	0.063
Supplier Sale	5,704	0.184	0.218	0.059	0.130	0.233
Supplier HHI	5,704	0.211	0.195	0.099	0.146	0.243
Customer Controls						
Customer Ln(AT)	5,704	9.527	1.717	8.522	9.769	10.625
Customer Leverage	5,704	0.631	0.242	0.501	0.620	0.747
Customer ROA	5,704	0.045	0.100	0.022	0.050	0.084
Customer Sale	5,704	0.122	0.128	0.044	0.083	0.161
Customer HHI	5,704	0.254	0.226	0.093	0.184	0.303

This table presents summary statistics for the variables used in the analysis. Column (1) reports the number of observations, column (2) reports the mean, column (3) reports the standard deviation, and columns (4)-(6) report the first, second, and third quartiles of the distribution. Panel A reports descriptive statistics for the contract sample. The unit of observation is at the supplier-customer-contract level. Panel B presents statistics for the outcome tests and survival tests sample, and Panel C presents statistics for the Bank M&A shocks sample. For these panels, the observation is at the supplier-customer-year level. Definitions of the variables are in Appendix B.

Table 3. The Common Lender Effect on Supply Contract Covenants

Dep. Var =	Sales Audit Covenant		Product Quality Covenant	
	(1)	(2)	(3)	(4)
Common Lender	-0.039	-0.090**	-0.101*	-0.147**
	(-0.95)	(-2.44)	(-1.65)	(-2.56)
Contract Controls				
Distance	0.004	-0.004	0.006	0.009
	(0.60)	(-0.30)	(0.90)	(0.49)
Amended	-0.017	-0.030	-0.170***	-0.188***
	(-0.71)	(-1.22)	(-5.43)	(-5.26)
Customer Controls				
Customer Ln(AT)	0.014**	0.017**	-0.012*	0.012
	(2.40)	(2.21)	(-1.72)	(1.16)
Customer Leverage	0.025	0.029	-0.067**	-0.007
	(1.45)	(1.42)	(-2.35)	(-0.17)
Customer ROA	-0.002	-0.020	-0.013	0.022
	(-0.09)	(-0.84)	(-0.52)	(0.66)
Cus Sale	0.029	0.026	-0.009	-0.031
	(1.50)	(1.10)	(-0.49)	(-1.09)
Customer HHI	-0.264***	-0.163	-0.512***	-0.284
	(-3.13)	(-1.17)	(-4.03)	(-1.54)
Supplier Controls				
Supplier Ln(AT)	-0.003	0.005	-0.000	0.021*
	(-0.48)	(0.61)	(-0.04)	(1.86)
Supplier Leverage	0.025	0.005	0.024	-0.030
	(0.99)	(0.17)	(0.65)	(-0.73)
Supplier ROA	-0.001	-0.047	-0.016	-0.075
	(-0.05)	(-1.23)	(-0.35)	(-1.44)
Supplier Sale	0.011	0.013	-0.011	0.004
	(0.65)	(0.68)	(-0.61)	(0.12)
Supplier HHI	0.008	0.040	-0.123	-0.089
	(0.11)	(0.32)	(-1.01)	(-0.47)
Contract Types	Yes	Yes	Yes	Yes
Year Effects	Yes	Yes	Yes	Yes
Paired Ind FEs	No	Yes	No	Yes
Paired State FEs	No	Yes	No	Yes
N	1,157	1,157	1,157	1,157
Adj. R^2	0.05	0.24	0.17	0.31

This table reports coefficient estimates from linear regressions examining the relation between the use of the supply covenants and the common lender effect. I examine the following linear probability model:

$$\begin{aligned}\text{pr}(\text{Has Covenant}_{\text{l,t,s,c}} = 1) = \alpha_l + \beta\text{Common Lender}_{l,t\in[0,-5]} \\ + \mathbf{S}_{s,t} + \mathbf{C}_{c,t} + \mathbf{L}_{l,t} + \Omega_l + \Lambda_t + \Theta_i + \Psi_d + \varepsilon_t\end{aligned}$$

Has Covenant$_{l,t,s,c}$ is a dummy variable equal to one if the supply contract l between the supplier s and the customer c in year t requires the supplier s to audit sales-related financial information (*sales audit covenant*) or provide product quality assurance (*product quality covenant*), and zero other-

wise. *Common Lender*$_{l,t\in[0,-5]}$ equals one if both the supplier and the customer have loans from at least one common lender within the five years before the negotiation of their supply contract. Each regression includes time-varying supplier controls ($\mathbf{S}_{s,t}$): logarithm-transformed Supplier Asset (*Supplier Ln*(AT)), Supplier Leverage (*Supplier Leverage*), Supplier ROA (*Supplier ROA*), Supplier asset-scaled sales (*Supplier Sale*), and Supplier HHI (*Supplier HHI*). Customer controls ($\mathbf{C}_{c,t}$) mirror these supplier variables. Supply Contract controls ($\mathbf{L}_{l,t}$) include geographic distance (*Distance*), and an indicator for whether the contract is an amendment or origination contract (*Amended*). All control variables are defined in Appendix B. The regressions absorb contract type effects (Ω_l) and include year, supplier-customer paired industry, and supplier-customer paired state fixed effects (Λ_t, Θ_i, Ψ_d). Standard errors are clustered at supplier-customer pair level, t statistics are reported in parentheses. Statistical significance is indicated as follows: $*$ $p < .1$, $**$ $p < .05$, $***$ $p < .01$.

Table 4. Product Covenant Intensity and the Common Lender Effect

Dep. Var =	Product Covenant Count		
Model:	OLS	ZIP	PPML
	(1)	(2)	(3)
Common Lender	-0.305**	-0.392**	-0.346**
	(-2.94)	(-2.21)	(-2.33)
Controls	Yes	Yes	Yes
Contract Types	Yes	Yes	Yes
Year Effects	Yes	No	Yes
Paired Ind FEs	Yes	No	Yes
Paired State FEs	Yes	No	Yes
N	1,157	1,157	847
Adj. R^2	0.29		
Log likelihood		-1215.12	-917.9
Pseudo R^2			0.18

This table reports estimates from linear (OLS in Column 1), Zero-Inflated Poisson (ZIP in Column 2), and Poisson Pseudo-Maximum Likelihood (PPML in Column 3) models examining how common lender monitoring affects the intensity of product quality covenants in supply contracts. Specifically, I estimate the following model:

$$\begin{aligned}\text{Product Covenant Count}_{\text{l,t,s,c}} = \alpha_l + \beta\text{Common Lender}_{l,t\in[0,-5]} \\ + \mathbf{S}_{s,t} + \mathbf{C}_{c,t} + \mathbf{L}_{l,t} + \Omega_l + \Lambda_t + \Theta_i + \Psi_d + \varepsilon_t\end{aligned}$$

The dependent variable, *Product Covenant Count*, is a count variable ranging from 0 to 3, representing the sum of three types of product quality covenants in supply contracts. In Column 1 (OLS), the coefficient reflects the change of *product quality covenant* intensity due to the existence/non-existence of the common lender. In Columns 2 (ZIP) and 3 (PPML), the coefficients represent transformed estimates from the respective models. Specifically, the coefficient is calculated as $(\exp(\beta) - 1)$, where β is the original coefficient from the ZIP and PPML models. This transformation reflects the proportional percentage change in the number of observing the *Product Quality Covenant* when the Common Lender dummy variable switches from 0 to 1. The Vuong test statistic of 2.42 for the ZIP model indicates that it provides a better fit than the standard Poisson model, given the high proportion of zero observations. Standard errors are clustered at the supplier-customer pair level, t statistics are reported in parentheses in column (1) and z statistics are reported in parentheses in column (2) and (3). Statistical significance is indicated as follows: $* \; p < .1$, $** \; p < .05$, $*** \; p < .01$.

Table 5. Cross-Sectional Variation of the Common Lender Effect in Holdup Risks

Dep. Var =	Sales Audit Covenant			Product Quality Covenant		
Panel A. Geographic Location						
	Same State	Diff State	Diff	Same State	Diff State	Diff
	(1)	(2)	(2)-(1)	(3)	(4)	(4)-(3)
Common Lender	0.027	-0.103**	-0.130*	-0.130	-0.111*	0.019
	(0.39)	(-2.32)	p=0.076	(-1.55)	(-1.87)	p=0.430
Controls	Yes	Yes		Yes	Yes	
Contract Types	Yes	Yes		Yes	Yes	
Paired Ind FEs	Yes	Yes		Yes	Yes	
Year Effects	Yes	Yes		Yes	Yes	
N	296	861		296	861	
Adj. R^2	0.27	0.20		0.19	0.32	
Panel B. The Level of Supplier's Operation Cash Flow						
	High	Low	Diff	High	Low	Diff
	(1)	(2)	(2)-(1)	(3)	(4)	(4)-(3)
Common Lender	-0.074*	-0.138*	-0.064	-0.073	-0.302***	-0.229***
	(-1.74)	(-1.78)	p=0.222	(-0.88)	(-3.52)	p=0.018
Controls	Yes	Yes		Yes	Yes	
Contract Types	Yes	Yes		Yes	Yes	
Paired Ind FEs	Yes	Yes		Yes	Yes	
Year Effects	Yes	Yes		Yes	Yes	
N	610	547		610	547	
Adj. R^2	0.14	0.22		0.24	0.30	
Panel C. Supplier Average Supply Chain Duration						
	Short Duration	Long Duration	Diff	Short Duration	Long Duration	Diff
	(1)	(2)	(2)-(1)	(3)	(4)	(4)-(3)
Common Lender	0.022	-0.093**	-0.115	-0.138	-0.156**	-0.017
	(0.23)	(-2.21)	p=0.102	(-1.45)	(-2.57)	p=0.474
Controls	Yes	Yes		Yes	Yes	
Contract Types	Yes	Yes		Yes	Yes	
Paired Ind FEs	Yes	Yes		Yes	Yes	
Year Effects	Yes	Yes		Yes	Yes	
N	361	772		361	772	
Adj. R^2	0.14	0.23		0.32	0.29	

This table explores variation in common lender monitoring effects across different supply chain characteristics by estimating equation 1 for distinct subsamples. Panel A partitions the sample based on geographic proximity, comparing supply partners with headquarters in the same state versus different states. Panel B splits the sample based on the suppliers' financial constraints, using operating cash flow relative to the sample median. Panel C examines the role of relationship specificity following Aleszczyk and Loumioti (2024) by comparing suppliers with average business durations above versus below 5 years. Coefficient differences between subsamples are tested using 500 bootstrap replications. Standard errors are clustered at the supplier-customer pair level, t statistics are reported in parentheses. Statistical significance is indicated as follows: $* \ p < .1$, $** \ p < .05$, $*** \ p < .01$.

Table 6. Cross-Sectional Variation of the Common Lender Effect in Communication Frictions

Dep. Var =	Sales Audit Covenant			Product Quality Covenant		
Panel A. Supplier Accounting Quality						
	Low	High	Diff	Low	High	Diff
	(1)	(2)	(2)-(1)	(3)	(4)	(4)-(3)
Common Lender	-0.110*	0.009	0.119*	-0.170**	-0.215**	-0.047
	(-1.95)	(0.14)	p=0.074	(-2.32)	(-2.39)	p=0.322
Controls	Yes	Yes		Yes	Yes	
Contract Types	Yes	Yes		Yes	Yes	
Paired Ind FEs	Yes	Yes		Yes	Yes	
Year Effects	Yes	Yes		Yes	Yes	
N	540	540		540	540	
Adj. R^2	0.20	0.17		0.30	0.33	
Panel B. Originated Supply Contract						
	Origination	Amended	Diff	Origination	Amended	Diff
	(1)	(2)	(2)-(1)	(3)	(4)	(4)-(3)
Common Lender	-0.103*	-0.053	0.049	-0.186**	-0.128*	0.052
	(-1.88)	(-1.16)	p=0.244	(-2.46)	(-1.76)	p=0.294
Controls	Yes	Yes		Yes	Yes	
Contract Types	Yes	Yes		Yes	Yes	
Paired Ind FEs	Yes	Yes		Yes	Yes	
Year Effects	Yes	Yes		Yes	Yes	
N	602	555		602	555	
Adj. R^2	0.17	0.18		0.38	0.18	
Panel C. Supplier's Age						
	Low	High	Diff	Low	High	Diff
	(1)	(2)	(2)-(1)	(3)	(4)	(4)-(3)
Common Lender	-0.088**	0.073	-0.161**	-0.142**	-0.057	0.085
	(-2.27)	(1.07)	p=0.028	(-2.26)	(-0.61)	p=0.252
Controls	Yes	Yes		Yes	Yes	
Contract Types	Yes	Yes		Yes	Yes	
Paired Ind FEs	Yes	Yes		Yes	Yes	
Year Effects	Yes	Yes		Yes	Yes	
N	716	315		716	315	
Adj. R^2	0.27	0.23		0.32	0.24	

This table examines how the common lender effect varies with communication frictions by estimating equation 1 for distinct subsamples. Panel A partitions the sample based on supplier accounting quality, using the sample median as the cutoff. Panel B distinguishes between newly originated contracts and contract amendments. Panel C examines supplier age, comparing firms above and below 10 years old. Standard errors are clustered at the supplier-customer pair level, t statistics are reported in parentheses. Coefficient differences between subsamples are tested using 500 bootstrap replications. Statistical significance is indicated as follows: $* \ p < .1$, $** \ p < .05$, $*** \ p < .01$.

Table 7. Impacts of Loan Covenants on Supply Contract Covenants

Dep. Var =	Sales Audit Covenant		Product Quality Covenant	
	(1)	(2)	(3)	(4)
Supplier Avg C-Cov × Common Lender	-0.100*		-0.305***	
	(-1.78)		(-3.21)	
Supplier Avg C-Cov	0.051		0.122***	
	(1.41)		(2.65)	
Supplier Avg P-Cov × Common Lender		-0.023		-0.049
		(-0.50)		(-0.94)
Supplier Avg P-Cov		0.022		0.029
		(0.95)		(1.05)
Common Lender	-0.044	-0.053	-0.113**	-0.141**
	(-1.05)	(-1.01)	(-2.20)	(-2.30)
Controls	Yes	Yes	Yes	Yes
Contract Types	Yes	Yes	Yes	Yes
Paired Ind FEs	Yes	Yes	Yes	Yes
Year Effects	Yes	Yes	Yes	Yes
N	1,157	1,157	1,157	1,157
Adj. R^2	0.16	0.16	0.30	0.29

This table reports coefficient estimates from linear regressions examining the impacts of loan covenants on the supply covenants through common lender monitoring. I examine the following linear probability model:

$$\begin{aligned}\text{pr}(\text{Has Covenant}_{\text{l,t,s,c}} = 1) = \alpha_l &+ \beta_1 \text{Supplier Loan Covenants Intensity}_{l,t\in[0,-5]} \times \text{Common Lender}_{l,t\in[0,-5]} \\ &+ \beta_2 \text{Supplier Loan Covenants Intensity}_{l,t\in[0,-5]} + \beta_3 \text{Common Lender}_{l,t\in[0,-5]} \\ &+ \mathbf{S}_{s,t} + \mathbf{C}_{c,t} + \mathbf{L}_{l,t} + \Omega_l + \Lambda_t + \Theta_i + \varepsilon_t\end{aligned}$$

The dependent variable, *Supplier Loan Covenants Intensity*, is either the averaged number of *Supplier Avg C-Cov* or *Supplier Avg P-Cov* across all loans received by the supplier within the five years before the supply contract was made. *Supplier Avg C-Cov* is the average count number of the loan capital covenants. *Supplier Avg P-Cov* is the average count number of the loan performance covenants. Loan capital covenants and performance covenants are defined following Christensen and Nikolaev (2012). The control variables are consistent with those in Table 3, and their definitions are provided in Appendix B. The regressions absorb contract type effects (Ω_l) and include year and supplier-customer paired industry fixed effects (Λ_t, Θ_i). Standard errors are clustered at the supplier-customer pair level, t statistics are reported in parentheses. Statistical significance is indicated as follows: $*$ $p < .1$, $**$ $p < .05$, $***$ $p < .01$.

Table 8. Trade Credit Terms and the Common Lender Effect

Dep. Var =	Trade Credit		
Supsample:	Supply	Origination	Whole Sample
	(1)	(2)	(3)
Common Lender	18.323***	12.726***	5.352
	(4.57)	(3.16)	(1.43)
Controls	Yes	Yes	Yes
Contract Types	No	Yes	Yes
Paired Firm FEs	Yes	Yes	Yes
Year Effects	Yes	Yes	Yes
N	312	344	588
Adj. R^2	0.83	0.55	0.58

This table reports coefficient estimates from linear regressions examining the relation between the days of trade credit in a supply contract and the common lender effect. Column (1) is on the supply agreements subsample, column (2) is on the origination agreements subsample, and column (3) is on the whole sample agreements. I examine the following linear probability model:

$$\text{Trade Credit}_{\text{l,t,s,c}} = \alpha_l + \beta \text{Common Lender}_{l,t\in[0,-5]} + \mathbf{S}_{s,t} + \mathbf{C}_{c,t} + \mathbf{L}_{l,t} + \Omega_l + \Lambda_t + \Phi_f + \varepsilon_{i,t}$$

$Trade\ Credit_{l,t,s,c}$ is the trade credit days in the contract l between supplier s and customer c at year t. The control variables are consistent with those in Table 3, and their definitions are provided in Appendix B . I also include year, and supplier-customer paired firm fixed effects (Λ_t, Φ_f). Standard errors are clustered at the supplier-customer pair level, t statistics are reported in parentheses. Statistical significance is indicated as follows: $*\ p < .1$, $**\ p < .05$, $***\ p < .01$.

Table 9. the Cross-Citation and the Common Lender Effect

Dep. Var =	Cross Cite$_{t+1}$ (1)	Cross Cite$_{t+2}$ (2)
Common Lender	0.163***	0.160**
	(3.49)	(3.27)
Controls	Yes	Yes
Year Effects	Yes	Yes
Supplier FEs	Yes	Yes
N	311,984	311,984
Log-likelihood	-31222.50	-29587.20
Pseudo R^2	0.43	0.44

This table reports the effect of common lenders on relationship-specific investments along the supply chain following Dasgupta et al. (2021) and uses the Poisson Pseudo-Maximum Likelihood model as below:

$$\text{pr}(\text{Relationship Specefict Innovation}_{\text{t+1 or t+2}} = 1) = \alpha_l + \beta \text{Common Lender}_{l,t\in[0,-5]} + \mathbf{S}_{s,t} + \mathbf{C}_{c,t} + \Lambda_t + \Theta_i + \mu_s + \varepsilon_t$$

The observations are on the supplier-customer-year level. *Relationship Specefict Innovation* is *Cross Cite*$_{t+1}$ or *Cross Cite*$_{t+2}$. *Cross Cite*$_{t+1}$ equals one if supplier s cites customer c's patents in year $t+1$, and zero otherwise. *Cross Cite*$_{t+2}$ equals one if supplier s cites customer c's patents in year $t+2$, and zero otherwise. The coefficient is calculated as $(\exp(\beta) - 1)$, where β is the original coefficient. This transformation reflects the proportional percentage change in the probability of observing Cross Patent Citation in the following $t+1$ or $t+2$ when the Common Lender dummy variable switches from 0 to 1. The control variables are consistent with those in Table 3, and their definitions are provided in Appendix B. In order to exploit the rich cross-sectional heterogeneity in the pairwise innovation proxies between pairs with and not with the common lender for the same supplier firm, I control for supplier fixed effects (μ_s). Standard errors are clustered at the supplier level, z statistics are reported in parentheses. Statistical significance is indicated as follows: $* \ p < .1$, $** \ p < .05$, $*** \ p < .01$.

Table 10. Agency Conflicts and the Common Lender Effect

Dep. Var =	Sales Audit Covenant			Product Quality Covenant		
	(1)	(2)	(3)	(4)	(5)	(6)
Common Lender× Low Supplier TobinQ	-0.007			0.010		
	(-0.09)			(0.12)		
Common Lender× High Supplier Leverage		0.058			-0.195	
		(0.94)			(-1.05)	
Common Lender× High Supplier EDF			0.036			-0.013
			(0.37)			(-0.12)
Low Supplier TobinQ	0.022			-0.036		
	(0.63)			(-0.79)		
High Supplier Leverage		0.018			0.018	
		(0.55)			(0.39)	
High Supplier EDF			-0.015			0.018
			(-0.45)			(0.40)
Common Lender	-0.055	-0.114**	-0.057	-0.167***	0.014	-0.119
	(-1.32)	(-2.16)	(-0.66)	(-2.86)	(0.07)	(-1.16)
Controls	Yes	Yes	Yes	Yes		
Contract Types	Yes	Yes	Yes	Yes	Yes	Yes
Paired Ind FEs	Yes	Yes	Yes	Yes	Yes	Yes
Year Effects	Yes	Yes	Yes	Yes	Yes	Yes
N	1,031	1,157	885	1,031	1,157	885
Adj. R^2	0.19	0.16	0.20	0.29	0.29	0.32

This table presents regression estimates for the relationship between supply covenants and the common lender for firms with different financial risks forthe below model:

$$\begin{aligned}\text{pr}(\text{Has Covenant}_{\text{l,t,s,c}} = 1) = \alpha_l &+ \beta_1 \text{Common Lender}_{l,t\in[0,-5]} + \beta_2 \text{Financial Risk}_t \\ &+ \beta_3 \text{Common Lender}_{l,t\in[0,-5]} \times \text{Financial Risk}_t \\ &+ \mathbf{S}_{s,t} + \mathbf{C}_{c,t} + \mathbf{L}_{l,t} + \Omega_l + \Lambda_t + \Theta_i + \varepsilon_t\end{aligned}$$

This table presents the results using three measures of supplier *Financial Risk*$_t$: low Tobin's Q (below sample first quartile of *Supplier TobinQ*), high leverage (above sample third quartile of *Supplier Leverage*), and high expected default frequency (above sample third quartile of *Supplier EDF*). The model includes the same controls as in Table 3. All of the measures of financial risks (*Low Supplier TobinQ*, *High Supplier Leverage*, *High Supplier EDF*) have interacted with Common Lender. Standard errors are clustered at the supplier-customer pair level, t statistics are reported in parentheses. Statistical significance is indicated as follows: $*$ $p < .1$, $**$ $p < .05$, $***$ $p < .01$.

Table 11. The Common Lender Effect on Initial Supply Contract

Dep. Var =	Sales Audit Covenant	Product Quality Covenant
Panel A: Initial Supply Contract Sample		
	(1)	(2)
Common Lender	-0.052	-0.258**
	(-0.60)	(-1.99)
Controls	Yes	Yes
Contract Types	Yes	Yes
Paired Ind FEs	Yes	Yes
Year Effects	Yes	Yes
N	244	244
Adj. R^2	0.26	0.40
Panel B: Contract Origination Sample		
	(1)	(2)
Common Lender	-0.103*	-0.186**
	(-1.93)	(-2.52)
Controls	Yes	Yes
Contract Types	Yes	Yes
Paired Ind FEs	Yes	Yes
Year Effects	Yes	Yes
N	575	575
Adj. R^2	0.19	0.38

This table replicates the tests from Table 3 using subsamples to test the alternative hypothesis that the substitution effects from common lenders arise because banks may first analyze the customer-supplier relationship, particularly focusing on the supplier's sales contract with the customer. In Panel A, I match the contract dates within 180 days of the first strategic alliance announcement between the supplier and customer, sourced from SDC Platinum (Bodnaruk et al., 2013; Frattaroli and Herpfer, 2023). The subsample in Panel A restricts the sample to supplier-customer pairs formed after they have a common lender. Panel B restricts the sample to origination contracts (excluding amendments), proxy new business projects between the supplier and customer, following the approach in Costello (2013).[19] The Controls are the supplier and the customer characteristics controls which are consistent with those in Table 3. Detailed variable definitions can be found in Appendix B. Standard errors are clustered at the supplier-customer pair level, and t statistics are reported in parentheses. Statistical significance is indicated as follows: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

[19]Similar to Costello (2013), a caveat to this sample is that I can only observe relationship date that meets the disclosure requirements of Regulation S-K. Previous relationships involving spot or non-material contracts are not captured.

Table 12. The Common Lender Effect on Supply Chain Relationship Duration

Dep. Var =	End Relationship		
Panel A: Survival Test			
Models:	OLS	COX	Weibull
	(1)	(2)	(3)
Common Lender	-0.005**	-0.055***	-0.105***
	(-2.33)	(-5.65)	(-8.22)
Controls	Yes	Yes	Yes
Year Effects	Yes	No	No
N	311,984	311,984	311,984
Adj. R^2	0.02		
Panel B: Bank M&A			
Models:	(1)	(2)	
Treat × Post	-0.077**	-0.116***	
	(-2.72)	(-3.91)	
Treat	-0.277**		
	(-2.81)		
Post	0.100*	0.096*	
	(1.81)	(1.68)	
Controls	Yes	Yes	
Year, Supplier, Customer, Event FEs	Yes	No	
Year, Supplier × Event, Customer × Event FEs	No	Yes	
N	5,704	5,704	
Adj. R^2	0.20	0.21	

The table presents the results from regressions of supplier-customer relationship duration on the common lender effect following Freeman (2023). *End Relationship* is an indicator equal to one if an observation is the last year a customer-supplier pair appears in the sample and zero if the relationship continues. In Panel A, we conduct pair-level regressions of *End Relationship* on the common lender with the unit of observation being relationship-year. Column (1) employs linear probability models, the OLS regression predicts whether the relationship terminates in the subsequent year. In Columns (2) and (3), the survival analysis techniques are used to estimate the hazard function describing relationship duration. Relationships that last until the end of the sample period are treated as right-censored. Columns (2) and (3) report results from the Cox proportional hazards model and the Weibull distribution model. The coefficients in Column (2) and (3) are calculated as $(\exp(\beta) - 1)$, where β is the original coefficient from the Cox and Weibull models. In Panel B, I conduct difference-in-differences tests surrounding common lender mergers using the merger and acquisition events listed in Appendix A of He and Huang (2017) to construct the sample. Among these events, the acquisitions of Westcap Investors by Transamerica in 2005, Lehman Brothers by Barclays in 2008, and Merrill Lynch by Bank of America Corp in 2008 are the primary events of my analysis. The sample includes customer-supplier pairs whose relationships began prior to the announcement of the common lender merger. *Treat* is an indicator that equals one when one acquirer bank lends to one partner firm while the target bank lends to the other partner firm. *Post* equals one in the three years following the merger and zero in the three years prior to the merger. The Controls are the supplier and the customer characteristics controls which are consistent with those in Table 3. Year fixed effects are included in every specification. Column (1) incorporates fixed effects for suppliers, customers, and each Bank M&A event, while Column (2) includes firm × Bank M&A event fixed effects for both customers and suppliers. Detailed variable definitions can be found in Appendix B. Standard errors are clustered at the supplier-customer pair level, and t statistics are reported in parentheses. Statistical significance is indicated as follows: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

A. Covenants Examples

A.1. Sales Audit Covenant

Commercial Supply (Manufacturing Services) Agreement between CMC ICOS Biologics, Inc. ("Supplier") and Portola Pharmaceuticals, Inc. ("Customer")

- Section 8.1 CUSTOMER AUDITS, REGULATORY INSPECTIONS & MATTERS

  Customer shall be entitled, [*], to conduct one quality audit and one financial audit (a "Customer Audit") of CMC's facility [*] in respect of Product manufacture, CMC's financial statements and records relevant to the financial statements..... **Such audit can include review of supporting information used to invoice** Customer for costs not covered by the Batch Price.

A.2. Product Quality Covenant

Commercial Supply (Manufacturing Services) Agreement between West CMC ICOS Biologics, Inc. ("Supplier") and Portola Pharmaceuticals, Inc. ("Customer")

- Section 2. MANUFACTURING SUPPLY AND APPLICABLE STANDARDS

  CMC shall perform the Services in compliance with all applicable laws and regulations, including the applicable Regulatory Obligations and FDA guidelines. Without limiting the foregoing, where the relevant stage of the Services defines the performance of that stage to be in accordance with **cGMP standards**...

OEM Supply Agreement between MYERS Power Products, Inc. ("Supplier") and GREEN LIGHT Acquisition Company ("Customer")

- Section 6. Engineering, ISO.

  ... All Modules shall be manufactured at a facility that is ISO-certified, and Supplier shall provide Customer with written evidence of such **ISO certification**, at Customer's request.

Supply Agreement between West Pharmaceutical Services, Inc ("Supplier") and scPharmaceuticals Inc.("Customer")

- Section 2. Commitment to Sell and Purchase Product.

  g. Quality Agreement... The parties entered into that certain Quality Agreement dated effective as of December 19, 2019 setting out the responsibilities of the parties with respect to **quality assurance** of the Product manufactured and supplied by West pursuant to this Agreement (the "Quality Agreement").

B. Definitions of Variables

Variable	Definition	Sources
Relationships with the Lender		
Common Lender	Equals one if both the supplier and its customer have loans from at least one common lead lender within the five years before the negotiation of their supply contract.	EDGAR, LPC
Supplier Banked By Non-Common Lender	Equals one if the supplier is banked by lenders other than common lenders within the five years before the negotiation of their supply contract.	EDGAR, LPC
Supplier Banked	Equals one if the supplier is banked by common or non-common lenders within the five years before the negotiation of their supply contract. *Supplier Banked= Common Lender + Supplier Non-Common Lender Banked*	EDGAR, LPC
Supplier Avg C-Cov	Capital covenants averaged across all loans received by the supplier over the past five years before the negotiation of their supply contract. Capital covenants are defined as the count sum of the max leverage ratio, the tangible net worth ratio, the max debt to tangible net worth ratio, the net worth, the min current ratio, the max loan-to-value ratio, and the max debt to equity ratio. Suppliers who have no loans within the past five years are recorded as having zero capital covenants.	LPC
Supplier Avg P-Cov	Performance covenants averaged across all loans received by the supplier over the past five years. Performance covenants are defined as the count sum of the max debt to cash flow, the min interest coverage ratio, the fixed charge coverage ratio, the debt service coverage ratio, the senior debt to cash flow, and the cash interest coverage ratio. Suppliers who have no loans within the past five years are recorded as having zero performance covenants.	LPC
More Loan Exposure to Customer	Equals one if the common lender's exposure to the customer within the five years before the negotiation of their supply contract was greater than its exposure to the supplier, and zero if less than the exposure to the supplier or the customer had no common lender exposure.	LPC
Supply Contract Covenants		
Sales Audit Covenant	Equals one if the supply contract has covenants that require the supplier to audit the financial information related to sales invoices, and zero otherwise.	EDGAR
Product Quality Covenant	Equals one if the supply contract has covenants that require any ISO certification, FDA Current Good Manufacturing Practices (CGMP), or quality assurance.	EDGAR

Continued on next page

Forecast Covenant	Equals one if the supply contract has covenants that require the customer to deliver sales forecasts to the supplier following Bushee et al. (2020).	EDGAR
Product Covenant Count	The count sum of *Product Quality Covenant*.	EDGAR
Trade Credit (Days)	The number of days a supplier allows a customer to purchase goods or services and defer payment to a later date.	EDGAR
Supply Contract Characteristics		
Supply Agreement	Equals one if the contract is intended for product supply.	EDGAR
Service Agreement	Equals one if the contract is intended for service provision, including marketing, licenses, etc.	EDGAR
Construction Agreement	Equals one if the contract is intended for a construction project.	EDGAR
Hold Up Risk & Credible Communication		
Amended	Equals one if the supply contract is an amended contract, otherwise 0.	EDGAR
Same State	Equals one if the headquarters of the supplier and the customer are in the same state, zero otherwise.	COMPUSTAT
Supplier Operation Cash Flow	Supplier's operation cash flow scaled by the total assets.	COMPUSTAT
Supplier Business Duration	The average length of the supplier's business relationship with each customer.[20]	COMPUSTAT, Factset
Supplier Accounting Quality	The average discretionary accounting accruals of supplier or customer following Jones (1991) model and Kothari et al. (2005) model.	COMPUSTAT
Supplier Age	The age of the supplier at the time the supply contract was made, calculated as the number of years between the contract date and the supplier's first recorded trading date in CRSP.	CRSP
Supplier TobinQ	The ratio between the market value of the firm over the replacement cost of its assets.	COMPUSTAT
Supplier EDF	Supplier's expected default frequency from KMV model.	COMPUSTAT
Supplier Controls		
Supplier Ln(AT)	The logarithm value of supplier's total assets.	COMPUSTAT
Supplier Leverage	Supplier's total liabilities scaled by total common equities.	COMPUSTAT
Supplier ROA	Supplier's net income scaled by total assets.	COMPUSTAT
Supplier HHI	The three-digit supplier's SIC industry level sum of the squared firm-level market share for each fiscal year computed as $\sum_{i=1}^{n} S^2$. S is the sales of firm i. n is the number of firms in each three-digit SIC code.	COMPUSTAT
Supplier Sales	Supplier's gross sales scaled by total assets.	COMPUSTAT

[20]Factset started recording in 2003.

Continued on next page

Customer Controls		
Customer Ln(AT)	The logarithm value of the customer's total assets.	COMPUSTAT
Customer Leverage	Customer's total liabilities scaled by total common equities.	COMPUSTAT
Customer ROA	Customer's net income scaled by total assets.	COMPUSTAT
Customer HHI	The three-digit customer's SIC industry level sum of the squared firm-level market share for each fiscal year computed as $\sum_{i=1}^{n} S^2$. S is the sales of firm i. n is the number of firms in each three-digit SIC code.	COMPUSTAT
Customer Sales	Customer's gross sales scaled by total assets.	COMPUSTAT
Other Tests		
Cross Cite$_{t+1}$	Equals one if the supplier cites the customer's patents in year $t+1$, and zero otherwise	Patent View
Cross Cite$_{t+2}$	Equals one if the supplier cites the customer's patents in year $t+2$, and zero otherwise	Patent View
End Relationship	Equals one if an observation is the last year a customer-supplier pair appears in the sample, zero if the relationship continues.	Factset
Treat	Equals one when one acquirer bank lends to one supply partner firm while the target bank lends to the other supply partner firm.	He and Huang (2017), Factset
Post	Equals to one in the three years following the bank MA event, and zero in the three years prior to the MA event.	He and Huang (2017), Factset

C. Data Collection

C.1. Identification of Supply Contracts

My data collection methodology employs a structured three-phase approach to systematically identify material supply contracts.

- I implement Python-based algorithms to comprehensively parse and extract metadata from EDGAR filings spanning 2003 to 2023 via sec-api.io, following the methodological framework established by Schroeder and Posch (2023). The search parameters focus specifically on contract exhibits within Forms 10-K, 8-K, and S (Initial Public Offering) filings, retaining only documents whose titles or initial 1,000 characters contain supply-relation indicators such as "Supply," "Supplie*," "Manufactur*," "Procurement," "Service," "Construct*," "Buyer," and "Seller."
- To enhance data integrity, I employ rigorous screening procedures that systematically exclude contracts containing terminology indicative of non-supply agreements. The exclusion criteria encompass documents containing "Memorandum," "Letter," "Warranty," "Terminate," "Dismiss," "Settle," "Discontinue," "Suspend," "Cessation," "Stock," "Equity," "Security," "Loan," "Credit," "Employ," "Mortgage," "Escrow," "Incentive," or "Asset transfer."
- I validate supply chain relationships through cross-referential verification, comparing supplier and customer identifiers with independently sourced relationship records from FactSet and Compustat Segment databases to confirm the existence and nature of each supply chain partnership.

C.2. Identification of Supply Covenants

- *Sale audit covenant*: I develop a dual-criterion classification approach that captures financial monitoring mechanisms by isolating contractual provisions containing both monitoring-related terminology ("audit*," "inspect*," or "verif*") and financial-relevant terms ("accounting," "records," "payment," "finan*," "price," "cost," "sale," or "revenu*"). This methodological precision ensures the identification of substantive sale auditing provisions while minimizing false positives.
- *Product quality covenant*: I identify three distinct categories of quality assurance requirements: (1) standardized quality certifications, including ISO standards or Current Good Manufacturing Practices (CGMP); (2) formalized audit protocols specifically designed for quality control verification; and (3) comprehensive product warranty provisions.

C.3. Identification of Trade Credit

1. I first identify sections containing keywords related to trade credit, specifically "invoice" and "payment." Store these sections in *[Content to Be Read]*.

2. I then query GPT with the following prompt with temperature equals 0.

   Prompt: *Extract the required information from the text:[Content to Be Read]. Find the maximum number of days within which the customer (buyer) is required to pay the invoice amount after receiving the invoice, and only return in number. If cannot identify the information, only return NA.*

D. Appendix Tables

Table D1. The Supply Forecast Covenants and the Common Lender Effect

Dep. Var =	Forecast Covenant (1)
Common Lender	-0.058
	(-0.93)
Controls	Yes
Contract Types	Yes
Paired Ind FEs	Yes
Paired State FEs	Yes
Year Effects	Yes
N	1,157
Adj. R^2	0.32

This table replicates Table 3 to test the common lender effect on information forecast covenants. Following Bushee et al. (2020), *Forecast Covenants* equals one if the supply contract includes covenants that require the customer to deliver sales forecasts to the supplier. The control variables are consistent with those in Table 3, and their definitions are provided in Appendix B. Standard errors are clustered at the supplier-customer pair level, t statistics are reported in parentheses. Statistical significance is indicated as follows: $*$ $p < .1$, $**$ $p < .05$, $***$ $p < .01$.

Table D2. Supply Contract Covenants and Non-Common Lender Monitoring

Dep. Var =	Sales Audit Covenant		Product Quality Covenant	
	(1)	(2)	(3)	(4)
Common Lender	-0.084**		-0.130**	
	(-2.09)		(-2.09)	
Supplier Banked By Non-Common Lender	0.015		0.042	
	(0.44)		(0.80)	
Supplier Banked		-0.008		0.003
		(-0.26)		(0.06)
Controls	Yes	Yes	Yes	Yes
Contract Types	Yes	Yes	Yes	Yes
Paired Ind FEs	Yes	Yes	Yes	Yes
Paired State FEs	Yes	Yes	Yes	Yes
Year Effects	Yes	Yes	Yes	Yes
N	1,157	1,157	1,157	1,157
Adj. R^2	0.24	0.24	0.31	0.31

This table presents linear regression coefficient estimates examining the relationship between the use of supply contract covenants and the presence of a banking monitor on the supplier side. The model highlights the necessity of a common lender for benefits to materialize:

$$\text{pr}(\text{Has Covenants}_{\text{l,t,s,c}} = 1) = \alpha_l + \boldsymbol{\beta}\text{Bank Monitor}_{l,t\in[0,-5]} + \mathbf{S}_{s,t} + \mathbf{C}_{c,t} + \mathbf{L}_{l,t} + \Omega_l + \Lambda_t + \Theta_i + \Psi_d + \varepsilon_t$$

Here, $\text{Bank Monitor}_{\boldsymbol{l,t\in[0,-5]}}$ is a vector that includes *Sup Banked By Non-Common Lender* and *Common Lender* together, or *Supplier Banked* alone, in order to demonstrate whether the "Cross-Monitoring" effects come from the common lender. Specifically, *Supplier Banked By Non-Common Lender* equals one if the supplier is banked by lenders other than common lenders of the customer within five years before the negotiation of their supply contract. *Supplier Banked* equals one if the supplier is banked by either common or non-common lenders, i.e., *Supplier Banked* = *Supplier Banked By Non-Common Lender* + *Common Lender*. In Columns (1) and (3), $\text{Bank Monitor}_{\boldsymbol{l,t\in[0,-5]}}$ represents *Common Lender* and *Supplier Banked By Non-Common Lender*, while in Columns (2) and (4), it represents *Supplier Banked* alone. The control variables are consistent with those in Table 3, and their definitions are provided in Appendix B. Standard errors are clustered at the supplier-customer pair level, t statistics are reported in parentheses. Statistical significance is indicated as follows: $*$ $p < .1$, $**$ $p < .05$, $***$ $p < .01$.

Table D3. Impact of Common Lenders Loan Exposure on Supply Contract Covenants

Dep. Var =	Sales Audit Covenant (1)	Product Quality Covenant (2)
More Exposure to Cus × Common Lender	0.054	0.157*
	(0.90)	(1.65)
Common Lender	-0.109**	-0.222***
	(-2.17)	(-2.85)
Controls	Yes	Yes
Contract Types	Yes	Yes
Year Effects	Yes	Yes
Paired Ind FEs	Yes	Yes
Cus, Sup State FEs	Yes	Yes
N	1,157	1,157
Adj. R^2	0.21	0.30

This table presents linear regression coefficient estimates analyzing the relationship between the use of supply contract covenants and the loan exposure size from the common lender. The model below tests whether the common lender's incentives differ based on their relative lending to the customer and the supplier:

$$\begin{aligned}\text{pr}(\text{Has Covenant}_{\text{l,t,s,c}} = 1) = \alpha_l + \beta_1 &\text{More Exposure on Customer}_{l,t\in[0,-5]} \times \text{Common Lender}_{l,t\in[0,-5]} \\ &+ \beta_2 \text{Common Lender}_{l,t\in[0,-5]} + \mathbf{S}_{s,t} + \mathbf{C}_{c,t} + \mathbf{L}_{l,t} + \Omega_l + \Lambda_t + \Theta_i + \Psi_d + \varepsilon_t\end{aligned}$$

More Exposure to Customer equals one if the common lender's exposure to the customer over the past five years is greater than their exposure to the supplier, and zero if less than their exposure to the supplier or has no loan exposure. The control variables are consistent with those in Table 3, and their definitions are provided in Appendix B. Standard errors are clustered at the supplier-customer pair level, and t statistics are reported in parentheses. Statistical significance is indicated as follows: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.