

# Global Air Connectivity and Syndicated Loan Structuring

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## Abstract

We examine how long-distance air links affect the contract design of international syndicated loans. We find that air links facilitate efficient monitoring of lead lenders by using more performance-based covenants to substitute for high loan spreads. The effect is stronger if borrowers have worse accounting quality, have higher information asymmetry, or are financially constrained. We employ a regression discontinuity approach based on the discontinuity of direct flights around 6,000 miles to identify causality. Placebo tests using cargo flights and flights to participant lenders show no significance, suggesting that the effect of air links is through easy transportation of personnel from lead lenders rather than products or personnel from participant lenders with minimal monitoring incentive.

**Keywords:** Syndicated loan, loan spread, financial covenant, lender monitoring, long-distance direct flight

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# 1. Introduction

The market of syndicated loans provides a critical source of corporate debt financing. In an increasingly globalized economy, international syndicated loans are of particular importance for linking capital from rich countries to underutilized resources in underdeveloped regions; the role of physical connectivity between borrowers and lenders in the globalized syndicated loan market thus becomes more important. Geographic distance imposes significant costs on information acquisition and monitoring, making banks more likely to lend to closer borrowers with more transparent information ([Petersen and Rajan, 1995](#); [Degryse and Ongena, 2005](#); [Hauswald and Marquez, 2006](#); [Sufi, 2007](#)). Existing research shows that longer distance between borrowers and lenders usually results in higher interest spread (e.g., [Agarwal and Hauswald, 2010](#); [Champagne and Coggins, 2012](#)).

However, interest spread is not the only factor under consideration when lending syndicates sign loan contracts with remote borrowers. Recent studies have provided some evidence beyond loan spread. For example, according to [Hollander and Verriest \(2016\)](#), loan covenants tend to become more restrictive when firms borrow from remote lenders. The model of [Vives and Ye \(2025\)](#) suggests that information technology improvement may weaken the influence of lender-borrower distance on monitoring costs. [Heitz, Martin, and Ufier \(2023\)](#) provide direct evidence that, when banks and borrowers are far away, banks may partly overcome information opaqueness through delegated, third party monitoring.

What remains underexplored in the literature is how borrower-lender connectivity affects multiple loan contract terms, such as loan spread and loan covenants, that are simultaneously determined. One challenge for answering this question is potential endogeneity: Some unobservable factors may jointly determine borrower-lender connectivity and loan contract terms. Therefore, this paper aims at answering the above research question and strengthening causal identification based on a discontinuity in global airline connectivity ([Campante and Yanagizawa-Drott, 2018](#)). In particular, our paper examines the following research questions: How do long-distance direct flights between borrowers and remote oversea lead lenders affect interest spread and shift financial covenants for syndicated loan contracts? Is there any substitution effect between different loan contract terms? Are the influences on loan contract terms aligned with monitoring incentives of lead lenders in the syndicates?

Our discussion focuses on international syndicated loans between borrowers and remote lenders for

several reasons. First, the fast development of technology and transportation has substantially reduced travel costs and reshaped the definition of distance. Long-distance connectivity has significantly facilitated economic activities between two remote cities ([Campante and Yanagizawa-Drott, 2018](#); [Bernard, Moxnes, and Saito, 2019](#); [Feyrer, 2019](#)). Second, the trend of globalization has made it common that business and financial links go beyond the border. Third, unlike domestic small business loans that show insignificant sensitivity of loan pricing to distance ([Levine et al., 2020](#)), syndicated loans tend to be large loans for large borrowers and are led by financial institutions over the globe. In this case, travel costs and information acquisition costs tend to be very sensitive to a change in long-distance direct flights between borrowers and lenders, which then result in significant variations in monitoring incentives of lead lenders.

We obtain data on syndicated loans from Reuters Loan Pricing Corporation's (LPC) DealScan database. Based on the headquarters of borrowers and lead lenders in DealScan, we obtain information on the number of direct flights between these cities (or their nearest airports within 50 miles) and major international airports from the International Civil Aviation Organization (ICAO). After merging with borrowers' financial information from the Worldscope database, we exclude the following loan facilities: 1) flight distance between borrowers and lead lenders is below 1,000 miles; 2) loan amount is less than 100 million USD; 3) US domestic loans for which both borrowers and lenders are in the US.

We measure connectivity between borrowers and lead lenders using the dummy and the number of direct flights between their headquarters. For loan contract terms, our main focus is on loan spread and loan covenants. We use all-in-drawn loan spread defined as the loan interest rate above the London Interbank Offered Rate (LIBOR) in basis points, including fees paid to the lender group. Loan spread measures borrowing cost (e.g., [Hollander and Verriest, 2016](#); [Houston et al., 2014](#); [Lin et al., 2013](#)). We count the number of financial covenants and follow [Christensen and Nikolaev \(2012\)](#) to classify them into performance-based covenants (P-covenants) and capital-based covenants (C-covenants). We follow [Demerjian and Owens \(2016\)](#) to define covenant tightness.

We find that the presence of weekly round-trip direct flights reduces loan spreads by 9.6% and that a one standard deviation increase in direct flight frequency decreases spreads by 3.17%. At the same time, direct flights significantly increase the number and tightness of financial covenants, mainly for performance-based covenants rather than capital-based covenants. In addition, placebo tests using cargo

flights without personnel transport and flights to participant lenders that perform minimal monitoring show no significant impacts on loan spreads and covenants. These results imply that, without direct flights between borrowers and lead lenders, borrowing costs tend to be higher because lead lenders face relatively high information acquisition costs. As the airline connectivity between borrowers and lead lenders becomes easier, lead lenders have better monitoring channel by efficient travels to enforce frequent performance checks; in this case, performance-based covenants serve as a substitution for high interest spread. Capital-based covenants do not show similar substitution function as performance-based covenants because the objective of capital-based covenants is to encourage shareholder monitoring ex ante (Christensen and Nikolaev (2012)).

We validate causality using a regression discontinuity design (RDD) using a setting by Campante and Yanagizawa-Drott (2018): Due to the regulation by the United States and European Union, two cities exhibit a disproportionate likelihood of being connected by direct flights when the distance between their airports is below 6,000 miles compared to the distance above 6,000 miles. We find that loan spreads increase by 58 basis points and performance-based covenants drop sharply when distance exceeds 6,000 miles, consistent with reduced flight availability.

Cross-sectional tests further confirm the monitoring channel. We find that the effects of direct flights on loan spread and performance-based covenants are weaker for borrowers with higher accounting quality and more analyst coverage and stronger for borrowers with more abnormal accruals and higher financial constraint. Higher accounting quality and more analyst coverage usually imply less information asymmetry, so the ex post monitoring need is lower. More abnormal accruals imply that borrowers may conduct more earnings management activities, and more financially constrained borrowers may adopt contingent control allocation; in either case, lenders may impose more stricter performance-based covenants to substitute loan spread when monitoring costs decrease.

Our study makes several contributions to the literature. Our study is related to a set of studies about the impact of borrower-lender connectivity on credit markets or syndicated loans.<sup>1</sup> Considering the fact that air links may reshape the distance between borrowers and lenders, we proxy “connectivity” using the availability of direct flights between borrowers and lenders. Instead of focusing on small business

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<sup>1</sup>To name some representative studies: (Petersen and Rajan, 2002; Degryse and Ongena, 2005; Giannetti and Laeven, 2012; Bellucci, Borisov, and Zazzaro, 2013; Hollander and Verriest, 2016; Gao, Ru, and Yang, 2019; Nguyen, 2019; Bonfim, Nogueira, and Ongena, 2021; ?; Heitz, Martin, and Ufier, 2023; Vives and Ye, 2025).

loans or local lending relationships (Petersen and Rajan, 2002; Bellucci, Borisov, and Zazzaro, 2013; Nguyen, 2019; Levine et al., 2020; Gopal and Schnabl, 2022), we focus on global syndicated loans that are usually contracts between large firms and large financial institutions, containing complex loan terms and syndicate structures. Therefore, we could examine how airline connectivity affects detailed syndicate structure and loan terms in addition to loan spreads. We find support for the monitoring hypothesis that direct flights tend to facilitate efficient monitoring, reflected by using more performance-based covenants as a substitution for high loan spread.

Cristea (2011) and Feyrer (2019) both argue that the ease of cross-border air travel fosters international trade. Giroud (2013) regards the initiation of new airline routes as a proxy for change in proximity and documents that headquarters' proximity to plants improves monitoring and information transmission, which then fosters plant-level productivity and investment. Zhang, Kandilov, and Walker (2021) show that newly introduced direct flights between China and the US allow for faster travel and lower cost to acquire information, which then facilitates cross-border mergers & acquisitions between these two countries. Da et al. (2021) use the introduction of flight links through newly opened air hubs to show that air travel broadens firms' investor base and reduces their cost of equity. Bernstein, Giroud, and Townsend (2016) show distance matters for venture capital monitoring.

We also contribute to the literature on the impact of transportation or connectivity on business activities. Several studies have examined the impact of transportation on innovation, firm performance, trade, investment, and ownership structure.<sup>2</sup> We add to the literature by using a regression discontinuity (RD) approach to identify the causal effect of airline connectivity on one important firm financing channel, i.e., syndicated loans. Our causality identification is based on a regulatory convention in the airline industry that results in a discontinuity of direct flights around 6,000 miles (Campante and Yanagizawa-Drott, 2018). This discontinuity is exogenous to local economic conditions and is not driven by changes in financing activities, so there is minimal problem of unobserved factors or reverse causality. Therefore, this setting offers a better identification of variation in connectivity than using the initiation of new airline routes, which may be endogenous to regional economic development. But different from Campante and Yanagizawa-Drott (2018) that focuses on city-level economic activities, our study introduces more

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<sup>2</sup>To name some representative studies: Cristea (2011); Giroud (2013); Bernstein, Giroud, and Townsend (2016); Donaldson (2018); Bernard, Moxnes, and Saito (2019); Feyrer (2019); Da et al. (2021); Zhang, Kandilov, and Walker (2021).

analyses using micro-data at the loan facility level.

The remainder of this paper is as follows. [Section 3](#) introduces the data source and variable construction of our empirical sample. [Section 4](#) presents the main empirical test results between air-links and syndicated loan terms, along with our identification strategy and underlying economic mechanism tests. [Section 5](#) summarizes and concludes the paper.

## 2. Model and Results

### 2.1. Model Setup

A firm borrows to finance a project that requires an investment of  $K$  at date 0. The project is risky and cash flows are realized at date 2. In case of success, the project pays out cash flows of  $X$  at date 2, otherwise it fails with zero cash flows. After the project is undertaken, there are two possible states realized at date 1. With a probability of  $\theta$ , the state is good,  $G$ ; with a probability of  $1 - \theta$ , the state is bad,  $B$ . In the good state, the project generates a cash flow  $X$  with a probability of  $p_G$ ; in the bad state, the project generates a cash flow  $X$  with a probability of  $p_B$ . In addition, the project's NPV is positive in the good state and negative in the bad state, i.e.,  $p_G X > K > p_B X$ . Ex-ante, the project is worth undertaking:

$$(A1) \quad [\theta p_G + (1 - \theta) p_B] X > K$$

The project can be terminated early when the states are realized. Without loss of generality, we assume that the liquidation value is  $M$ ,  $M \leq K$ . When the state is bad, early liquidation is better than continuation, i.e.,  $p_B X < M \leq K$ . Therefore, the efficient liquidation decision at the interim stage is to liquidate the bad project and continue the good project.

*Lending contract:* At date 0, the lending market is perfectly competitive. That is, the lenders need to compete for each individual loan at the initiation stage regardless of the lending relationship. With the competitive lending market, the lender always breaks even on the loan ex-ante at date 0 (with the lender's required rate of return normalized to zero). The lending contract is long-term.<sup>3</sup> The borrower promises

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<sup>3</sup>A similar conclusion can be reached if the loan is short-term and the accounting signal upon the loan maturity affects the lender's investigation and roll-over decision of the loan. When the accounting signal is good, the borrower can easily obtain refinancing from the outside market. When the signal is bad, the borrower has difficulty obtaining financing from the outside

to repay  $D$  to the lender at date 2.

We assume that the borrower's manager enjoys an unmodelled private benefit when the project continues without liquidation, and the private benefit is large enough to prevent the borrower to initiate the renegotiation when he learns about the bad project state upon a good signal.<sup>4</sup> The inherent conflict of interests with respect to the liquidation decision prevents the borrower from making an ex-post efficient decision upon a good signal. Therefore it is crucial for the lender to be able to observe the true states in order to renegotiate with the borrower; otherwise, the bad type borrower always has the incentive to mimic the good borrower, and the lender cannot make an efficient decision without private information.

*Accounting-based covenants.* At date 1, the true states of the project are realized, but not verifiable or contractible. The firm's financial reporting system generates accounting signals, which are inherently noisy due to measurement errors, but might be useful in debt contracting because of its verifiability. To resolve the conflict of interest between the borrower and the lender, the debt contract may include covenants that protect the lender's interest and allow her to take control right upon covenant violation. Since the true states are not verifiable, the covenant can only be contingent on verifiable accounting signals.<sup>5</sup> The lender observes the quality of accounting information before entering the contract.<sup>6</sup>

Accounting signals are also binary,  $H$  or  $L$ . The information structure is defined as following:

$$P(H | G) = P(L | B) = q, \text{ and } q \in [\frac{1}{2}, 1].$$

Given our assumption of the information system, the covenant is contingent on binary accounting signals—when accounting signal is good, the debt covenant is not violated, and control right remains with the borrower; when accounting signal is bad, the covenant is violated and the lender obtains the control right about the interim liquidation decision. As previously discussed, the borrower will continue the

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market, and the incumbent lender may extract the rent from the good project if she finds out the project's true state is good.

<sup>4</sup>To be specific, assume that the manager enjoys a private benefit of  $B$  if the project continues, and the total payoff from continuing the bad project is always greater than liquidation value, i.e.,  $B + p_b X > M$ . Then upon a good signal, the manager who observes the bad state does not initiate the renegotiation with the lender.

<sup>5</sup>An accounting-based covenant achieves a noisy state-contingent allocation of control right to the party that is more likely to make an efficient decision ex-post, consistent with Aghion and Bolton (1992).

<sup>6</sup>The borrower may have the incentive to manipulate accounting information, especially when he is about to violate the debt covenant contingent on realized accounting signals. Such deviation is costly in the lending relationship. The lender will request a higher face value of debt in anticipating the borrower's opportunism in reporting. The overall efficiency improvement will be smaller if the borrower can manipulate earnings after observing the states.

project regardless of the true states.<sup>7</sup> Only when the lender has the control right, it is possible to liquidate the project when the lender expects that continuation leads to lower payoff than liquidation. Because accounting signals are noisy, when covenant is violated, the lender does not simply make a decision based on the observed accounting signal. Instead the lender chooses a monitoring effort  $e \in (0, 1)$  to investigate the firm's performance and find out the true states. Exerting monitoring effort makes the lender more likely to find out the true state, but the effort is costly. For simplicity, we assume that with a probability of  $e$ , the lender discovers the true state of the project. We also assume that the lender's monitoring cost function is  $\frac{ce^2}{2}$ , where  $c$  indicates the marginal cost of monitoring.

*Renegotiation and lender's liquidation decision.* If the lender does not learn the true states after monitoring and investigation, she relies on the accounting information to make the liquidation decision. In this case, even though the borrower may have observed the true state, any renegotiation attempt by the lender to separate the good type from the bad type cannot succeed, as the latter always has the incentive to mimic the former by accepting any renegotiation offer that allows the project to continue. Upon the low signal, the lender without any private information simply liquidates the project and receives  $M$  proceeds.

If the lender learns the true project state perfectly through the costly investigation, she makes the liquidation decision based on her private information. When the true state is bad, the lender optimally liquidates the project and receives  $M$ . When the true state is good, the lender is willing to waive the violation to continue the project and but the new contract terms will be renegotiated with the borrower. The renegotiated debt payment ( $D'$ ) depends on the bargaining power between the borrower and the lender. Assume that the lender who observes the good state has full bargaining power at this stage and asks for the maximum repayment value,  $D' = X$ . The borrower enjoys private benefit from continuation and thus will accept the new debt contract.<sup>8</sup> Thus lender's expected payoff from discovering a good project  $p_G X$ .

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<sup>7</sup>In fact, even though the borrower knows that there is surplus left on the table by continuing the bad project, she does not want to renegotiate with the lender to liquidate the project if he enjoys private benefit from continuation.

<sup>8</sup>In Rajan (1992), the bargaining power is modeled through an outside refinancing option. Upon a bad signal, the borrower's outside refinancing opportunity is limited, as the outsider without any private information infers a negative expected payoff from the project and is not willing to provide financing.



## 2.2. The lender's monitoring decision

We now solve the lender's monitoring decision upon covenant violation if the debt contract includes a covenant. When covenant is violated upon a low signal, the lender's expected payoff from exerting a monitoring effort  $e$ ,  $u(e)$ , is given by

$$\begin{aligned} u(e) &= e[P(G|L)p_GX + P(B|L)M] + (1 - e)M - \frac{ce^2}{2} \\ &= eP(G|L)(p_GX - M) + M - \frac{ce^2}{2}, \end{aligned} \quad (1)$$

where  $P(G|L) = \frac{\theta(1-q)}{\theta(1-q) + (1-\theta)q}$ .

The payoff in (1) essentially has three parts: with probability  $e$ , the lender observes the true state and receives either  $p_GX$  or  $M$ ; second, with probability  $1 - e$ , the lender fails to observe the true state and liquidates the project to receive  $M$ ; third, the lender's cost of exerting effort,  $\frac{ce^2}{2}$ . Intuitively, without any monitoring effort ( $e = 0$ ), the lender's payoff is simply the liquidation value  $M$  after covenant violation. However, if the lender exercises the control right after further investigation, the good project can be continued if the lender discovers the true state, which leads to a surplus of  $p_GX - M$ .

Solving for the lender's optimal monitoring effort  $e^*$  that maximizes the lender's payoff  $u(e)$  in (1), we obtain the .

$$e^* = \frac{P(G|L)(p_GX - M)}{c}. \quad (2)$$

The lender's incentive to acquire information upon the covenant violation comes from the expected "rent" she may receive if the lender identifies a good project upon a low signal and allows it to continue, i.e.,  $P(G|L)(p_GX - M)$ . The larger the surplus, the more effort the lender is willing to spend to learn the true state of the project. Therefore, the lender's monitoring decision depends on the quality of accounting information (i.e.,  $q$ ) and the monitoring cost (i.e.,  $c$ ). Lemma 1 characterizes the effects of these two factors on the optimal monitoring effort.

**Lemma 1.** *The lender's optimal monitoring effort decreases with monitoring cost and information quality, i.e.,  $\frac{\partial e^*}{\partial c} < 0$ , and  $\frac{\partial e^*}{\partial q} < 0$ . Moreover, the monitoring cost and information quality have complementary effects on the optimal monitoring effort,  $\frac{\partial^2 e^*}{\partial q \partial c} > 0$ .*

Lemma 1 presents the key driving force of our model. All else equal, as the monitoring cost *decreases*, it is straightforward that the lender is willing to spend *more* effort to acquire information about the project's state. All else equal, given the covenant in place, the lender's monitoring effort also increases when accounting information's quality is lower. This is because monitoring is more effective when the accounting signal that leads to covenant violation is less informative about the project's state. In other words, a good state is more likely to give a "false alarm" when accounting system is noisier, resulting in higher payoff to the lender from extracting the surplus of continuing the good project. Therefore, the lender's optimal effort increases as the accounting system becomes less precise. In addition, these two effects are complementary to each other: the impact of reducing monitoring cost is greater for borrowers with lower information quality. These effects on the monitoring cost will determine whether the contract will include accounting-based covenant when considering the benefit of

### 2.3. Optimal debt contract

We first solve the equilibrium debt contract with covenant when the lender optimally chooses the monitoring effort after covenant violation. Then we compare the borrower's payoff for debt contract with and without covenants.

*Debt contract with accounting-based covenant.* At date 0, the lending market is competitive. Following our discussions about the renegotiation after covenant violation, the borrower does not get any payoff if covenant is violated upon a low signal. The borrower only receives payoff from the project, after repaying the amount of debt, when the project is continued upon a high signal at date 1 and succeeds at date 2. The lender's monitoring effort after the covenant violation is not contractible. Therefore, the borrower chooses the optimal debt repayment amount  $D$  to maximize his expected payoff from the investment, subject to the lender's participation and incentive compatibility constraints in choosing the monitoring effort:

$$\begin{aligned}
& \max_D P(H)P(\text{success}|H)(X - D) \\
& s.t. \quad P(H)P(\text{success}|H)D + P(L)u(e^*) - K \geq 0, \\
& \quad e^* \in \operatorname{argmax}_e u(e),
\end{aligned} \tag{3}$$

where  $P(H) = \theta q + (1 - \theta)(1 - q)$  and  $P(L) = \theta(1 - q) + (1 - \theta)q$  are the probabilities of observing high and low signals; and  $P(\text{success}|H) = \frac{\theta q p_G + (1 - \theta)(1 - q)p_B}{\theta q + (1 - \theta)(1 - q)}$  is the probability of project success conditional on observing a high signal.

In equilibrium, the lender's participation constraint is binding, and the optimal debt repayment value is then given by

$$D^* = \frac{K - P(L)u(e^*)}{P(H)P(\text{success}|H)}, \quad (4)$$

where  $e^*$  is the optimal monitoring effort in (2).

**Proposition 1.** *The optimal debt repayment (interest spread) always increases with the lender's marginal monitoring cost  $c$ , and the effect monitoring cost is weaker when the borrower's accounting information quality  $q$  increases, i.e.,  $\frac{\partial D^*}{\partial c} > 0$  and  $\frac{\partial^2 D^*}{\partial c \partial q} < 0$ .*

Intuitively, when the lender's monitoring cost decreases, it is easier for the lender to increase the monitoring effort to investigate the borrower's true financial conditions and evaluate the liquidation decisions. Therefore, in equilibrium, the lender obtains a larger ex-post payoff ( $u(e^*)$ ) after covenant violation, due to the efficient continuation of good project under "false alarm" in a noisy accounting system. This ex-post gain to the lender, however, will be fully extracted by the borrower because of the ex-ante competitive lending market at date 0. As a result, when monitoring cost decreases, the debt repayment value also decreases. Furthermore, this effect of monitoring cost on debt repayment comes from the ex-post benefit that the lender obtains when accounting system is imperfect. If the accounting signals perfectly reveal the true states of the firm (and reliable), there will be no incentive and benefit of exerting monitoring effort for the lender. In general, more precise accounting signals weakens the marginal effect of monitoring cost on the debt repayment value (or interest spread).

## 2.4. Optimal debt covenant.

If the debt contract does not include accounting-based covenant, then the project always continues at date 1. The lender requires a debt repayment that breaks even for providing the investment amount  $K$  at date 0. It is straightforward that without debt covenant, the debt repayment amount is  $D = \frac{K}{\theta p_G + (1 - \theta)p_B}$ . This contract does not lead to any interim liquidation. As a result, given the break-even debt repayment,

the borrower's payoff from the project is

$$\Pi_0 = \theta p_G X + (1 - \theta) p_B X - K. \quad (5)$$

Substituting the optimal debt payment  $D^*$  into the borrower's payoff function in (3), we have the borrower's payoff with the accounting-based covenant,  $\Pi_1$ ,

$$\Pi_1 = Pr(H)P(\text{success}|H)X + Pr(L)u(e^*) - K. \quad (6)$$

The lender's monitoring effort increases her payoff after covenant violation through efficiency surplus from continuing the good project, as reflected in  $u(e)$ . However, because of the ex-ante competitive-lending market, the borrower can reduce the ex-ante debt repayment to extract this surplus from the lender. Therefore, the ex-post efficiency induced by the lender's monitoring effort also transforms into the borrower's payoff.

Comparing the borrower's payoff with and without accounting covenants, we have the following proposition.

**Proposition 2.** *Given the borrower's accounting information quality  $q$  and the lender's marginal monitoring cost  $c$ , there exists  $\hat{q}$  and  $\hat{c}$ , such that*

- *when  $q > \hat{q}$ , optimal debt contract always includes accounting-based covenant;*
- *when  $q < \hat{q}$ , optimal debt contract includes accounting-based covenant if and only if  $c < \hat{c}$ .*

The role of accounting-based covenant in debt contracts is to allocate the decision right to the lender to monitor and make liquidation decision after covenant violation. Proposition 2 shows whether or not the debt contract should include such an accounting-based covenant depends on both accounting information quality and monitoring cost. Essentially, the borrower extracts the efficiency gain of preventing the good project from liquidation due to the lender's monitoring effort, but the borrower also needs to bear the expected monitoring cost for the lender at date-0 contracting stage. If accounting information quality is sufficiently high, the lender's monitoring after covenant violation always improves the contracting efficiency and the borrower's payoff. However, if accounting information quality is low, the monitoring

may not always improve the borrower’s payoff. Proposition 2 shows that for low information quality, accounting-based covenant is optimal if and only if the monitoring cost is sufficiently low. The reason is as follows. Recall that the incentive for the lender to exert monitoring increases when the accounting information quality is low. Therefore covenant violation upon a noisy low signal may lead the lender to exert excessive monitoring such that the cost of such monitoring may exceed the efficiency gain from the continuation of good project. The borrower is better off not including such accounting-based covenant ex-ante.

## 2.5. Empirical predictions

# 3. Sample Description and Variables Definition

## 3.1. Syndicated Loan Variables

The syndicated loans data are sourced from Reuters Loan Pricing Corporation’s (LPC) DealScan database. We collect the information of the borrower, lead arrangers and participant lenders for each loan facility.<sup>9</sup> We measure the borrowing cost using all-in-drawn loan spread, which is defined as the loan interest rate above the London Interbank Offered Rate (LIBOR) in basis points, including fees paid to the lender group. This variable is the most commonly used measure of borrowing cost (e.g., [Hollander and Verriest, 2016](#); [Houston et al., 2014](#); [Lin et al., 2013](#)). We also collect other important loan characteristics, including maturity (in months), loan size (in USD), loan type, and primary purpose to account for variation in loan pricing attributable to standard contractual features. Beyond pricing terms, we extract the number of financial covenants and classify them into performance-based covenants (P-covenants) or capital-based covenants (C-covenants), following the methodology of [Christensen and Nikolaev \(2012\)](#). To assess covenant tightness, we utilize the measures provided by [Demerjian and Owens \(2016\)](#), which estimate the likelihood of covenant violation for all financial covenants, P-covenants, and C-covenants, respectively.

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<sup>9</sup>We follow the procedure of [Amiram et al. \(2017\)](#): a lender is classified as lead arranger if the “Lead Arranger Credit” is marked “Yes” or their roles are one of the following: “Administrative Agent”, “Agent”, “Arranger”, “Bookrunner”, “Lead Arranger”, “Lead Bank”, “Lead Manager”.

### 3.2. Air Links

We obtain flight data from the International Civil Aviation Organization (ICAO) Traffic by Flight Stage (TFS) database, spanning the periods from 1989 to 2019. The TFS database contains comprehensive records of annual international scheduled air traffic, including detailed information on: (1) aircraft types; (2) passenger volumes; and (3) passenger and cargo flights. Additionally, the database provides geographical specifications such as city and country names, departure and destination cities, and the geographic coordinates of major international airports.

We construct two measures of intercity travel costs: 1) *DirectFlight* is an dummy variable equals to one if there exists at least on weekly round-trip passenger flights between two cities, 2) *FlightNumber* denotes the natural logarithm of number of passenger flights between two cities. To control the effects of geographic influences between city pairs, we construct the *Distance*, defined as the natural logarithm of physical distance between their respective international airports. This metric serves as a control variable in our analysis, capturing the fundamental transportation costs associated with physical separation. For city pairs with multiple international airports, we defined the distance as average distance between their airport clusters following [Campante and Yanagizawa-Drott \(2018\)](#). We also construct analogous measures using the cargo flights, which serves as our placebo tests as the cargo flights do not reduce the time or cost associated with on-site monitoring.

### 3.3. Control Variables

We collect data on international firms' financial fundamentals from the Worldscope database. We include various firm-year characteristics in our analysis to control for firm fundamentals that may affect syndicated loan contract. Following [Lin et al. \(2013\)](#), we control 1) loan characteristics, including loan maturity (*Maturity*) and loan size (*LoanSize*), 2) borrower-lender relationship defined as the total loan size obtained in the past five years between the particular borrower-lender pair (*LoanSizePast5Y*), and 3) firm-year characteristics, including the natural logarithm of total assets (*Assets*), market-to-book ratio (*MarketBookRatio*), profitability (*Profitability*), leverage (*Leverage*), cash flow volatility (*CashFlowVolatility*), and tangibility (*Tangibility*) for loan-level analyses. All quantitative variables are winsorized at the 1st and 99th percentiles and definitions of all variables are in [Table A1](#).

### 3.4. Sample Construction

We start with the Dealscan database, based on the headquarters of borrowers and lead lenders in DealScan, we obtain information on the number of direct flights between these cities and major international airports from the ICAO. In cases where firms are headquartered in cities without an international airport, we assign them to the nearest major international airport within a 50-mile distance.<sup>10</sup> For instance, if a firm is headquartered in Wilmington, Delaware, we assign it to Philadelphia International Airport, which is located 20 miles away. We then merge this data with borrowers' financial information from Worldscope databases through a fuzzy name-matching algorithm following [Beyhaghi et al. \(2021\)](#) and WRDS.<sup>11</sup>

Because we are interested in the long-distant borrower-lender relationship, we keep the loan facilities that the distance between borrowers and lead lenders is at least 1,000 miles.<sup>12</sup> We exclude loan facilities with amounts less than 100 million USD and US domestic loans in which both borrowers and lead lenders are in the US, as the pricing of US domestic loans is less likely to be affected by direct flights according to our tests ([Levine et al., 2020](#)). We present summary statistics of final sample in [Table 1](#).

[Place [Table 1](#) Here]

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<sup>10</sup>Our results remain robust when using alternative distance thresholds for airport assignment.

<sup>11</sup>The linking table is available at: <https://wrds-www.wharton.upenn.edu/pages/wrds-research/database-linking-matrix/linking-thomson-refinitiv-with-thomson-refinitiv/>.

<sup>12</sup>We clean our sample using the following criteria to make sure the borrower-lender distance truly reflects the distance between the operating entity that borrows money and the entity that provides money. First, we define a lead lender's location as its branch that signs the loan contract with a borrower. Second, we manually check the names of all borrowers in our sample; if a borrower is an offshore financial or investment shell company, we use its parent company to calculate the distance.

## 4. Empirical Specification

### 4.1. Effects of Long-distance Air Links on Loan Contract Terms

#### 4.1.1. Loan spread

To empirically examine the impact of long-distance air travel connections between borrowers and lead arrangers on loan spread, we estimate the following regression model at the loan facility level:

$$\begin{aligned} LoanSpread_{i,f,t} = & \alpha + \beta_1 \cdot (DirectFlight \text{ or } FlightNumber)_{i,f,t-1} + \beta_2 \cdot Distance_{i,f} \\ & + \gamma_1 \cdot Control_{f,t} + \gamma_2 \cdot Control_{i,t-1} + CountryYearFE + IndustryYearFE \\ & + LeaderYearFE + LoanTypeFE + LoanPurposeFE + BorrowerFE + \epsilon_{i,f,t} \end{aligned} \quad (7)$$

where  $LoanSpread_{i,f,t}$  denotes the all-in-drawn loan spread of the loan facility  $f$  issued to firm  $i$  in year  $t$ , defined as the loan interest rate above the LIBOR in basis points, including fees paid to the lender group;  $DirectFlight_{i,f,t-1}$  represents the fraction of lead arrangers of the loan facility  $f$  that are connected to borrower  $i$  in year  $t - 1$  with weekly round-trip passenger flights;  $FlightNumber$  denotes the natural logarithm of average number of passenger flights per lead arranger that connect the borrower and the lender;  $Distance_{i,f}$  denotes the natural logarithm of average distances in miles between borrower and lead lenders;  $Control_{f,t}$  represents a vector of facility-level control variables including *Maturity*, *LoanSize* and *LoanSizePast5Y*;  $Control_{i,t-1}$  represents a vector of lagged borrower-year controls including *Assets*, *MarketBookRatio*, *Profitability*, *Leverage*, *CashFlowVolatility* and *Tangibility*. The variable definitions are presented in [Table A1](#). We incorporate fixed effects at multiple levels to account for unobservable confounding factors. Specifically, we include country-year fixed effects to control for macroeconomic conditions, industry-year fixed effects to capture time-varying industry trends, and lead lender-year fixed effects to absorb supply-side shocks. Additionally, we account for loan type, loan purpose, and borrower fixed effects to further mitigate potential omitted variable bias. We cluster standard errors at the borrower city level.

[Place [Table 2](#) Here]

[Table 2](#) reports the estimation results of [Equation \(7\)](#). Columns (1) and (2) of [Table 2](#) indicate that the



availability of long-distance passenger flights is negatively associated with loan spreads. The estimated effects are both statistically significant and economically meaningful, as the presence of weekly round-trip direct flights is associated with a 9.6% reduction in loan spreads, while a one standard deviation increase in log number of passenger flights corresponds to a 3.17% decrease in loan spreads.<sup>13</sup> The results are robust if we control the covenant intensity in columns (3) and (4).

One might argue that the observed facilitation of capital flows stems not from more convenient transportation of people (which reduces monitoring costs for lead lenders gathering private information), but rather from enhanced goods transportation. To test whether this argument is valid, we conduct a placebo test using cargo flights and direct flights with participant lenders. The reasons are that: 1) cargo flights do not facilitate frequent on-site monitoring or negotiation by lenders, and 2) participant lenders, as arm's-length contracting parties, neither directly access borrowers nor cultivate relationship business like lead lenders. We modify our baseline model in Equation (7) by replacing the key independent variables with *Direct Cargo Flight (Lead Arranger)*, *Cargo Flight Number (Lead Arranger)*, *Direct Flight (Participant)*, and *Flight Number (Participant)*. As Table 6 demonstrates, none of these alternative specifications yield statistically significant results, thereby reinforcing our monitoring channel interpretation.

[Place Table 6 Here]

#### 4.1.2. Loan covenant

Next, we examine the impact of direct airlinks on additional loan contract covenants and estimate the following regression model:

$$\begin{aligned} LoanCovenant_{i,f,t} = & \alpha + \beta_1 \cdot (DirectFlight \text{ or } FlightNumber)_{i,f,t-1} + \beta_2 \cdot Distance_{i,f} \\ & + \gamma_1 \cdot LoanSpread + \gamma_2 \cdot Control_{i,f,t-1} + CountryYearFE + IndustryYearFE \quad (8) \\ & + LeaderYearFE + LoanTypeFE + LoanPurposeFE + BorrowerFE + \epsilon_{i,f,t} \end{aligned}$$

where  $LoanCovenant_{i,f,t}$  indicates the one of the loan covenant proxies, including: *Covenant Intensity* denotes the total number of financial covenants in the loan contract; *Covenant Mix* represents the proportion

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<sup>13</sup>9.6% = 1 \* 15.44 (coefficient) / 160.97 (sample mean) \* 100%; 3.17% = 2.33 (standard deviation) \* 2.19 (coefficient) / 160.97 (sample mean) \* 100%.

of performance-based covenants, calculated as the number of performance covenants scaled by the total covenant count; *P-Covenant Intensity* is the number of performance-based covenants; and *C-Covenant Intensity* is defined as the number of capital-based covenants. The classification of performance and capital covenants follows Christensen and Nikolaev (2012). We control for *LoanSpread* in all regressions and the remaining specifications are the same as our baseline model outlined in Equation (7).

[Place Table 3 Here]

Table 3 presents the results of Equation (8). As shown in Table 3, the presence of weekly direct flights have significant effects on loan covenant structure: it increases the total covenant count by 0.34 (17.71% of sample mean), raises the proportion of performance covenants by 0.07 (8.98% of sample mean), and expands the number of P-covenants by 0.42 (26.58% of sample mean), while simultaneously reduces C-covenants by 0.08 (24.24% of sample mean).<sup>14</sup> The results remain qualitatively similar when using the natural logarithm of passenger flight numbers as the independent variable, as evidenced in columns (2), (4), (6), and (8) of Table 3. We further conduct placebo tests by re-estimating Equation (8) using cargo flights and passenger flights to participant lenders as alternative independent variables. As shown in Table 7, we do not observe significance for either cargo flights or passenger flights to participant lenders. The results strengthen the monitoring hypothesis, as they suggest that only direct flights with lead arrangers (rather than cargo flights or participant lenders' flights) facilitate the increased monitoring that leads to more performance-based covenants. The evidence supports our argument that lead arrangers incorporate more performance-based covenants ex ante when they can more easily monitor borrowers through direct flight access.

[Place Table 7 Here]

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<sup>14</sup> 17.71% = 1 \* 0.34 (coefficient) / 1.92 (sample mean) \* 100%; 8.98% = 1 \* 0.07 (coefficient) / 0.78 (sample mean) \* 100%; 26.58% = 1 \* 0.42 (coefficient) / 1.58 (sample mean) \* 100%; 24.24% = 1 \* 0.08 (coefficient) / 0.33 (sample mean) \* 100%.

### 4.1.3. Loan covenant tightness

We further investigate the tightness of the loan covenants by running the following regression:

$$\begin{aligned} Tightness_{i,f,t} = & \alpha + \beta_1 \cdot (DirectFlight \text{ or } FlightNumber)_{i,f,t-1} + \beta_2 \cdot Distance_{i,f} \\ & + \gamma_1 \cdot LoanSpread + \gamma_2 \cdot Control_{i,f,t-1} + CountryYearFE + IndustryYearFE \quad (9) \\ & + LeaderYearFE + LoanTypeFE + LoanPurposeFE + BorrowerFE + \epsilon_{i,f,t} \end{aligned}$$

where  $Tightness_{i,f,t}$  is the probability of covenant violation following the methods by [Demerjian and Owens \(2016\)](#). We consider the probability of violation of all covenants (*Covenant Tightness*), performance covenants (*P-covenant Tightness*) and capital covenants (*C-covenant Tightness*). The remaining specifications are the same as [Equation \(8\)](#).

[Place [Table 4](#) Here]

[Table 4](#) presents the results of [Equation \(9\)](#). As shown in [Table 4](#), we observed a statistically significant positive relationship between air connectivity and covenant tightness, which is driven specifically by performance covenants rather than capital covenants. Specifically, a one standard deviation increase in the logarithm of direct flights between borrower and lead lenders corresponds to a 9.32% higher ex ante probability of performance covenant violation.<sup>15</sup> These results align with the theoretical prediction that when frequent monitoring becomes less costly, tighter covenants emerge as a more attractive contractual terms ([Diamond, 1991](#)). As tighter covenants grant lenders enhanced rights to intervene early and recover the liquidation value. Similar as before, we perform placebo tests by examining cargo flights and flights to participant lenders as alternative dependent variables. The results show no statistically significant relationship between these flight measures and the tightness of performance covenants.

[Place [Table 8](#) Here]

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<sup>15</sup>9.32% = 2.33 (standard deviation) \* 0.04 (coefficient) \* 100%.

## 4.2. Identification Strategy

### 4.2.1. The discontinuity setting

Our primary findings demonstrate that a higher prevalence of air travel connections between borrowers and lead arrangers makes lenders to substitute loan spreads with stricter, performance-based covenants *ex ante*. To eliminate the endogeneity concern that unobservable confounding factors may jointly influence the establishment of new airline routes and borrower-lender contracting decisions, we exploit a quasi-natural experiment based on discontinuities in airline connectivity to identify causal effects. As documented by [Campante and Yanagizawa-Drott \(2018\)](#), due to the regulation by the United States and European Union, two cities exhibit a disproportionate likelihood of being connected by direct flights when the distance between their airports is below 6,000 miles compared to the distance above 6,000 miles.<sup>16</sup>

For identification validity, the assumption is that borrower-lender pairs with international airports located just below and above the 6,000-mile threshold are comparable except the direct airline connectivity. This implies that the locations of potential lenders and borrowers are randomly distributed around this cutoff, ensuring that the loan contracts for pairs near this distance is not determined by other economic or geographic factors. Thus, any differences in syndicated loan terms for observed pairs near the threshold reflect variation in air connectivity rather than confounding channels.

Different from our main sample, the regression discontinuity design (RDD) sample is restricted to the periods between 1989 and 2014. This restriction is necessitated because the 6,000-mile discontinuity starts disappearing after US and EU regulatory changes in 2014. We first check whether the air-link discontinuity matters for our sample of syndicated loans: Panel A of [Figure 1](#) plots the distance distribution of all possible borrower-lender city pairs in the Dealscan, regardless of direct flight connections or loan contracts; Panel B of [Figure 1](#) plots the distance distribution of city pairs with borrower-lead arranger that initiated syndicated loans during the periods. As shown, while no discontinuity exists at 6,000 miles for potential pairs, ruling out geographic distribution as the determinant, actual lending pairs exhibit a sharp drop at this threshold, coinciding with the air links discontinuity. This figure provides preliminary

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<sup>16</sup>The U.S. Federal Aviation Administration mandates additional pilots, crew members, and sleeping quarters for non-stop flights exceeding 12 hours (Code of Federal Regulations, Section 121.485). Similarly, EU regulations require augmented crew staffing for flights operating more than 12 hours (EU-OPS Subpart Q, Council Regulation (EEC) no. 3922/91). These regulatory provisions create a discontinuity in direct flight availability around the 6,000-mile threshold.

evidence of causal effects between long-distance air connectivity and syndicated loans.

[Place [Figure 1](#) Here]

Except the geographic distribution of borrowers and lenders, another concern is that borrowers above 6,000 miles may differ systematically, leading to different loan contract terms. To address this, we conduct a balance test around the discontinuity threshold. We first collect all borrowers with distances to their lead lenders between 5,000 and 7,000 miles and then split the sample into two groups (below/above 6,000 miles). We then compare borrower characteristics of the two groups and report the results in [Table 9](#). We find no significant differences in borrowing firm characteristics including *Assets*, *MarketBookRatio*, *Profitability*, *Leverage*, *CashFlowVolatility* and *Tangibility*. Therefore, the difference in loan contracts terms is unlikely to be driven by borrower heterogeneity, further validating our discontinuity setting.

[Place [Table 9](#) Here]

#### 4.2.2. Regression discontinuity design

We further investigate the impact of air-link discontinuity at the 6,000-mile threshold on syndicated loan contract terms. To ensure clear identification, we restrict our sample to syndicated loans with a single lead lender where the distance between the borrower and the sole lead lender falls within the 5,000 to 6,000-mile range. This procedure allows us to eliminate the concern that loan negotiation and monitoring may be influenced by the presence of multiple lead lenders—where the nearest or largest lead lender could play an important role.

[Place [Figures 2 to 4](#) Here]

To perform the RD analysis, we calculate the average loan contract terms (*Loan Spread*, *P-Covenant Intensity* and *C-Covenant Intensity*) within each bin, where the optimal bin width is determined by the mimicking variance evenly-spaced estimator proposed by [Calonico, Cattaneo, and Titiunik \(2015\)](#). We plot the fitted polynomial regression curves, binned averages and 90% confidence intervals in [Figures 2 to 4](#). Regardless of using a linear polynomial, quadratic polynomial, or cubic polynomial, we observe a sharp increase in loan spreads and a decrease in P-covenant intensity as the borrower-lender

distance crosses the 6,000-mile threshold. Moreover, we do not observe sharp changes of C-covenant intensity. These findings are consistent with our baseline model that long-distance air links promote information transmission and monitoring efficiency, incentivizing borrowers to substitute loan spreads with performance-based covenants. We also conduct RD analysis using unbinned data and our results remains largely consistent with our main specifications. We present the corresponding results in [Figures A1 to A3](#).

To further estimate the causal effects, we establish the following regression discontinuity design (RDD):

$$Y_{ij} = \alpha + \beta \cdot \mathbf{1}(Distance_{ij} > 6,000 \text{ Miles}) + g(Distance_{ij}) + \epsilon_{ij} \quad (10)$$

where  $Y_{ij}$  denotes the average loan spread, P-covenant intensity or C-covenant intensity of syndicated loans between borrower city  $i$  and lead lender city  $j$ . The indicator variable  $\mathbf{1}(Distance_{ij} > 6,000 \text{ Miles})$  equals one if the distance between city  $i$  and city  $j$  exceeds 6,000 miles and zero otherwise. The function  $g(Distance_{ij})$  denotes higher-order polynomials of  $Distance_{ij}$  to account for potential non-linearity.

We report estimates for loan spreads, P-covenant intensity, and C-covenant intensity in [Table 10](#), [Table 11](#), and [Table 12](#), respectively. Columns (1)–(3) in each table present results using linear, quadratic, and cubic polynomials. Similar to [He, Wang, and Zhang \(2020\)](#), we assess robustness using uniform, triangular, and Epanechnikov kernels, with results detailed in Panels A to C in each table.

**[Place [Tables 10 to 12](#) Here]**

As shown in Panels A, B and C of [Table 10](#) and [Table 11](#), when borrower-lender distance exceeds 6,000 miles, loan spreads increase significantly while P-covenant intensity decreases. Specifically, as shown in Panel A, for city pairs unlikely to be connected by direct flights, loan spreads rise by 58.06 basis points and P-covenants decline by 1.43. This suggests that when direct flights reduce monitoring costs, borrowers prefer substituting loan spreads with performance-based covenants. The effects on C-covenants, shown in [Table 12](#), are marginally significant. These results align with our baseline models, further supporting the causal impact of air connectivity on syndicated loan terms.

We also conduct placebo tests to ensure that the significant results only hold for the 6,000-mile threshold. To do so, following [Campante and Yanagizawa-Drott \(2018\)](#), we randomly select pseudo threshold between 4,500-5,750 miles and 6,250-7,500 miles for the air-link discontinuity and re-estimate

Equation (10). We repeat the procedure 1,000 times and Figure A5 plots the distribution of coefficients based on pseudo threshold corresponding to column (1) in Panel A of Table 10 and Table 11. As shown, the actual 6,000-mile threshold coefficient appears as an outlier in this distribution, while the pseudo-threshold coefficients cluster around zero. These placebo tests further imply that the observed discontinuity effects of the air-link discontinuity around 6,000 miles is not driven by coincidence.

### 4.3. Cross-sectional Heterogeneity

#### 4.3.1. Accounting Quality

Our baseline findings and RDD analysis suggest that lead lenders substitute lower loan spreads with a greater number of stricter performance covenants when direct flights between borrowers and lenders are available. Since P-covenants are monitoring-intensive and tied to the borrower's current-period performance, typically formulated using income statement information, improved contractibility of accounting information reduces the ex ante concern of frequent monitoring. Consequently, we expect that higher accounting quality mitigates the impact of direct air links on loan contract terms. To test the mechanism, we run the following regressions:

$$\begin{aligned}
Y_{i,f,t} = & \alpha + \beta_1 \cdot ((DirectFlight \text{ or } FlightNumber)_{i,f,t-1} \times Contractibility_{i,t-1}) \\
& + \beta_2 \cdot (DirectFlight \text{ or } FlightNumber)_{i,f,t-1} + \beta_3 \cdot Contractibility_{i,t-1} \\
& + \beta_4 \cdot Distance_{i,f} + \gamma_1 \cdot Control_{i,f,t-1} + CountryYearFE + IndustryYearFE \\
& + LeaderYearFE + LoanTypeFE + LoanPurposeFE + BorrowerFE + \epsilon_{i,f,t}
\end{aligned} \tag{11}$$

where  $Y_{i,f,t}$  denotes the loan contract terms including the loan spread, the number of P-covenants, proportion of P-covenants and the probability of P-covenant violation;  $Contractibility_{i,t-1}$  denotes the proxy of firm  $i$ 's accounting quality in year  $t - 1$ . We employ two proxies of firm's accounting quality: 1) *AcctQuality* is the negative value of standard deviation of residual values from the past eight fiscal years from the Francis et al. (2005) model and, 2) *AbnormalAccural* is the residual values of Jones (1991) model. Detailed construction methods are provided in Table A1.

[Place Table 5 Here]

Table 5 presents the estimation results of Equation (11). Panel A shows that the interaction terms with *AcctQuality* are positively (negatively) significant when the dependent variable is loan spread (loan covenants), suggesting that higher accounting quality attenuates the impact of direct air links. Panel B reveals that the interaction terms with *AbnormalAccrual* are negatively (positively) significant for loan spreads (covenants), indicating that lenders impose stricter monitoring when borrowers engage in greater earnings management by shifting unrealized income forward. Collectively, these findings support our monitoring hypothesis that lenders incorporate more intensive monitoring terms when firms' accounting information exhibits lower contractibility.

#### 4.3.2. Financial Constraint

We next examine how financial constraints influence loan contract terms. Following Aghion and Bolton (1992)'s theoretical framework, financially constrained firms face limitations in offering lenders contracts that provide sufficient return sharing to cover external financing costs and maintaining proper firm's incentive at the same time. In such circumstances, borrowers are more likely to employ contingent control allocation, particularly through the use of performance-based loan covenants. To test the prediction, we run the following regression:

$$\begin{aligned}
Y_{i,f,t} = & \alpha + \beta_1 \cdot ((DirectFlight \text{ or } FlightNumber)_{i,f,t-1} \times FinConstraint_{i,t-1}) \\
& + \beta_2 \cdot (DirectFlight \text{ or } FlightNumber)_{i,f,t-1} + \beta_3 \cdot FinConstraint_{i,t-1} \\
& + \beta_4 \cdot Distance_{i,f} + \gamma_1 \cdot Control_{i,f,t-1} + CountryYearFE + IndustryYearFE \\
& + LeaderYearFE + LoanTypeFE + LoanPurposeFE + BorrowerFE + \epsilon_{i,f,t}
\end{aligned} \tag{12}$$

where  $Y_{i,f,t}$  denotes the loan contract terms including the loan spread, the number of P-covenants, proportion of P-covenants and the probability of P-covenant violation;  $FinConstraint_{i,t-1}$  denotes the measures of firm  $i$ 's financial constraint in year  $t - 1$ . We consider two indices to proxy the extent of financial constraints: 1) the *KZ* index proposed by Kaplan and Zingales (1997), and 2) the *WW* index proposed by Whited and Wu (2006). A greater value of either index indicates a higher degree of financial constraints. The remaining specifications are the same as in our baseline model.

[Place Table 13 Here]



Table 13 reports the estimation results of Equation (12), with Panels A and B presenting the interaction effects using the *KZ* and *WW* indices, respectively. The results demonstrate that financial constraints strengthen the effects of air connectivity on loan contract terms. More financially constrained borrowers tend to adopt contingent control allocation, while lenders impose more stricter performance-based covenants to substitute loan spread when monitoring costs decrease.

#### 4.3.3. Information Transparency

We use the number of analysts that cover a borrower as a measure of information transparency. If a borrower is covered by more analysts, it suggests that the public has more information about the borrower's quality, reducing the required loan spread (Hallman, Howe, and Wang, 2023). Therefore, lenders can partially rely on analyst research to assess the risk of the covered borrowers and have lower incentives for on-site monitor; in this case, the facilitating effect of long-distance air links between them on syndicated loan contracts may be weaker. To test this prediction, we obtain the number of analysts for all borrowers in our sample from the I/B/E/S database and interact this variable *AnalystCoverage* with *DirectFlight* or *FlightNumber* in Equation (7). Specifically, we run the following regression:

$$\begin{aligned}
Y_{i,f,t} = & \alpha + \beta_1 \cdot ((DirectFlight \text{ or } FlightNumber)_{i,f,t-1} \times AnalystCoverage_{i,t-1}) \\
& + \beta_2 \cdot (DirectFlight \text{ or } FlightNumber)_{i,f,t-1} + \beta_3 \cdot AnalystCoverage_{i,t-1} \\
& + \beta_4 \cdot Distance_{i,f} + \gamma_1 \cdot Control_{i,f,t-1} + CountryYearFE + IndustryYearFE \\
& + LeaderYearFE + LoanTypeFE + LoanPurposeFE + BorrowerFE + \epsilon_{i,f,t}
\end{aligned} \tag{13}$$

where  $Y_{i,f,t}$  denotes the loan contract terms including the loan spread, the number of P-covenants, proportion of P-covenants and the probability of P-covenant violation;  $AnalystCoverage_{i,t-1}$  denotes the natural logarithm of the number of analysts issuing earnings forecasts for firm  $i$  in year  $t - 1$ . All other specifications remain consistent with our baseline model.

[Place Table 14 Here]

Table 14 presents the corresponding regression results. Consistent with our hypothesis, the coefficient on the interaction term between analyst coverage and either *DirectFlight* or *FlightNumber* holds opposite

signs compared to the standalone coefficients of *DirectFlight* or *FlightNumber*. These results imply that the lowering effect of long-distance air links on borrowing costs is weaker if borrowers exhibit higher ex-ante transparency, which echoes the prediction from the monitoring hypothesis. These findings align with [Hallman, Howe, and Wang \(2023\)](#), who documents that analyst coverage reduces lenders' need to acquire private information, resulting in lower loan spreads and fewer financial covenants.

## 5. Conclusion

This paper examines how long-distance air links over the globe affect syndicated loan contract terms, such as loan spread and financial covenants. In general, we find that direct flights between borrowers and lead lenders reduces loan spread while increase the number and tightness of performance-based covenants. The substitution between performance-based covenants and high loan spread is consistent with the monitoring story that when borrower-lender connectivity becomes easier due to more direct flights, lead lenders have better monitoring channel to enforce performance checks and hence may accept lower loan spread.

Placebo tests using cargo flights without personnel transportation and calculating distance to participant lenders that perform minimal monitoring do not have significant results. These tests confirm the argument that the easy transportation of personnel from lead lenders is crucial for performing efficient monitoring on the performance of borrowers.

Considering with the monitoring argument, our cross-sectional analyses show that the impacts of air links on syndicated loans are weaker with better accounting quality or higher information transparency and are stronger with more abnormal accruals and higher financial constraint.

To identify a causal relationship, we employ a regression discontinuity (RD) approach based on the discontinuity of long-distance air links around 6,000 miles because of substantially higher operating costs beyond this distance ([Campante and Yanagizawa-Drott, 2018](#)). We find that when the distances between borrowers and lead lenders are above 6,000 miles, the loan spread is significantly higher, while performance-based covenants are significantly lower.

Overall, our study shows airline connectivity matters for syndicated loans when borrowers and lead lenders can be very far away from each other or even from different countries. The development

of transportation not only fosters trade, innovation, firm investment, and ownership structure but also facilitates the flow of capital through syndicated loans.

## References

- Agarwal, Sumit, and Robert Hauswald. (2010). Distance and private information in lending. *The Review of Financial Studies* 23, 2757–2788.
- Aghion, Philippe, and Patrick Bolton. (1992). An incomplete contracts approach to financial contracting. *The Review of Economic Studies* 59, 473–494.
- Amiram, Dan, William H Beaver, Wayne R Landsman, and Jianxin Zhao. (2017). The effects of credit default swap trading on information asymmetry in syndicated loans. *Journal of Financial Economics* 126, 364–382.
- Bellucci, Andrea, Alexander Borisov, and Alberto Zazzaro. (2013). Do banks price discriminate spatially? evidence from small business lending in local credit markets. *Journal of Banking & Finance* 37, 4183–4197.
- Bernard, Andrew B, Andreas Moxnes, and Yukiko U Saito. (2019). Production networks, geography, and firm performance. *Journal of Political Economy* 127, 639–688.
- Bernstein, Shai, Xavier Giroud, and Richard R Townsend. (2016). The impact of venture capital monitoring. *The Journal of Finance* 71, 1591–1622.
- Beyhaghi, Mehdi, Rui Dai, Anthony Saunders, and John Wald. (2021). International lending: The role of lender’s home country. *Journal of Money, Credit and Banking* 53, 1373–1416.
- Bonfim, Diana, Gil Nogueira, and Steven Ongena. (2021). “sorry, we’re closed” bank branch closures, loan pricing, and information asymmetries. *Review of Finance* 25, 1211–1259.
- Calonico, Sebastian, Matias D Cattaneo, and Rocio Titiunik. (2015). Optimal data-driven regression discontinuity plots. *Journal of the American Statistical Association* 110, 1753–1769.
- Campante, Filipe, and David Yanagizawa-Drott. (2018). Long-range growth: economic development in the global network of air links. *The Quarterly Journal of Economics* 133, 1395–1458.
- Champagne, Claudia, and Frank Coggins. (2012). Common information asymmetry factors in syndicated loan structures. *Journal of Banking & Finance* 36, 1437–1451.
- Christensen, Hans B., and Valeri V. Nikolaev. (2012). Capital versus performance covenants in debt contracts. *Journal of Accounting Research* 50, 75–116.
- Cristea, Anca D. (2011). Buyer-seller relationships in international trade: Evidence from us states’ exports and business-class travel. *Journal of International Economics* 84, 207–220.
- Da, Zhi, Umit G Gurun, Bin Li, and Mitch Warachka. (2021). Investment in a smaller world: The implications of air travel for investors and firms. *Management Science* 67, 417–435.
- Degryse, Hans, and Steven Ongena. (2005). Distance, lending relationships, and competition. *The Journal of Finance* 60, 231–266.
- Demerjian, Peter R., and Edward L. Owens. (2016). Measuring the probability of financial covenant violation in private debt contracts. *Journal of Accounting and Economics* 61, 433–447.

- Diamond, Douglas W. (1991). Monitoring and reputation: The choice between bank loans and directly placed debt. *Journal of Political Economy* 99, 689–721.
- Donaldson, Dave. (2018). Railroads of the raj: Estimating the impact of transportation infrastructure. *American Economic Review* 108, 899–934.
- Feyrer, James. (2019). Trade and income—exploiting time series in geography. *American Economic Journal: Applied Economics* 11, 1–35.
- Francis, Jennifer, Ryan LaFond, Per Olsson, and Katherine Schipper. (2005). The market pricing of accruals quality. *Journal of Accounting and Economics* 39, 295–327.
- Gao, Haoyu, Hong Ru, and Xiaoguang Yang. (2019). What do a billion observations say about distance and relationship lending. *Available at SSRN* 3195616.
- Giannetti, Mariassunta, and Luc Laeven. (2012). The flight home effect: Evidence from the syndicated loan market during financial crises. *Journal of Financial Economics* 104, 23–43.
- Giroud, Xavier. (2013). Proximity and investment: Evidence from plant-level data. *The Quarterly Journal of Economics* 128, 861–915.
- Gopal, Manasa, and Philipp Schnabl. (2022). The rise of finance companies and fintech lenders in small business lending. *The Review of Financial Studies* 35, 4859–4901.
- Hallman, Nicholas, John S Howe, and Wei Wang. (2023). Analyst coverage and syndicated lending. *Review of Accounting Studies* 28, 1531–1569.
- Hauswald, Robert, and Robert Marquez. (2006). Competition and strategic information acquisition in credit markets. *The Review of Financial Studies* 19, 967–1000.
- He, Guojun, Shaoda Wang, and Bing Zhang. (2020). Watering down environmental regulation in china. *The Quarterly Journal of Economics* 135, 2135–2185.
- Heitz, Amanda Rae, Christopher Martin, and Alexander Ufier. (2023). Bank loan monitoring, distance, and delegation. in *AEA Papers and Proceedings*. volume 113. 177–181. American Economic Association 2014 Broadway, Suite 305, Nashville, TN 37203.
- Hollander, Stephan, and Arnt Verriest. (2016). Bridging the gap: the design of bank loan contracts and distance. *Journal of Financial Economics* 119, 399–419.
- Houston, Joel F, Liangliang Jiang, Chen Lin, and Yue Ma. (2014). Political connections and the cost of bank loans. *Journal of Accounting Research* 52, 193–243.
- Jones, Jennifer J. (1991). Earnings management during import relief investigations. *Journal of Accounting Research* 29, 193–228.
- Kaplan, Steven N, and Luigi Zingales. (1997). Do investment-cash flow sensitivities provide useful measures of financing constraints?. *The Quarterly Journal of Economics* 112, 169–215.
- Levine, Ross, Chen Lin, Qilin Peng, and Wensi Xie. (2020). Communication within banking organizations and small business lending. *The Review of Financial Studies* 33, 5750–5783.

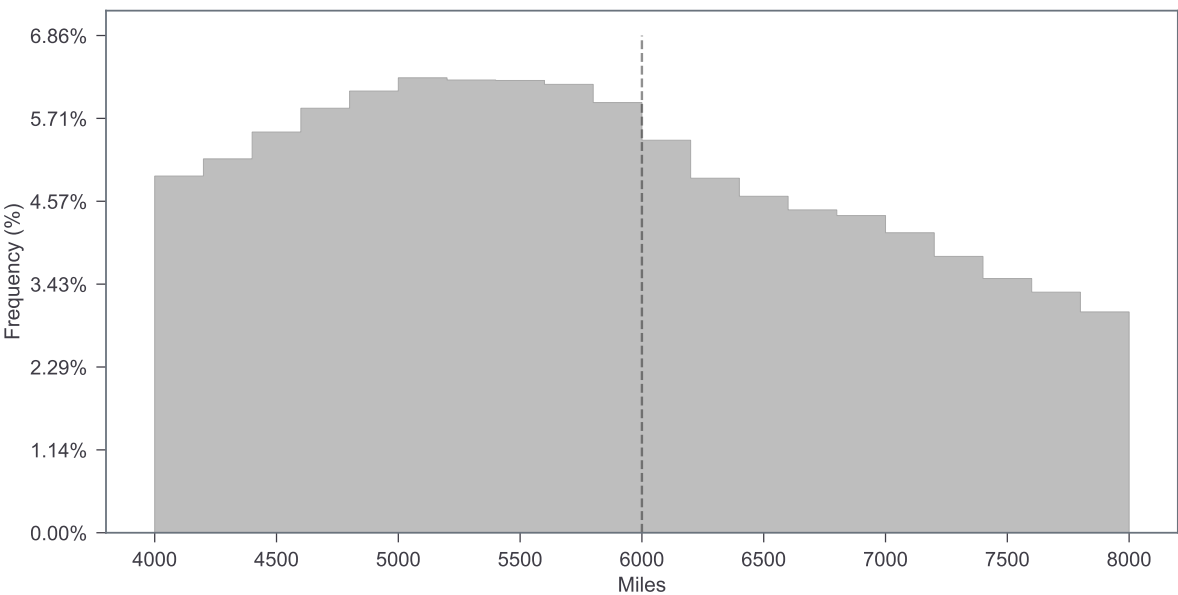
- Lin, Chen, Micah S Officer, Rui Wang, and Hong Zou. (2013). Directors' and officers' liability insurance and loan spreads. *Journal of Financial Economics* 110, 37–60.
- Nguyen, Hoai-Luu Q. (2019). Are credit markets still local? evidence from bank branch closings. *American Economic Journal: Applied Economics* 11, 1–32.
- Petersen, Mitchell A, and Raghuram G Rajan. (1995). The effect of credit market competition on lending relationships. *The Quarterly Journal of Economics* 110, 407–443.
- Petersen, Mitchell A, and Raghuram G Rajan. (2002). Does distance still matter? the information revolution in small business lending. *The Journal of Finance* 57, 2533–2570.
- Sufi, Amir. (2007). Information asymmetry and financing arrangements: Evidence from syndicated loans. *The Journal of Finance* 62, 629–668.
- Vives, Xavier, and Zhiqiang Ye. (2025). Information technology and lender competition. *Journal of Financial Economics* 163, 103957.
- Whited, Toni M, and Guojun Wu. (2006). Financial constraints risk. *The Review of Financial Studies* 19, 531–559.
- Zhang, Chi, Ivan T Kandilov, and Mark D Walker. (2021). Direct flights and cross-border mergers & acquisitions. *Journal of Corporate Finance* 70, 102063.

# Tables and Figures

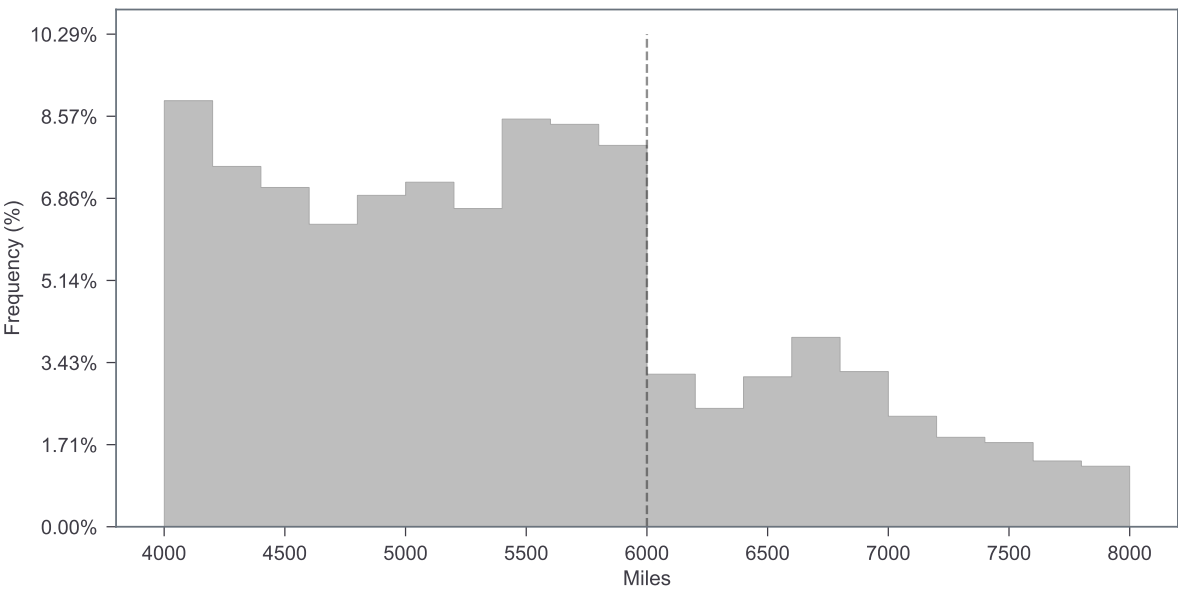
**Figure 1. City Pairs Histogram**

This figure plots the distribution of borrower-lender city pairs across flight distances from 4,000 to 8,000 miles with 20 equally spaced bins. Panel A plots the frequency of all potential combinations of borrower and lender cities obtained from the Dealscan database. Panel B plots the frequency of borrower-lender city pairs with at least one syndicated loan deal from 1989 to 2014.

**Panel A. All Possible City Pairs**



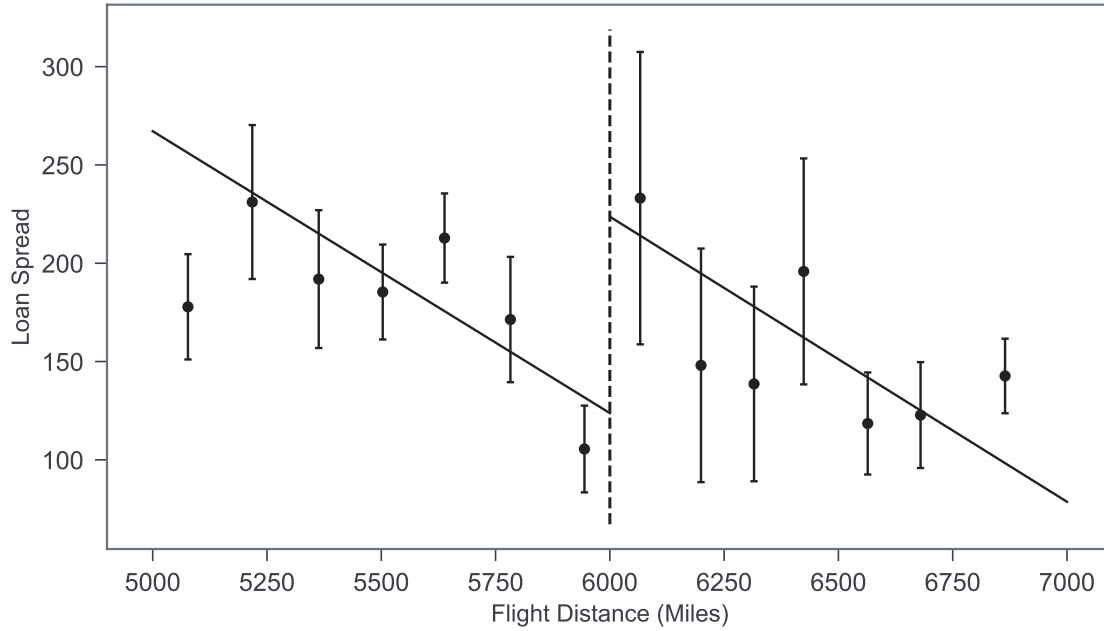
**Panel B. City Pairs with Syndicated Loan**



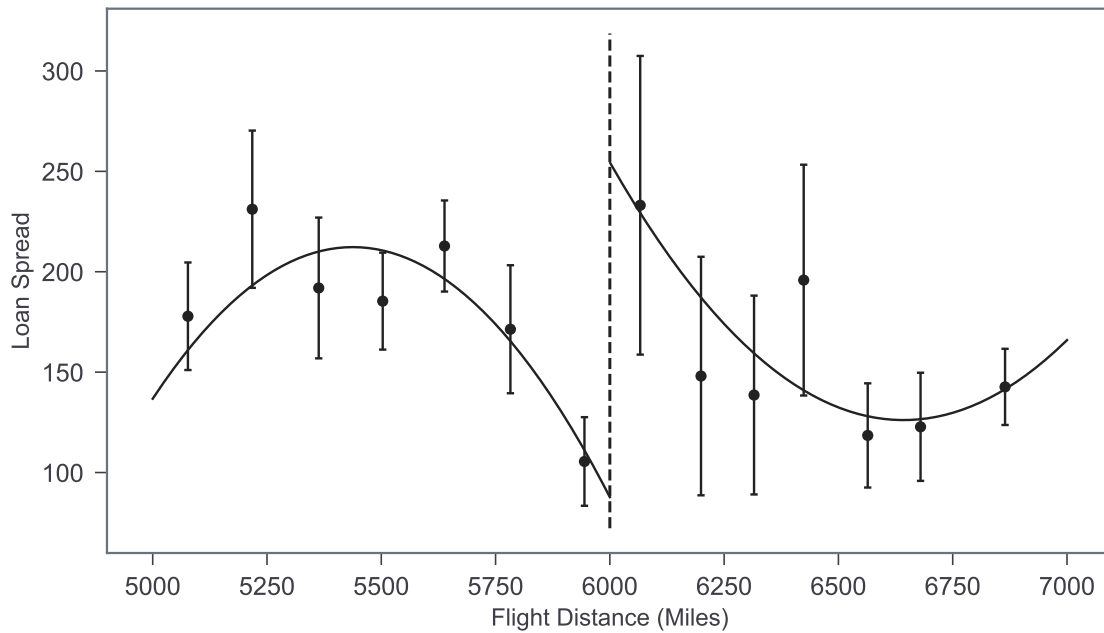
## Figure 2. Regression Discontinuity Design: Loan Spread

This figure plots the fitted linear, quadratic, and cubic estimates with 90% confidence intervals within a bin of distance. The x-axis is the flight distance between the borrower and lead arranger, and the y-axis is the loan spread of loan facilities in basis points. Each dot on the plot represents the average loan spread within evenly-spaced bins, with a margin of 1,000 miles around the 6,000-mile cut-off. The number of bins is determined by IMSE-optimal evenly-spaced method using polynomial regression proposed by [Calonico, Cattaneo, and Titiunik \(2015\)](#).

**Panel A. Linear Estimation**

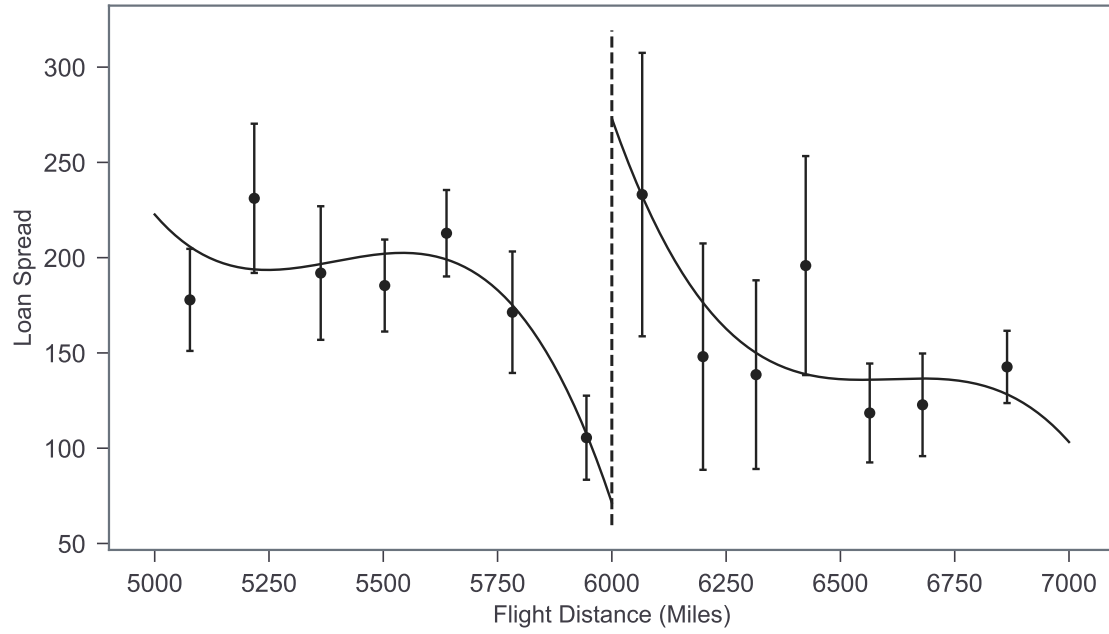


**Panel B. Quadratic Estimation**





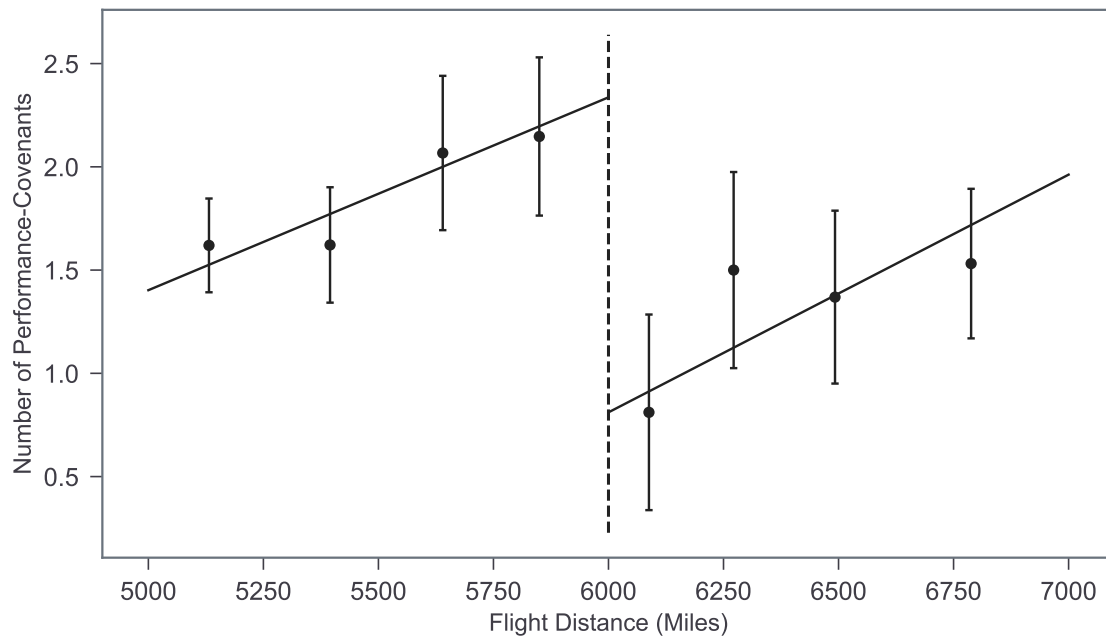
**Panel C. Cubic Estimation**



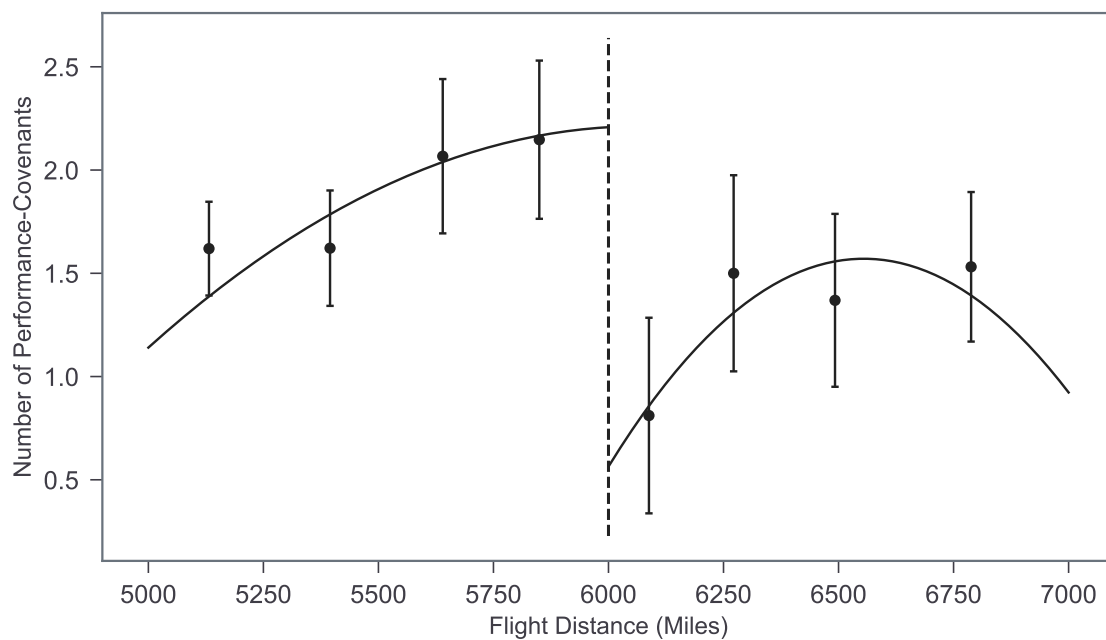
**Figure 3. Regression Discontinuity Design: Performance-covenant Intensity**

This figure plots the fitted linear, quadratic, and cubic estimates with 90% confidence intervals within a bin of distance. The x-axis is the flight distance between the borrower and lead arranger, and the y-axis is the number of performance-covenants of loan facilities. Each dot on the plot represents the average loan spread within evenly-spaced bins, with a margin of 1,000 miles around the 6,000-mile cut-off. The number of bins is determined by IMSE-optimal evenly-spaced method using polynomial regression proposed by [Calonico, Cattaneo, and Titiunik \(2015\)](#).

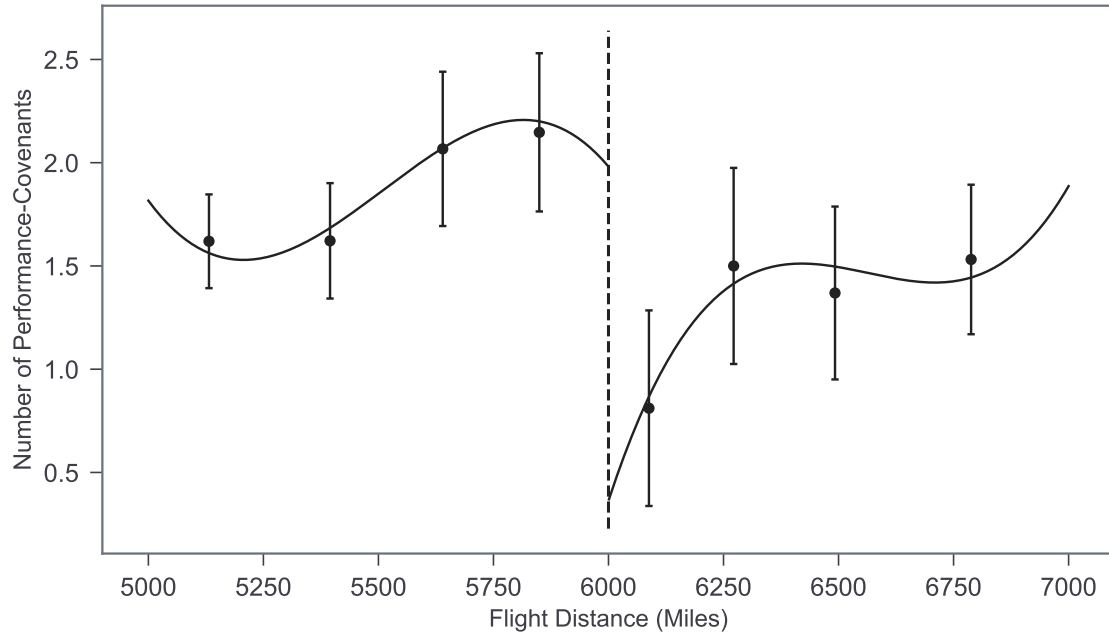
**Panel A. Linear Estimation**



**Panel B. Quadratic Estimation**



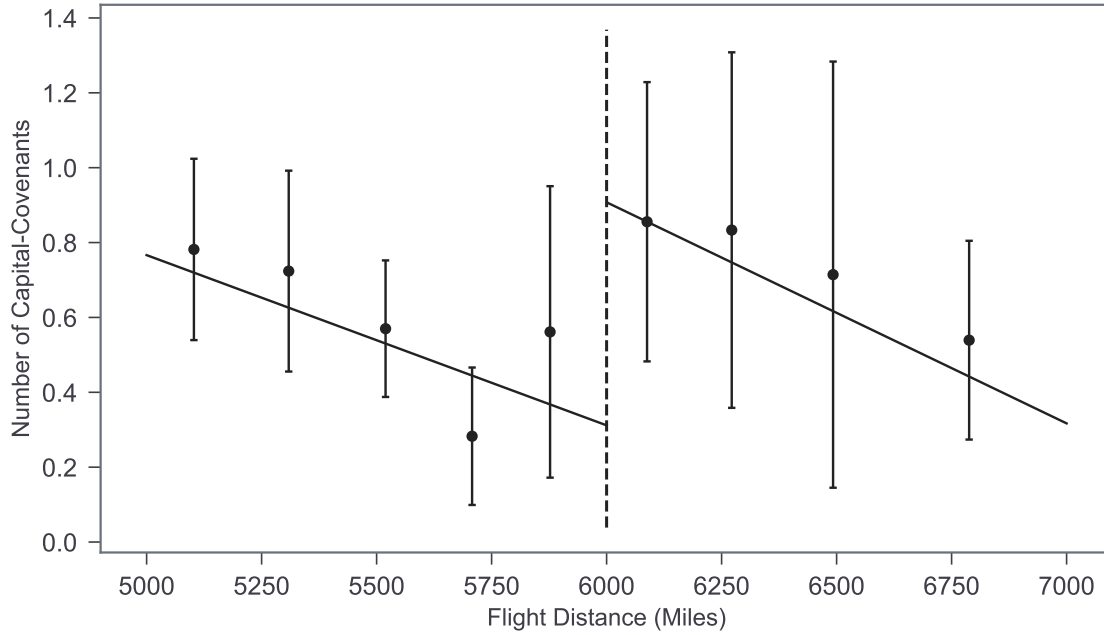
**Panel C. Cubic Estimation**



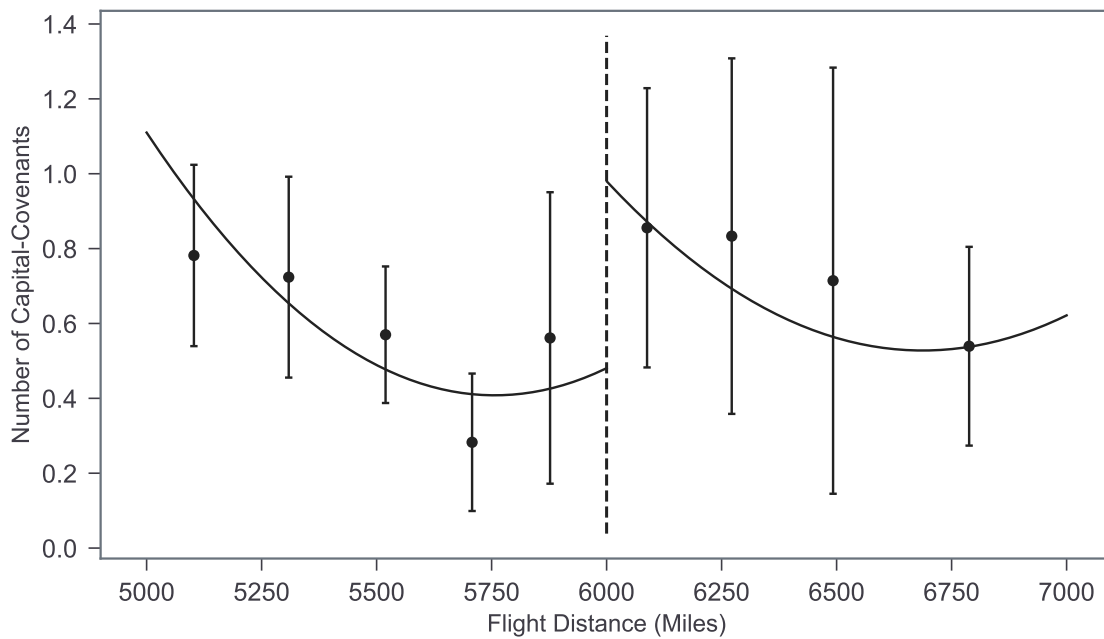
**Figure 4. Regression Discontinuity Design: Capital-covenant Intensity**

This figure plots the fitted linear, quadratic, and cubic estimates with 90% confidence intervals within a bin of distance. The x-axis is the flight distance between the borrower and lead arranger, and the y-axis is the number of capital-covenants of loan facilities. Each dot on the plot represents the average loan spread within evenly-spaced bins, with a margin of 1,000 miles around the 6,000-mile cut-off. The number of bins is determined by IMSE-optimal evenly-spaced method using polynomial regression proposed by [Calonico, Cattaneo, and Titiunik \(2015\)](#).

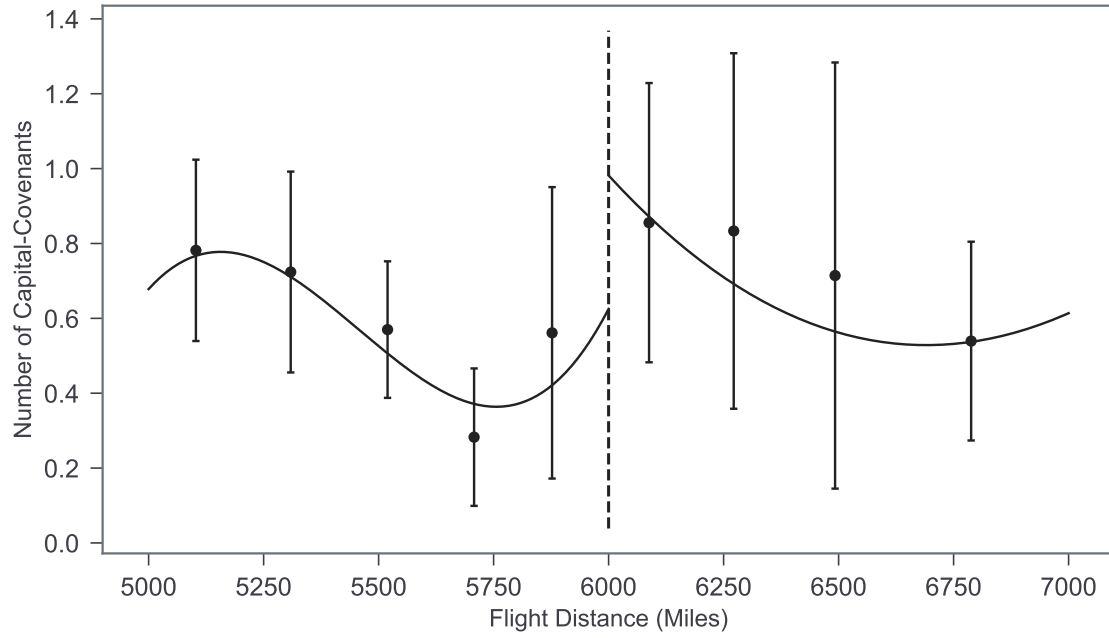
**Panel A. Linear Estimation**



**Panel B. Quadratic Estimation**



**Panel C. Cubic Estimation**



**Table 1. Summary Statistics**

| <b>Variable</b>                     | <b>Obs</b> | <b>Mean</b> | <b>Std</b> | <b>25%</b> | <b>Median</b> | <b>75%</b> |
|-------------------------------------|------------|-------------|------------|------------|---------------|------------|
| <i><b>Dependent Variable</b></i>    |            |             |            |            |               |            |
| LoanSpread                          | 5,141      | 160.97      | 110.98     | 85.00      | 140.00        | 200.00     |
| Covenant Mix                        | 1,642      | 0.78        | 0.35       | 0.50       | 1.00          | 1.00       |
| Covenant Intensity                  | 1,642      | 1.92        | 0.86       | 1.00       | 2.00          | 2.00       |
| P-Covenant Intensity                | 1,642      | 1.58        | 1.00       | 1.00       | 2.00          | 2.00       |
| C-Covenant Intensity                | 1,642      | 0.33        | 0.50       | 0.00       | 0.00          | 1.00       |
| Covenant Tightness                  | 1,169      | 0.30        | 0.40       | 0.00       | 0.04          | 0.78       |
| P-Covenant Tightness                | 1,169      | 0.27        | 0.39       | 0.00       | 0.02          | 0.55       |
| C-Covenant Tightness                | 1,169      | 0.05        | 0.20       | 0.00       | 0.00          | 0.00       |
| <i><b>Independent Variable</b></i>  |            |             |            |            |               |            |
| Direct Flight (Lead Arranger)       | 5,141      | 0.67        | 0.40       | 0.33       | 1.00          | 1.00       |
| Flight Number (Lead Arranger)       | 5,141      | 6.47        | 2.33       | 5.87       | 7.16          | 7.92       |
| Direct Cargo Flight (Lead Arranger) | 5,141      | 0.70        | 0.39       | 0.40       | 1.00          | 1.00       |
| Cargo Flight Number (Lead Arranger) | 5,141      | 7.78        | 2.98       | 7.00       | 8.70          | 9.74       |
| Direct Flight (Participant)         | 5,141      | 0.66        | 0.39       | 0.40       | 0.83          | 1.00       |
| Flight Number (Participant)         | 5,141      | 6.21        | 2.86       | 5.98       | 7.20          | 7.97       |
| Flight Distance (Participant)       | 5,141      | 7.86        | 0.48       | 7.52       | 7.87          | 8.18       |
| Abnormal Accrual                    | 3,065      | 0.00        | 0.08       | -0.03      | 0.00          | 0.03       |
| Acct Quality                        | 3,099      | -0.03       | 0.03       | -0.04      | -0.03         | -0.02      |
| Analyst Coverage                    | 3,999      | 3.86        | 0.99       | 3.37       | 4.04          | 4.54       |
| KZ                                  | 3,806      | -0.46       | 8.16       | 0.44       | 1.39          | 2.04       |
| WW                                  | 4,592      | -1.04       | 0.09       | -1.11      | -1.05         | -0.99      |
| <i><b>Control Variable</b></i>      |            |             |            |            |               |            |
| GeoDistance (Participant)           | 5,141      | 7.86        | 0.48       | 7.52       | 7.87          | 8.18       |
| GeoDistance (Lead Arranger)         | 5,141      | 7.77        | 0.49       | 7.37       | 7.75          | 8.12       |
| LoanSize                            | 5,141      | 19.87       | 1.41       | 19.11      | 20.03         | 20.82      |
| Maturity                            | 5,141      | 48.04       | 21.93      | 36.00      | 60.00         | 60.00      |
| LoanSizePast5Y                      | 5,141      | 12.89       | 10.35      | 0.00       | 19.83         | 21.51      |
| Assets                              | 5,141      | 22.67       | 1.65       | 21.52      | 22.69         | 23.83      |
| Profitability                       | 5,141      | 2.58        | 3.97       | 1.25       | 1.99          | 3.32       |
| Leverage                            | 5,141      | 0.11        | 0.08       | 0.06       | 0.10          | 0.15       |
| MarketBookRatio                     | 5,141      | 0.34        | 0.18       | 0.22       | 0.32          | 0.45       |
| CashFlow Volatility                 | 5,141      | 0.03        | 0.03       | 0.01       | 0.02          | 0.04       |
| Tangibility                         | 5,141      | 0.36        | 0.29       | 0.10       | 0.29          | 0.62       |

**Table 2. Loan Spread**

This table presents the OLS regression results on the relationship between loan spread and passenger flights connecting borrower and lead arrangers. The dependent variable is the *Loan Spread* of the loan facility. The independent variables of interest are *Direct Flight (Lead Arranger)* and *Flight Number (Lead Arranger)*. Loan facility controls, including *GeoDistance (Lead Arranger)*, *Maturity*, *LoanSize* and *LoanSizePast5Y*; borrower-year controls, including *Assets*, *MarketBookRatio*, *Profitability*, *Leverage*, *CashFlowVolatility*, *Tangibility*; country  $\times$  year fixed effects; industry  $\times$  year fixed effects; leader  $\times$  year fixed effects; borrower fixed effects; loan type fixed effects and loan purpose fixed effects are included in all regressions. Definitions of all variables are in the [Table A1](#). Columns (1) and (2) present the results based on the full sample, and columns (3) and (4) present the result based on a subsample controlling for the number of covenants (*Covenant Intensity*). Standard errors are clustered by borrower city. Robust t-statistics are in parentheses. \*, \*\*, and \*\*\* indicate significance at 10%, 5% and 1%, respectively.

|                               | (1)<br>Loan Spread  | (2)<br>Loan Spread | (3)<br>Loan Spread   | (4)<br>Loan Spread   |
|-------------------------------|---------------------|--------------------|----------------------|----------------------|
| Direct Flight (Lead Arranger) | -15.44**<br>(-2.26) |                    | -30.88***<br>(-3.39) |                      |
| Flight Number (Lead Arranger) |                     | -2.19**<br>(-2.35) |                      | -3.41***<br>(-2.75)  |
| Covenant Intensity            |                     |                    | -36.18***<br>(-9.09) | -37.87***<br>(-9.81) |
| GeoDistance (Lead Arranger)   | 22.94***<br>(2.98)  | 21.75***<br>(2.66) | 37.67**<br>(2.18)    | 35.19*<br>(1.91)     |
| Facility Control              | Yes                 | Yes                | Yes                  | Yes                  |
| Borrower-Year Control         | Yes                 | Yes                | Yes                  | Yes                  |
| Country-Year FE               | Yes                 | Yes                | Yes                  | Yes                  |
| Industry-Year FE              | Yes                 | Yes                | Yes                  | Yes                  |
| Leader-Year FE                | Yes                 | Yes                | Yes                  | Yes                  |
| Loan Type FE                  | Yes                 | Yes                | Yes                  | Yes                  |
| Loan Purpose FE               | Yes                 | Yes                | Yes                  | Yes                  |
| Borrower FE                   | Yes                 | Yes                | Yes                  | Yes                  |
| Cluster at Borrower City      | Yes                 | Yes                | Yes                  | Yes                  |
| Observations                  | 5,141               | 5,141              | 1,642                | 1,642                |
| R-squared                     | 0.92                | 0.92               | 0.98                 | 0.98                 |

**Table 3. Covenant Intensity**

This table presents the OLS regression results on the relationship between covenant intensity and passenger flights connecting borrower and lead arrangers. The dependent variables are the *Covenant Intensity*, *Covenant Mix*, *P-Covenant Intensity* and *C-Covenant Intensity* of the loan facility. The independent variables of interest are *Direct Cargo Flight (Lead Arranger)*, *Cargo Flight Number (Lead Arranger)*, *Direct Flight (Participant)* and *Flight Number (Participant)*. Loan facility controls, including *GeoDistance (Lead Arranger or Participant)*, *LoanSpread*, *Maturity*, *LoanSize* and *LoanSizePast5Y*; borrower-year controls, including *Assets*, *MarketBookRatio*, *Profitability*, *Leverage*, *CashFlowVolatility*, *Tangibility*; country  $\times$  year fixed effects; industry  $\times$  year fixed effects; leader  $\times$  year fixed effects; borrower fixed effects; loan type fixed effects and loan purpose fixed effects are included in all regressions. Definitions of all variables are in the [Table A1](#). Standard errors are clustered by borrower city. Robust t-statistics are in parentheses. \*, \*\*, and \*\*\* indicate significance at 10%, 5% and 1%, respectively.

|                               | (1)                | (2)               | (3)                 | (4)                 | (5)                  | (6)                | (7)                  | (8)               |
|-------------------------------|--------------------|-------------------|---------------------|---------------------|----------------------|--------------------|----------------------|-------------------|
|                               | Covenant Intensity |                   | Covenant Mix        |                     | P-Covenant Intensity |                    | C-Covenant Intensity |                   |
| Direct Flight (Lead Arranger) | 0.34***<br>(3.23)  |                   | 0.07***<br>(2.89)   |                     | 0.42***<br>(3.48)    |                    | -0.08*<br>(-1.83)    |                   |
| Flight Number (Lead Arranger) |                    | 0.04***<br>(2.71) |                     | 0.01**<br>(2.39)    |                      | 0.05***<br>(3.48)  |                      | -0.01*<br>(-1.76) |
| GeoDistance (Lead Arranger)   | -0.19<br>(-1.51)   | -0.17<br>(-1.42)  | -0.09***<br>(-3.77) | -0.09***<br>(-3.00) | -0.29**<br>(-2.16)   | -0.28**<br>(-2.14) | 0.10**<br>(2.09)     | 0.11*<br>(1.89)   |
| Facility Control              | Yes                | Yes               | Yes                 | Yes                 | Yes                  | Yes                | Yes                  | Yes               |
| Borrower-Year Control         | Yes                | Yes               | Yes                 | Yes                 | Yes                  | Yes                | Yes                  | Yes               |
| Country-Year FE               | Yes                | Yes               | Yes                 | Yes                 | Yes                  | Yes                | Yes                  | Yes               |
| Industry-Year FE              | Yes                | Yes               | Yes                 | Yes                 | Yes                  | Yes                | Yes                  | Yes               |
| Leader-Year FE                | Yes                | Yes               | Yes                 | Yes                 | Yes                  | Yes                | Yes                  | Yes               |
| Loan Type FE                  | Yes                | Yes               | Yes                 | Yes                 | Yes                  | Yes                | Yes                  | Yes               |
| Loan Purpose FE               | Yes                | Yes               | Yes                 | Yes                 | Yes                  | Yes                | Yes                  | Yes               |
| Borrower FE                   | Yes                | Yes               | Yes                 | Yes                 | Yes                  | Yes                | Yes                  | Yes               |
| Cluster at Borrower City      | Yes                | Yes               | Yes                 | Yes                 | Yes                  | Yes                | Yes                  | Yes               |
| Observations                  | 1,642              | 1,642             | 1,642               | 1,642               | 1,642                | 1,642              | 1,642                | 1,642             |
| R-squared                     | 0.99               | 0.99              | 0.99                | 0.99                | 0.99                 | 0.99               | 0.99                 | 0.99              |



**Table 4. Covenant Tightness**

This table presents the OLS regression results on the relationship between covenant tightness and passenger flights connecting borrower and lead arrangers. The dependent variables are the *Covenant Tightness*, *P-Covenant Tightness* and *C-Covenant Tightness* of the loan facility. The independent variables of interest are *Direct Flight (Lead Arranger)* and *Flight Number (Lead Arranger)*. Loan facility controls, including *GeoDistance (Lead Arranger)*, *LoanSpread*, *Maturity*, *LoanSize* and *LoanSizePast5Y*; borrower-year controls, including *Assets*, *MarketBookRatio*, *Profitability*, *Leverage*, *CashFlowVolatility*, *Tangibility*; country  $\times$  year fixed effects; industry  $\times$  year fixed effects; leader  $\times$  year fixed effects; borrower fixed effects; loan type fixed effects and loan purpose fixed effects are included in all regressions. Definitions of all variables are in the [Table A1](#). Standard errors are clustered by borrower city. Robust t-statistics are in parentheses. \*, \*\*, and \*\*\* indicate significance at 10%, 5% and 1%, respectively.

|                               | (1)                | (2)               | (3)                  | (4)               | (5)                  | (6)              |
|-------------------------------|--------------------|-------------------|----------------------|-------------------|----------------------|------------------|
|                               | Covenant Tightness |                   | P-Covenant Tightness |                   | C-Covenant Tightness |                  |
| Direct Flight (Lead Arranger) | 0.40***<br>(4.65)  |                   | 0.42***<br>(4.88)    |                   | -0.01<br>(-0.24)     |                  |
| Flight Number (Lead Arranger) |                    | 0.04*<br>(1.65)   |                      | 0.04*<br>(1.67)   |                      | 0.01<br>(0.13)   |
| GeoDistance (Lead Arranger)   | 0.30**<br>(2.10)   | 0.27***<br>(3.05) | 0.30**<br>(2.17)     | 0.28***<br>(3.09) | -0.01<br>(-0.28)     | -0.02<br>(-0.58) |
| Facility Control              | Yes                | Yes               | Yes                  | Yes               | Yes                  | Yes              |
| Borrower-Year Control         | Yes                | Yes               | Yes                  | Yes               | Yes                  | Yes              |
| Country-Year FE               | Yes                | Yes               | Yes                  | Yes               | Yes                  | Yes              |
| Industry-Year FE              | Yes                | Yes               | Yes                  | Yes               | Yes                  | Yes              |
| Leader-Year FE                | Yes                | Yes               | Yes                  | Yes               | Yes                  | Yes              |
| Loan Type FE                  | Yes                | Yes               | Yes                  | Yes               | Yes                  | Yes              |
| Loan Purpose FE               | Yes                | Yes               | Yes                  | Yes               | Yes                  | Yes              |
| Borrower FE                   | Yes                | Yes               | Yes                  | Yes               | Yes                  | Yes              |
| Cluster at Borrower City      | Yes                | Yes               | Yes                  | Yes               | Yes                  | Yes              |
| Observations                  | 1,169              | 1,169             | 1,169                | 1,169             | 1,169                | 1,169            |
| R-squared                     | 0.99               | 0.99              | 0.99                 | 0.99              | 0.99                 | 0.99             |

**Table 5. Accounting Quality**

This table presents the OLS regression results to test the accounting quality mechanism. The dependent variables are the *Loan Spread*, *Covenant Mix*, *P-Covenant Intensity* and *P-Covenant Tightness* of the loan facility. The independent variables of interest are *Direct Flight (Lead Arranger)*, *Flight Number (Lead Arranger)* and their interaction with financial constraint proxies (*Acct Quality* or *Abnormal Accrual*). Loan facility controls, including *GeoDistance (Lead Arranger or Participant)*, *Maturity*, *LoanSize* and *LoanSizePast5Y*; borrower-year controls, including *Assets*, *MarketBookRatio*, *Profitability*, *Leverage*, *CashFlowVolatility*, *Tangibility*; country  $\times$  year fixed effects; industry  $\times$  year fixed effects; leader  $\times$  year fixed effects; borrower fixed effects; loan type fixed effects and loan purpose fixed effects are included. We control the *LoanSpread* for columns (3) to (8). Panel A and B present the resultsing based on accounting quality or abnormal accrual, respectively. Definitions of all variables are in the [Table A1](#). Standard errors are clustered by borrower city. Robust t-statistics are in parentheses. \*, \*\*, and \*\*\* indicate significance at 10%, 5% and 1%, respectively.

**Panel A. Accounting Quality**

|                                                     | (1)                  | (2)                   | (3)                  | (4)                 | (5)                 | (6)                 | (7)                  | (8)                 |
|-----------------------------------------------------|----------------------|-----------------------|----------------------|---------------------|---------------------|---------------------|----------------------|---------------------|
|                                                     | Loan Spread          |                       | P-Covenant Intensity |                     | Covenant Mix        |                     | P-Covenant Tightness |                     |
| Direct Flight (Lead Arranger) $\times$ Acct Quality | 705.02***<br>(3.80)  |                       | -6.76**<br>(-2.58)   |                     | -2.82***<br>(-2.85) |                     | -30.67***<br>(-4.66) |                     |
| Direct Flight (Lead Arranger)                       | 6.32<br>(0.53)       |                       | 0.04<br>(0.29)       |                     | -0.08**<br>(-2.54)  |                     | -0.93***<br>(-3.92)  |                     |
| Flight Number (Lead Arranger) $\times$ Acct Quality |                      | 94.97***<br>(3.93)    |                      | -1.36***<br>(-3.33) |                     | -0.52***<br>(-3.29) |                      | -3.69***<br>(-3.14) |
| Flight Number (Lead Arranger)                       |                      | 2.00<br>(1.30)        |                      | -0.05**<br>(-2.20)  |                     | -0.02**<br>(-2.22)  |                      | -0.10**<br>(-2.35)  |
| Acct Quality                                        | -529.27**<br>(-2.57) | -669.25***<br>(-2.72) | 6.86***<br>(3.06)    | 9.71***<br>(3.70)   | 1.36*<br>(1.97)     | 2.46***<br>(2.82)   | 13.40**<br>(2.05)    | 15.25<br>(1.57)     |
| GeoDistance (Lead Arranger)                         | 14.78*<br>(1.72)     | 11.64<br>(1.29)       | 0.09<br>(1.28)       | 0.25**<br>(2.09)    | -0.05**<br>(-2.11)  | -0.02<br>(-0.95)    | 0.61***<br>(3.87)    | 0.64**<br>(2.44)    |
| Borrower-Year Control                               | Yes                  | Yes                   | Yes                  | Yes                 | Yes                 | Yes                 | Yes                  | Yes                 |
| Country-Year FE                                     | Yes                  | Yes                   | Yes                  | Yes                 | Yes                 | Yes                 | Yes                  | Yes                 |
| Industry-Year FE                                    | Yes                  | Yes                   | Yes                  | Yes                 | Yes                 | Yes                 | No                   | No                  |
| Leader-Year FE                                      | Yes                  | Yes                   | Yes                  | Yes                 | Yes                 | Yes                 | Yes                  | Yes                 |
| Loan Type FE                                        | Yes                  | Yes                   | Yes                  | Yes                 | Yes                 | Yes                 | Yes                  | Yes                 |
| Loan Purpose FE                                     | Yes                  | Yes                   | Yes                  | Yes                 | Yes                 | Yes                 | Yes                  | Yes                 |
| Borrower FE                                         | Yes                  | Yes                   | Yes                  | Yes                 | Yes                 | Yes                 | Yes                  | Yes                 |
| Cluster at Borrower City                            | Yes                  | Yes                   | Yes                  | Yes                 | Yes                 | Yes                 | Yes                  | Yes                 |
| Observations                                        | 3,099                | 3,099                 | 1,086                | 1,086               | 1,086               | 1,086               | 831                  | 831                 |
| R-squared                                           | 0.95                 | 0.95                  | 0.98                 | 0.98                | 0.98                | 0.98                | 0.99                 | 0.99                |

### Panel B. Abnormal Accrual

|                                                  | (1)                   | (2)                  | (3)                  | (4)                | (5)               | (6)               | (7)                  | (8)                 |
|--------------------------------------------------|-----------------------|----------------------|----------------------|--------------------|-------------------|-------------------|----------------------|---------------------|
|                                                  | Loan Spread           |                      | P-Covenant Intensity |                    | Covenant Mix      |                   | P-Covenant Tightness |                     |
| Direct Flight (Lead Arranger) × Abnormal Accrual | -196.44***<br>(-5.00) |                      | 4.30***<br>(4.47)    |                    | 0.86***<br>(3.44) |                   | 5.78***<br>(5.41)    |                     |
| Direct Flight (Lead Arranger)                    | -3.63<br>(-0.44)      |                      | 0.23<br>(1.51)       |                    | 0.06<br>(1.63)    |                   | -0.06<br>(-0.46)     |                     |
| Flight Number (Lead Arranger) × Abnormal Accrual |                       | -30.26***<br>(-3.99) |                      | 0.50***<br>(2.73)  |                   | 0.13**<br>(2.19)  |                      | 0.55***<br>(3.41)   |
| Flight Number (Lead Arranger)                    |                       | 0.19<br>(0.13)       |                      | 0.04*<br>(1.97)    |                   | 0.01<br>(1.20)    |                      | 0.01<br>(0.52)      |
| Abnormal Accrual                                 | 105.52**<br>(2.57)    | 178.72***<br>(3.13)  | -1.85***<br>(-2.98)  | -2.66**<br>(-2.15) | -0.24*<br>(-1.89) | -0.56*<br>(-1.75) | -4.41***<br>(-6.85)  | -4.44***<br>(-4.11) |
| GeoDistance (Lead Arranger)                      | 1.29<br>(0.12)        | -1.37<br>(-0.12)     | -0.23<br>(-1.16)     | -0.13<br>(-0.79)   | -0.01<br>(-0.40)  | 0.03<br>(1.42)    | 0.15*<br>(1.76)      | 0.43**<br>(2.63)    |
| Borrower-Year Control                            | Yes                   | Yes                  | Yes                  | Yes                | Yes               | Yes               | Yes                  | Yes                 |
| Country-Year FE                                  | Yes                   | Yes                  | Yes                  | Yes                | Yes               | Yes               | Yes                  | Yes                 |
| Industry-Year FE                                 | Yes                   | Yes                  | Yes                  | Yes                | Yes               | Yes               | No                   | No                  |
| Leader-Year FE                                   | Yes                   | Yes                  | Yes                  | Yes                | Yes               | Yes               | Yes                  | Yes                 |
| Loan Type FE                                     | Yes                   | Yes                  | Yes                  | Yes                | Yes               | Yes               | Yes                  | Yes                 |
| Loan Purpose FE                                  | Yes                   | Yes                  | Yes                  | Yes                | Yes               | Yes               | Yes                  | Yes                 |
| Borrower FE                                      | Yes                   | Yes                  | Yes                  | Yes                | Yes               | Yes               | Yes                  | Yes                 |
| Cluster at Borrower City                         | Yes                   | Yes                  | Yes                  | Yes                | Yes               | Yes               | Yes                  | Yes                 |
| Observations                                     | 3,065                 | 3,065                | 1,157                | 1,157              | 1,157             | 1,157             | 868                  | 868                 |
| R-squared                                        | 0.95                  | 0.95                 | 0.98                 | 0.98               | 0.99              | 0.99              | 0.99                 | 0.99                |

**Table 6. Loan Spread: Placebo Test**

This table presents the OLS regression results on the relationship between loan spread and cargo flights connecting borrower and lead arrangers, or passenger flights connecting borrower and participant lenders. The dependent variable is the *Loan Spread* of the loan facility. The independent variables of interest are *Direct Cargo Flight (Lead Arranger)*, *Cargo Flight Number (Lead Arranger)*, *Direct Flight (Participant)* and *Flight Number (Participant)*. Loan facility controls, including *GeoDistance (Lead Arranger or Participant)*, *Maturity*, *LoanSize* and *LoanSizePast5Y*; borrower-year controls, including *Assets*, *MarketBookRatio*, *Profitability*, *Leverage*, *CashFlowVolatility*, *Tangibility*; country  $\times$  year fixed effects; industry  $\times$  year fixed effects; leader  $\times$  year fixed effects; borrower fixed effects; loan type fixed effects and loan purpose fixed effects are included in all regressions. Definitions of all variables are in the [Table A1](#). Panel A presents the results based on the cargo flights connecting borrower and lead arrangers, and Panel B presents the result based on passenger flights connecting borrower and participant lenders. Standard errors are clustered by borrower city. Robust t-statistics are in parentheses. \*, \*\*, and \*\*\* indicate significance at 10%, 5% and 1%, respectively.

| Panel A. Cargo Flights              |                    |                    | Panel B. Participant Lenders |                    |                    |
|-------------------------------------|--------------------|--------------------|------------------------------|--------------------|--------------------|
|                                     | (1)<br>Loan Spread | (2)<br>Loan Spread |                              | (3)<br>Loan Spread | (4)<br>Loan Spread |
| Direct Cargo Flight (Lead Arranger) | -1.02<br>(-0.22)   |                    | Direct Flight (Participant)  | 2.02<br>(0.31)     |                    |
| Cargo Flight Number (Lead Arranger) |                    | -0.39<br>(-0.65)   | Flight Number (Participant)  |                    | -0.36<br>(-0.57)   |
| GeoDistance (Lead Arranger)         | 18.44**<br>(2.41)  | 19.08**<br>(2.35)  | GeoDistance (Participant)    | 1.11<br>(0.15)     | 1.88<br>(0.27)     |
| Facility Control                    | Yes                | Yes                | Facility Control             | Yes                | Yes                |
| Borrower-Year Control               | Yes                | Yes                | Borrower-Year Control        | Yes                | Yes                |
| Country-Year FE                     | Yes                | Yes                | Country-Year FE              | Yes                | Yes                |
| Industry-Year FE                    | Yes                | Yes                | Industry-Year FE             | Yes                | Yes                |
| Leader-Year FE                      | Yes                | Yes                | Leader-Year FE               | Yes                | Yes                |
| Loan Type FE                        | Yes                | Yes                | Loan Type FE                 | Yes                | Yes                |
| Loan Purpose FE                     | Yes                | Yes                | Loan Purpose FE              | Yes                | Yes                |
| Borrower FE                         | Yes                | Yes                | Borrower FE                  | Yes                | Yes                |
| Cluster at Borrower City            | Yes                | Yes                | Cluster at Borrower City     | Yes                | Yes                |
| Observations                        | 5,141              | 5,141              | Observations                 | 5,141              | 5,141              |
| R-squared                           | 0.93               | 0.93               | R-squared                    | 0.93               | 0.93               |

**Table 7. Covenant Intensity: Placebo Test**

This table presents the OLS regression results on the relationship between covenant intensity and cargo flights connecting borrower and lead arrangers, or passenger flights connecting borrower and participant lenders. The dependent variable is the *Loan Spread* of the loan facility. The dependent variables are the *Covenant Intensity*, *Covenant Mix*, *P-Covenant Intensity* and *C-Covenant Intensity* of the loan facility. The independent variables of interest are *Direct Cargo Flight (Lead Arranger)*, *Cargo Flight Number (Lead Arranger)*, *Direct Flight (Participant)* and *Flight Number (Participant)*. Loan facility controls, including *GeoDistance (Lead Arranger / Participant)*, *Maturity*, *LoanSize* and *LoanSizePast5Y*; borrower-year controls, including *Assets*, *MarketBookRatio*, *Profitability*, *Leverage*, *CashFlowVolatility*, *Tangibility*; country  $\times$  year fixed effects; industry  $\times$  year fixed effects; leader  $\times$  year fixed effects; borrower fixed effects; loan type fixed effects and loan purpose fixed effects are included in all regressions. Definitions of all variables are in the [Table A1](#). Standard errors are clustered by borrower city. Robust t-statistics are in parentheses. \*, \*\*, and \*\*\* indicate significance at 10%, 5% and 1%, respectively.

**Panel A. Cargo Flights Connecting Borrower and Lead Arranger**

|                                     | (1)                | (2)              | (3)                 | (4)                | (5)                  | (6)              | (7)                  | (8)              |
|-------------------------------------|--------------------|------------------|---------------------|--------------------|----------------------|------------------|----------------------|------------------|
|                                     | Covenant Intensity |                  | Covenant Mix        |                    | P-Covenant Intensity |                  | C-Covenant Intensity |                  |
| Direct Cargo Flight (Lead Arranger) | 0.03<br>(0.30)     |                  | -0.01<br>(-0.45)    |                    | 0.03<br>(0.25)       |                  | 0.01<br>(0.09)       |                  |
| Cargo Flight Number (Lead Arranger) |                    | 0.01<br>(0.42)   |                     | 0.01<br>(0.67)     |                      | 0.01<br>(0.63)   |                      | -0.01<br>(-0.56) |
| GeoDistance (Lead Arranger)         | -0.05<br>(-0.40)   | -0.05<br>(-0.42) | -0.06***<br>(-2.97) | -0.06**<br>(-2.54) | -0.11<br>(-0.95)     | -0.13<br>(-0.97) | 0.07*<br>(1.71)      | 0.07<br>(1.57)   |
| Facility Control                    | Yes                | Yes              | Yes                 | Yes                | Yes                  | Yes              | Yes                  | Yes              |
| Borrower-Year Control               | Yes                | Yes              | Yes                 | Yes                | Yes                  | Yes              | Yes                  | Yes              |
| Country-Year FE                     | Yes                | Yes              | Yes                 | Yes                | Yes                  | Yes              | Yes                  | Yes              |
| Industry-Year FE                    | Yes                | Yes              | Yes                 | Yes                | Yes                  | Yes              | Yes                  | Yes              |
| Leader-Year FE                      | Yes                | Yes              | Yes                 | Yes                | Yes                  | Yes              | Yes                  | Yes              |
| Loan Type FE                        | Yes                | Yes              | Yes                 | Yes                | Yes                  | Yes              | Yes                  | Yes              |
| Loan Purpose FE                     | Yes                | Yes              | Yes                 | Yes                | Yes                  | Yes              | Yes                  | Yes              |
| Borrower FE                         | Yes                | Yes              | Yes                 | Yes                | Yes                  | Yes              | Yes                  | Yes              |
| Cluster at Borrower City            | Yes                | Yes              | Yes                 | Yes                | Yes                  | Yes              | Yes                  | Yes              |
| Observations                        | 1,642              | 1,642            | 1,642               | 1,642              | 1,642                | 1,642            | 1,642                | 1,642            |
| R-squared                           | 0.99               | 0.99             | 0.99                | 0.99               | 0.99                 | 0.99             | 0.99                 | 0.99             |

**Panel B. Passenger Flights Connecting Borrower and Participant Lender**

|                             | (1)                | (2)              | (3)                | (4)                | (5)                  | (6)              | (7)                  | (8)              |
|-----------------------------|--------------------|------------------|--------------------|--------------------|----------------------|------------------|----------------------|------------------|
|                             | Covenant Intensity |                  | Covenant Mix       |                    | P-Covenant Intensity |                  | C-Covenant Intensity |                  |
| Direct Flight (Participant) | -0.03<br>(-0.59)   |                  | 0.01<br>(0.11)     |                    | -0.04<br>(-0.60)     |                  | 0.01<br>(0.24)       |                  |
| Flight Number (Participant) |                    | -0.01<br>(-0.28) |                    | 0.01<br>(0.34)     |                      | -0.01<br>(-0.01) |                      | -0.01<br>(-0.42) |
| GeoDistance (Participant)   | 0.05<br>(1.55)     | 0.04<br>(1.37)   | -0.02**<br>(-2.24) | -0.02**<br>(-2.28) | 0.03<br>(0.69)       | 0.02<br>(0.41)   | 0.02<br>(1.26)       | 0.03<br>(1.33)   |
| Facility Control            | Yes                | Yes              | Yes                | Yes                | Yes                  | Yes              | Yes                  | Yes              |
| Borrower-Year Control       | Yes                | Yes              | Yes                | Yes                | Yes                  | Yes              | Yes                  | Yes              |
| Country-Year FE             | Yes                | Yes              | Yes                | Yes                | Yes                  | Yes              | Yes                  | Yes              |
| Industry-Year FE            | Yes                | Yes              | Yes                | Yes                | Yes                  | Yes              | Yes                  | Yes              |
| Leader-Year FE              | Yes                | Yes              | Yes                | Yes                | Yes                  | Yes              | Yes                  | Yes              |
| Loan Type FE                | Yes                | Yes              | Yes                | Yes                | Yes                  | Yes              | Yes                  | Yes              |
| Loan Purpose FE             | Yes                | Yes              | Yes                | Yes                | Yes                  | Yes              | Yes                  | Yes              |
| Borrower FE                 | Yes                | Yes              | Yes                | Yes                | Yes                  | Yes              | Yes                  | Yes              |
| Cluster at Borrower City    | Yes                | Yes              | Yes                | Yes                | Yes                  | Yes              | Yes                  | Yes              |
| Observations                | 1,642              | 1,642            | 1,642              | 1,642              | 1,642                | 1,642            | 1,642                | 1,642            |
| R-squared                   | 0.99               | 0.99             | 0.99               | 0.99               | 0.99                 | 0.99             | 0.99                 | 0.99             |

**Table 8. Covenant Tightness: Placebo Test**

This table presents the OLS regression results on the relationship between covenant tightness and passenger flights connecting borrower and lead arrangers. The dependent variables are the *Covenant Tightness*, *P-Covenant Tightness* and *C-Covenant Tightness* of the loan facility. The independent variables of interest are *Direct Cargo Flight (Lead Arranger)*, *Cargo Flight Number (Lead Arranger)*, *Direct Flight (Participant)* and *Flight Number (Participant)*. Loan facility controls, including *GeoDistance (Lead Arranger)*, *LoanSpread*, *Maturity*, *LoanSize* and *LoanSizePast5Y*; borrower-year controls, including *Assets*, *MarketBookRatio*, *Profitability*, *Leverage*, *CashFlowVolatility*, *Tangibility*; country  $\times$  year fixed effects; industry  $\times$  year fixed effects; leader  $\times$  year fixed effects; borrower fixed effects; loan type fixed effects and loan purpose fixed effects are included in all regressions. Definitions of all variables are in the [Table A1](#). Standard errors are clustered by borrower city. Robust t-statistics are in parentheses. \*, \*\*, and \*\*\* indicate significance at 10%, 5% and 1%, respectively.

|                                     | (1)                | (2)               | (3)                  | (4)               | (5)                  | (6)              |
|-------------------------------------|--------------------|-------------------|----------------------|-------------------|----------------------|------------------|
|                                     | Covenant Tightness |                   | P-Covenant Tightness |                   | C-Covenant Tightness |                  |
| Direct Cargo Flight (Lead Arranger) | -0.01<br>(-0.03)   |                   | 0.01<br>(0.02)       |                   | -0.07**<br>(-2.46)   |                  |
| Cargo Flight Number (Lead Arranger) |                    | 0.01<br>(0.50)    |                      | 0.01<br>(0.47)    |                      | -0.01<br>(-0.88) |
| GeoDistance (Lead Arranger)         | 0.49***<br>(2.96)  | 0.43***<br>(4.29) | 0.49***<br>(3.02)    | 0.44***<br>(4.31) | 0.01<br>(0.44)       | 0.01<br>(0.17)   |
| Facility Control                    | Yes                | Yes               | Yes                  | Yes               | Yes                  | Yes              |
| Borrower-Year Control               | Yes                | Yes               | Yes                  | Yes               | Yes                  | Yes              |
| Country-Year FE                     | Yes                | Yes               | Yes                  | Yes               | Yes                  | Yes              |
| Industry-Year FE                    | Yes                | Yes               | Yes                  | Yes               | Yes                  | Yes              |
| Leader-Year FE                      | Yes                | Yes               | Yes                  | Yes               | Yes                  | Yes              |
| Loan Type FE                        | Yes                | Yes               | Yes                  | Yes               | Yes                  | Yes              |
| Loan Purpose FE                     | Yes                | Yes               | Yes                  | Yes               | Yes                  | Yes              |
| Borrower FE                         | Yes                | Yes               | Yes                  | Yes               | Yes                  | Yes              |
| Cluster at Borrower City            | Yes                | Yes               | Yes                  | Yes               | Yes                  | Yes              |
| Observations                        | 1,169              | 1,169             | 1,169                | 1,169             | 1,169                | 1,169            |
| R-squared                           | 0.99               | 0.99              | 0.99                 | 0.99              | 0.99                 | 0.99             |

**Panel B. Passenger Flights Connecting Borrower and Participant Lender**

|                             | (1)                | (2)            | (3)                  | (4)            | (5)                  | (6)              |
|-----------------------------|--------------------|----------------|----------------------|----------------|----------------------|------------------|
|                             | Covenant Tightness |                | P-Covenant Tightness |                | C-Covenant Tightness |                  |
| Direct Flight (Participant) | 0.03<br>(0.20)     |                | 0.02<br>(0.19)       |                | 0.01<br>(0.19)       |                  |
| Flight Number (Participant) |                    | 0.01<br>(0.16) |                      | 0.01<br>(0.13) |                      | 0.01<br>(0.44)   |
| Distance (Participant)      | 0.02<br>(0.32)     | 0.02<br>(0.36) | 0.01<br>(0.26)       | 0.02<br>(0.31) | -0.01<br>(-0.71)     | -0.01<br>(-0.88) |
| Facility Control            | Yes                | Yes            | Yes                  | Yes            | Yes                  | Yes              |
| Borrower-Year Control       | Yes                | Yes            | Yes                  | Yes            | Yes                  | Yes              |
| Country-Year FE             | Yes                | Yes            | Yes                  | Yes            | Yes                  | Yes              |
| Industry-Year FE            | Yes                | Yes            | Yes                  | Yes            | Yes                  | Yes              |
| Leader-Year FE              | Yes                | Yes            | Yes                  | Yes            | Yes                  | Yes              |
| Loan Type FE                | Yes                | Yes            | Yes                  | Yes            | Yes                  | Yes              |
| Loan Purpose FE             | Yes                | Yes            | Yes                  | Yes            | Yes                  | Yes              |
| Borrower FE                 | Yes                | Yes            | Yes                  | Yes            | Yes                  | Yes              |
| Cluster at Borrower City    | Yes                | Yes            | Yes                  | Yes            | Yes                  | Yes              |
| Observations                | 1,169              | 1,169          | 1,169                | 1,169          | 1,169                | 1,169            |
| R-squared                   | 0.99               | 0.99           | 0.99                 | 0.99           | 0.99                 | 0.99             |



**Table 9. Regression Discontinuity Design: Balance Test**

This table presents the balance test results for our regression discontinuity design (RDD) sample. We report the mean and standard deviation of borrower-year characteristics for observations above and below the threshold, using a bandwidth of 1,000 miles. The examined variables include *Assets*, *MarketBookRatio*, *Profitability*, *Leverage*, *CashFlowVolatility* and *Tangibility*. The rightmost columns presents the differences in means along with the corresponding t-statistics.

| Borrower Characteristic | Flight Distance < 6,000 Miles<br>Observations = 1,450 |       | Flight Distance > 6,000 Miles<br>Observations = 530 |      | Diff  | T-stat |
|-------------------------|-------------------------------------------------------|-------|-----------------------------------------------------|------|-------|--------|
|                         | Mean                                                  | Std   | Mean                                                | Std  |       |        |
| Assets                  | 21.46                                                 | 4.16  | 21.81                                               | 3.55 | -1.54 | -1.25  |
| Profitability           | 0.10                                                  | 0.01  | 0.10                                                | 0.01 | -0.04 | -0.60  |
| Leverage                | 0.30                                                  | 0.04  | 0.31                                                | 0.03 | -0.43 | -1.05  |
| MarketBookRatio         | 2.43                                                  | 61.03 | 2.12                                                | 1.62 | 0.65  | 0.25   |
| CashFlowVolatility      | 0.04                                                  | 0.00  | 0.04                                                | 0.00 | 0.53  | -0.93  |
| Tangibility             | 0.35                                                  | 0.08  | 0.36                                                | 0.07 | -0.24 | -1.07  |

**Table 10. Regression Discontinuity Design: Loan Spread**

This table presents the RD regression results on the relationship between loan spread and distance between borrower and lender. The Definitions of all variables are in the [Table A1](#). The results are based on 1,000-mile margin around the 6,000-mile cut-off. Panel A, B, and C present the results using the Uniform, Triangular, and Epaneck kernel methods, respectively. Standard errors are clustered by borrowers' city. Robust t-statistics are in parentheses. \*, \*\*, and \*\*\* indicate significance at 10%, 5% and 1%, respectively.

| <b>Panel A. Uniform Kernel</b> |                  |                     |                    |
|--------------------------------|------------------|---------------------|--------------------|
|                                | (1)              | (2)                 | (3)                |
|                                | Loan Spread      |                     |                    |
| Flight Distance > 6,000 Miles  | 58.06*<br>(1.88) | 157.08***<br>(2.99) | 178.50**<br>(2.51) |
| Polynomial                     | 1                | 2                   | 3                  |
| Cluster by Borrower City       | Yes              | Yes                 | Yes                |
| Borrower Lender City-Pairs     | 582              | 582                 | 582                |

| <b>Panel B. Triangular Kernel</b> |                    |                     |                    |
|-----------------------------------|--------------------|---------------------|--------------------|
|                                   | (1)                | (2)                 | (3)                |
|                                   | Loan Spread        |                     |                    |
| Flight Distance > 6,000 Miles     | 98.76***<br>(2.59) | 166.64***<br>(2.91) | 200.50**<br>(2.56) |
| Polynomial                        | 1                  | 2                   | 3                  |
| Cluster by Borrower City          | Yes                | Yes                 | Yes                |
| Borrower Lender City-Pairs        | 582                | 582                 | 582                |

| <b>Panel C. Epaneck Kernel</b> |                   |                     |                    |
|--------------------------------|-------------------|---------------------|--------------------|
|                                | (1)               | (2)                 | (3)                |
|                                | Loan Spread       |                     |                    |
| Flight Distance > 6,000 Miles  | 86.63**<br>(2.44) | 161.06***<br>(2.92) | 192.89**<br>(2.57) |
| Polynomial                     | 1                 | 2                   | 3                  |
| Cluster by Borrower City       | Yes               | Yes                 | Yes                |
| Borrower Lender City-Pairs     | 582               | 582                 | 582                |

**Table 11. Regression Discontinuity Design: Number of Performance-Covenants**

This table presents the RD regression results on the relationship between number of performance-covenants and flight distance between borrower and lender. The Definitions of all variables are in the [Table A1](#). The results are based on 1,000-mile margin around the 6,000-mile cut-off. Panel A, B, and C present the results using the Uniform, Triangular, and Epanechnikov kernel methods, respectively. Standard errors are clustered by borrowers' city. Robust t-statistics are in parentheses. \*, \*\*, and \*\*\* indicate significance at 10%, 5% and 1%, respectively.

| <b>Panel A. Uniform Kernel</b>  |                     |                     |                    |
|---------------------------------|---------------------|---------------------|--------------------|
|                                 | (1)                 | (2)                 | (3)                |
| Number of Performance-covenants |                     |                     |                    |
| Flight Distance > 6,000 Miles   | -1.43***<br>(-4.11) | -1.65***<br>(-3.04) | -1.69**<br>(-1.97) |
| Polynomial                      | 1                   | 2                   | 3                  |
| Cluster by Borrower City        | Yes                 | Yes                 | Yes                |
| Borrower Lender City-Pairs      | 138                 | 138                 | 138                |

| <b>Panel B. Triangular Kernel</b> |                     |                     |                   |
|-----------------------------------|---------------------|---------------------|-------------------|
|                                   | (1)                 | (2)                 | (3)               |
| Number of Performance-covenants   |                     |                     |                   |
| Flight Distance > 6,000 Miles     | -1.51***<br>(-4.06) | -1.62***<br>(-2.81) | -1.62*<br>(-1.81) |
| Polynomial                        | 1                   | 2                   | 3                 |
| Cluster by Borrower City          | Yes                 | Yes                 | Yes               |
| Borrower Lender City-Pairs        | 138                 | 138                 | 138               |

| <b>Panel C. Epanechnikov Kernel</b> |                     |                     |                   |
|-------------------------------------|---------------------|---------------------|-------------------|
|                                     | (1)                 | (2)                 | (3)               |
| Number of Performance-covenants     |                     |                     |                   |
| Flight Distance > 6,000 Miles       | -1.49***<br>(-4.17) | -1.64***<br>(-2.95) | -1.61*<br>(-1.88) |
| Polynomial                          | 1                   | 2                   | 3                 |
| Cluster by Borrower City            | Yes                 | Yes                 | Yes               |
| Borrower Lender City-Pairs          | 138                 | 138                 | 138               |

**Table 12. Regression Discontinuity Design: Number of Capital-Covenants**

This table presents the RD regression results on the relationship between number of capital-covenants and distance between borrower and lender. The Definitions of all variables are in the [Table A1](#). The results are based on 1,000-mile margin around the 6,000-mile cut-off. Panel A, B, and C present the results using the Uniform, Triangular, and Epanechnikov kernel methods, respectively. Standard errors are clustered by borrowers' city. Robust t-statistics are in parentheses. \*, \*\*, and \*\*\* indicate significance at 10%, 5% and 1%, respectively.

| <b>Panel A. Uniform Kernel</b> |                             |                |                |
|--------------------------------|-----------------------------|----------------|----------------|
|                                | (1)                         | (2)            | (3)            |
|                                | Number of Capital-covenants |                |                |
| Flight Distance > 6,000 Miles  | 0.58**<br>(2.10)            | 0.60<br>(1.35) | 0.35<br>(0.53) |
| Polynomial                     | 1                           | 2              | 3              |
| Cluster by Borrower City       | Yes                         | Yes            | Yes            |
| Borrower Lender City-Pairs     | 138                         | 138            | 138            |

| <b>Panel B. Triangular Kernel</b> |                             |                |                |
|-----------------------------------|-----------------------------|----------------|----------------|
|                                   | (1)                         | (2)            | (3)            |
|                                   | Number of Capital-covenants |                |                |
| Flight Distance > 6,000 Miles     | 0.58*<br>(1.95)             | 0.52<br>(1.10) | 0.34<br>(0.46) |
| Polynomial                        | 1                           | 2              | 3              |
| Cluster by Borrower City          | Yes                         | Yes            | Yes            |
| Borrower Lender City-Pairs        | 138                         | 138            | 138            |

| <b>Panel C. Epanechnikov Kernel</b> |                             |                |                |
|-------------------------------------|-----------------------------|----------------|----------------|
|                                     | (1)                         | (2)            | (3)            |
|                                     | Number of Capital-covenants |                |                |
| Flight Distance > 6,000 Miles       | 0.59**<br>(2.08)            | 0.55<br>(1.21) | 0.31<br>(0.45) |
| Polynomial                          | 1                           | 2              | 3              |
| Cluster by Borrower City            | Yes                         | Yes            | Yes            |
| Borrower Lender City-Pairs          | 138                         | 138            | 138            |

**Table 13. Financial Constraint**

This table presents the OLS regression results to test the financial constraint mechanism. The dependent variables are the *Loan Spread*, *Covenant Mix*, *P-Covenant Intensity* and *P-Covenant Tightness* of the loan facility. The independent variables of interest are *Direct Flight (Lead Arranger)*, *Flight Number (Lead Arranger)* and their interaction with financial constraint proxies (*KZ* or *WW*). Loan facility controls, including *GeoDistance (Lead Arranger or Participant)*, *Maturity*, *LoanSize* and *LoanSizePast5Y*; borrower-year controls, including *Assets*, *MarketBookRatio*, *Profitability*, *Leverage*, *CashFlowVolatility*, *Tangibility*; country  $\times$  year fixed effects; industry  $\times$  year fixed effects; leader  $\times$  year fixed effects; borrower fixed effects; loan type fixed effects and loan purpose fixed effects are included. We control the *LoanSpread* for columns (3) to (8). Panel A and B present the results based on KZ index or WW index, respectively. Definitions of all variables are in the [Table A1](#). Standard errors are clustered by borrower city. Robust t-statistics are in parentheses. \*, \*\*, and \*\*\* indicate significance at 10%, 5% and 1%, respectively.

**Panel A. KZ Index**

|                                           | (1)                  | (2)                 | (3)                  | (4)                 | (5)                | (6)                 | (7)                  | (8)                  |
|-------------------------------------------|----------------------|---------------------|----------------------|---------------------|--------------------|---------------------|----------------------|----------------------|
|                                           | Loan Spread          |                     | P-Covenant Intensity |                     | Covenant Mix       |                     | P-Covenant Tightness |                      |
| Direct Flight (Lead Arranger) $\times$ KZ | -1.89***<br>(-3.08)  |                     | 0.07***<br>(4.68)    |                     | 0.01***<br>(3.53)  |                     | 0.04***<br>(3.90)    |                      |
| Direct Flight (Lead Arranger)             | -18.00***<br>(-2.95) |                     | 0.66***<br>(4.25)    |                     | 0.07***<br>(3.56)  |                     | 0.23**<br>(2.38)     |                      |
| Flight Number (Lead Arranger) $\times$ KZ |                      | -0.62***<br>(-3.06) |                      | 0.01**<br>(2.26)    |                    | 0.01***<br>(3.47)   |                      | 0.01***<br>(14.18)   |
| Flight Number (Lead Arranger)             |                      | -2.81**<br>(-2.59)  |                      | 0.04***<br>(3.05)   |                    | 0.01***<br>(4.58)   |                      | 0.05***<br>(7.00)    |
| KZ                                        | 1.43**<br>(2.05)     | 4.05***<br>(2.80)   | -0.03***<br>(-3.19)  | -0.06***<br>(-2.98) | -0.01<br>(-0.87)   | -0.01***<br>(-4.36) | -0.05***<br>(-3.81)  | -0.10***<br>(-17.36) |
| GeoDistance (Lead Arranger)               | 17.93**<br>(2.53)    | 16.87**<br>(2.18)   | -0.36**<br>(-2.63)   | -0.15<br>(-1.61)    | -0.04**<br>(-2.24) | -0.04**<br>(-2.52)  | 0.11<br>(1.30)       | -0.05<br>(-0.64)     |
| Borrower-Year Control                     | Yes                  | Yes                 | Yes                  | Yes                 | Yes                | Yes                 | Yes                  | Yes                  |
| Country-Year FE                           | Yes                  | Yes                 | Yes                  | Yes                 | Yes                | Yes                 | Yes                  | Yes                  |
| Industry-Year FE                          | Yes                  | Yes                 | Yes                  | Yes                 | Yes                | Yes                 | No                   | No                   |
| Leader-Year FE                            | Yes                  | Yes                 | Yes                  | Yes                 | Yes                | Yes                 | Yes                  | Yes                  |
| Loan Type FE                              | Yes                  | Yes                 | Yes                  | Yes                 | Yes                | Yes                 | Yes                  | Yes                  |
| Loan Purpose FE                           | Yes                  | Yes                 | Yes                  | Yes                 | Yes                | Yes                 | Yes                  | Yes                  |
| Borrower FE                               | Yes                  | Yes                 | Yes                  | Yes                 | Yes                | Yes                 | Yes                  | Yes                  |
| Cluster at Borrower City                  | Yes                  | Yes                 | Yes                  | Yes                 | Yes                | Yes                 | Yes                  | Yes                  |
| Observations                              | 3,806                | 3,806               | 1,297                | 1,297               | 1,297              | 1,297               | 978                  | 978                  |
| R-squared                                 | 0.94                 | 0.94                | 0.98                 | 0.98                | 0.98               | 0.98                | 0.98                 | 0.98                 |

### Panel B. WW Index

|                                           | (1)                  | (2)                  | (3)                  | (4)                 | (5)                 | (6)                 | (7)                  | (8)                 |
|-------------------------------------------|----------------------|----------------------|----------------------|---------------------|---------------------|---------------------|----------------------|---------------------|
|                                           | Loan Spread          |                      | P-Covenant Intensity |                     | Covenant Mix        |                     | P-Covenant Tightness |                     |
| Direct Flight (Lead Arranger) $\times$ WW | -221.47**<br>(-2.15) |                      | 7.03***<br>(5.13)    |                     | 1.23***<br>(2.67)   |                     | 5.19***<br>(3.32)    |                     |
| Direct Flight (Lead Arranger)             | -248.75**<br>(-2.31) |                      | 7.77***<br>(5.26)    |                     | 1.34***<br>(2.70)   |                     | 5.72***<br>(3.43)    |                     |
| Flight Number (Lead Arranger) $\times$ WW |                      | -31.56***<br>(-2.92) |                      | 0.86***<br>(3.97)   |                     | 0.18**<br>(2.05)    |                      | 1.06***<br>(8.26)   |
| Flight Number (Lead Arranger)             |                      | -35.63***<br>(-3.02) |                      | 0.97***<br>(3.89)   |                     | 0.19**<br>(2.07)    |                      | 1.11***<br>(7.98)   |
| WW                                        | 156.29<br>(1.25)     | 220.49**<br>(2.11)   | -1.61<br>(-0.88)     | -1.74<br>(-0.94)    | -0.22<br>(-0.69)    | -0.46<br>(-0.86)    | -6.80***<br>(-7.77)  | -9.63***<br>(-9.87) |
| GeoDistance (Lead Arranger)               | 29.16***<br>(3.67)   | 28.25***<br>(3.34)   | -0.30***<br>(-2.79)  | -0.38***<br>(-3.27) | -0.07***<br>(-3.14) | -0.08***<br>(-3.27) | 0.31***<br>(2.74)    | 0.54***<br>(3.84)   |
| Borrower-Year Control                     | Yes                  | Yes                  | Yes                  | Yes                 | Yes                 | Yes                 | Yes                  | Yes                 |
| Country-Year FE                           | Yes                  | Yes                  | Yes                  | Yes                 | Yes                 | Yes                 | Yes                  | Yes                 |
| Industry-Year FE                          | Yes                  | Yes                  | Yes                  | Yes                 | Yes                 | Yes                 | No                   | No                  |
| Leader-Year FE                            | Yes                  | Yes                  | Yes                  | Yes                 | Yes                 | Yes                 | Yes                  | Yes                 |
| Loan Type FE                              | Yes                  | Yes                  | Yes                  | Yes                 | Yes                 | Yes                 | Yes                  | Yes                 |
| Loan Purpose FE                           | Yes                  | Yes                  | Yes                  | Yes                 | Yes                 | Yes                 | Yes                  | Yes                 |
| Borrower FE                               | Yes                  | Yes                  | Yes                  | Yes                 | Yes                 | Yes                 | Yes                  | Yes                 |
| Cluster at Borrower City                  | Yes                  | Yes                  | Yes                  | Yes                 | Yes                 | Yes                 | Yes                  | Yes                 |
| Observations                              | 4,592                | 4,592                | 1,458                | 1,458               | 1,458               | 1,458               | 1,064                | 1,064               |
| R-squared                                 | 0.94                 | 0.94                 | 0.98                 | 0.98                | 0.98                | 0.98                | 0.99                 | 0.99                |

**Table 14. Information Transparency**

This table presents the OLS regression results to test the information transparency mechanism. The dependent variables are the *Loan Spread*, *Covenant Mix*, *P-Covenant Intensity* and *P-Covenant Tightness* of the loan facility. The independent variables of interest are *Direct Flight (Lead Arranger)*, *Flight Number (Lead Arranger)* and their interaction with *Analyst Coverage*. Loan facility controls, including *GeoDistance (Lead Arranger or Participant)*, *Maturity*, *LoanSize* and *LoanSizePast5Y*; borrower-year controls, including *Assets*, *MarketBookRatio*, *Profitability*, *Leverage*, *CashFlowVolatility*, *Tangibility*; country  $\times$  year fixed effects; industry  $\times$  year fixed effects; leader  $\times$  year fixed effects; borrower fixed effects; loan type fixed effects and loan purpose fixed effects are included. We control the *LoanSpread* for columns (3) to (8). Definitions of all variables are in the [Table A1](#). Standard errors are clustered by borrower city. Robust t-statistics are in parentheses. \*, \*\*, and \*\*\* indicate significance at 10%, 5% and 1%, respectively.

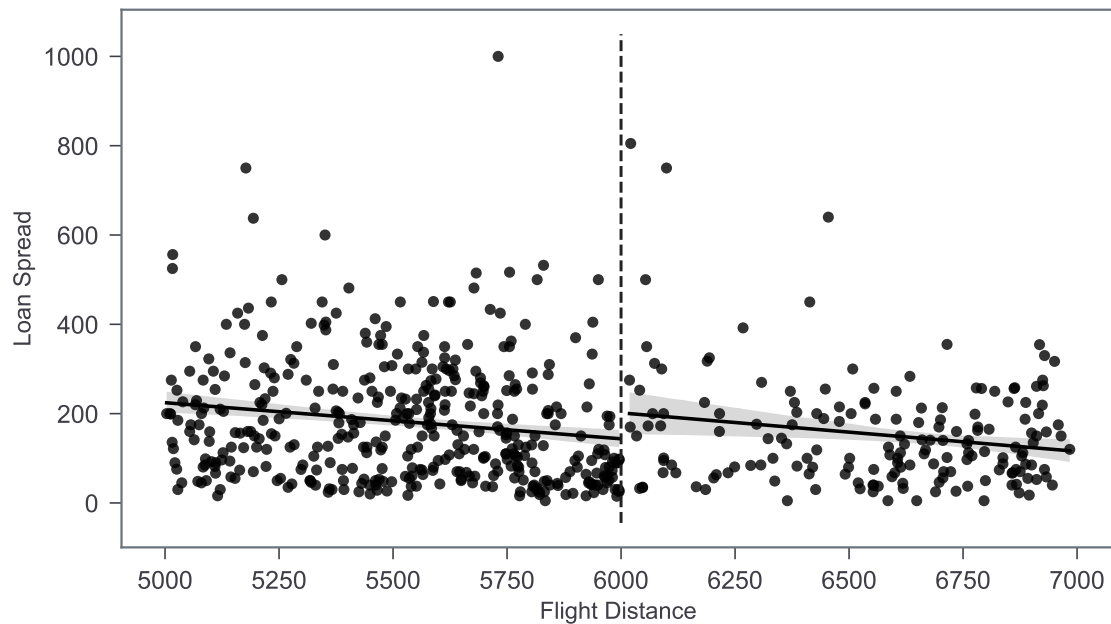
|                                                         | (1)                   | (2)                  | (3)                  | (4)                | (5)                 | (6)                 | (7)                  | (8)                |
|---------------------------------------------------------|-----------------------|----------------------|----------------------|--------------------|---------------------|---------------------|----------------------|--------------------|
|                                                         | Loan Spread           |                      | P-Covenant Intensity |                    | Covenant Mix        |                     | P-Covenant Tightness |                    |
| Direct Flight (Lead Arranger) $\times$ Analyst Coverage | 24.70***<br>(3.75)    |                      | -0.36***<br>(-2.68)  |                    | -0.09***<br>(-3.70) |                     | -0.58***<br>(-3.19)  |                    |
| Direct Flight (Lead Arranger)                           | -120.60***<br>(-4.10) |                      | 2.00***<br>(2.95)    |                    | 0.42***<br>(3.66)   |                     | 2.48***<br>(2.92)    |                    |
| Flight Number (Lead Arranger) $\times$ Analyst Coverage |                       | 3.05***<br>(3.14)    |                      | -0.05**<br>(-2.31) |                     | -0.01***<br>(-3.14) |                      | -0.14**<br>(-2.19) |
| Flight Number (Lead Arranger)                           |                       | -13.72***<br>(-3.20) |                      | 0.22**<br>(2.29)   |                     | 0.05***<br>(2.99)   |                      | 0.59**<br>(2.36)   |
| Analyst Coverage                                        | -16.15***<br>(-3.72)  | -18.18***<br>(-2.91) | -0.05<br>(-0.49)     | -0.00<br>(-0.02)   | 0.03<br>(1.27)      | 0.05<br>(1.54)      | 0.17**<br>(2.63)     | 0.66**<br>(2.23)   |
| GeoDistance (Lead Arranger)                             | 22.00***<br>(3.00)    | 18.34**<br>(2.32)    | -0.11<br>(-0.72)     | -0.02<br>(-0.19)   | -0.08**<br>(-2.32)  | -0.09**<br>(-2.21)  | 0.06<br>(0.37)       | 0.09<br>(0.76)     |
| Borrower-Year Control                                   | Yes                   | Yes                  | Yes                  | Yes                | Yes                 | Yes                 | Yes                  | Yes                |
| Country-Year FE                                         | Yes                   | Yes                  | Yes                  | Yes                | Yes                 | Yes                 | Yes                  | Yes                |
| Industry-Year FE                                        | Yes                   | Yes                  | Yes                  | Yes                | Yes                 | Yes                 | No                   | No                 |
| Leader-Year FE                                          | Yes                   | Yes                  | Yes                  | Yes                | Yes                 | Yes                 | Yes                  | Yes                |
| Loan Type FE                                            | Yes                   | Yes                  | Yes                  | Yes                | Yes                 | Yes                 | Yes                  | Yes                |
| Loan Purpose FE                                         | Yes                   | Yes                  | Yes                  | Yes                | Yes                 | Yes                 | Yes                  | Yes                |
| Borrower FE                                             | Yes                   | Yes                  | Yes                  | Yes                | Yes                 | Yes                 | Yes                  | Yes                |
| Cluster at Borrower City                                | Yes                   | Yes                  | Yes                  | Yes                | Yes                 | Yes                 | Yes                  | Yes                |
| Observations                                            | 3,999                 | 3,999                | 1,296                | 1,296              | 1,296               | 1,296               | 923                  | 923                |
| R-squared                                               | 0.93                  | 0.93                 | 0.99                 | 0.99               | 0.99                | 0.99                | 0.99                 | 0.99               |

## The Appendix

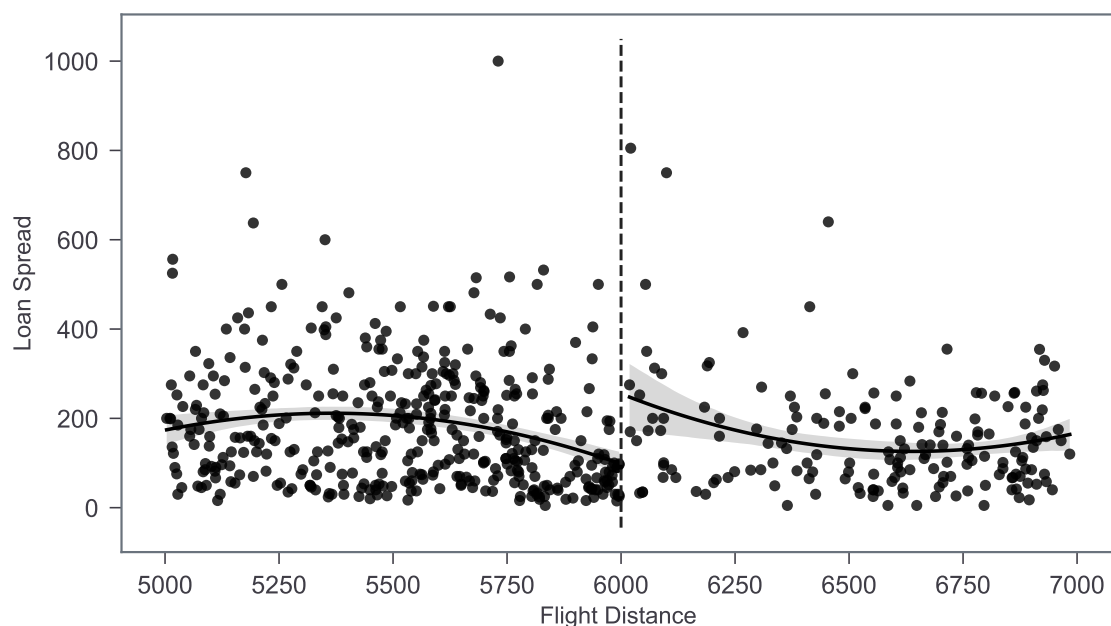
**Figure A1. Global Regression Discontinuity Design: Loan Spread**

This figure plots the fitted linear, quadratic, and cubic estimates with 90% confidence intervals around the fitted value. The x-axis is the flight distance between borrower and lead arranger, and the y-axis is the spread of loan facilities in basis points. The dots depict the average loan spread of each borrower-lender city pair within a margin of 1000 miles around the 6000-mile cut-off. The light gray area corresponds to the 90% confidence intervals of the fitted curve.

**Panel A. Linear Estimation**

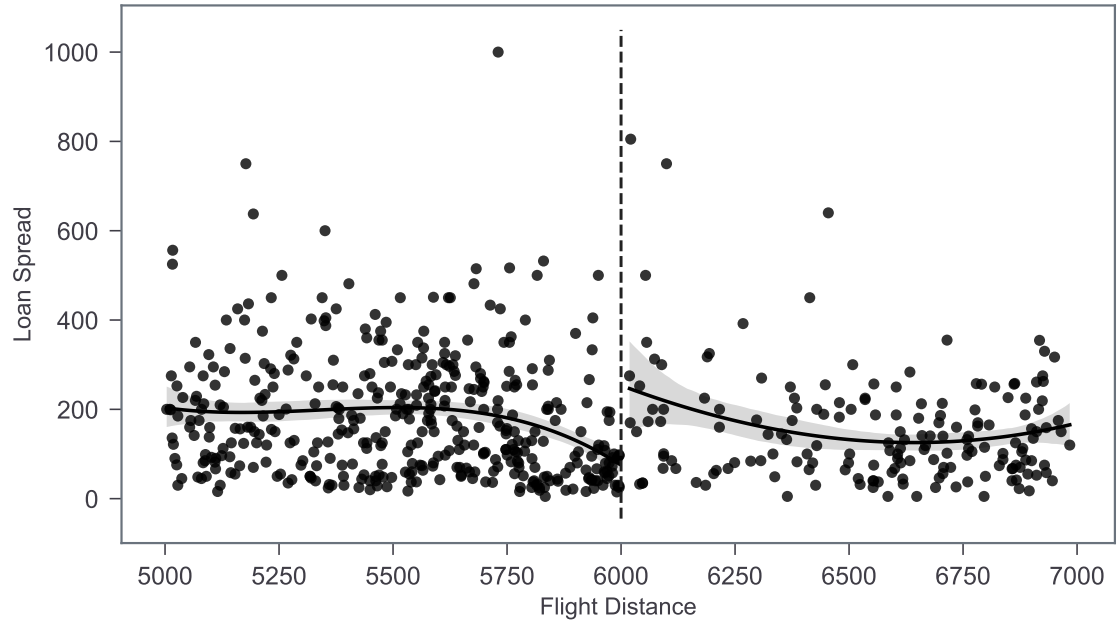


**Panel B. Quadratic Estimation**





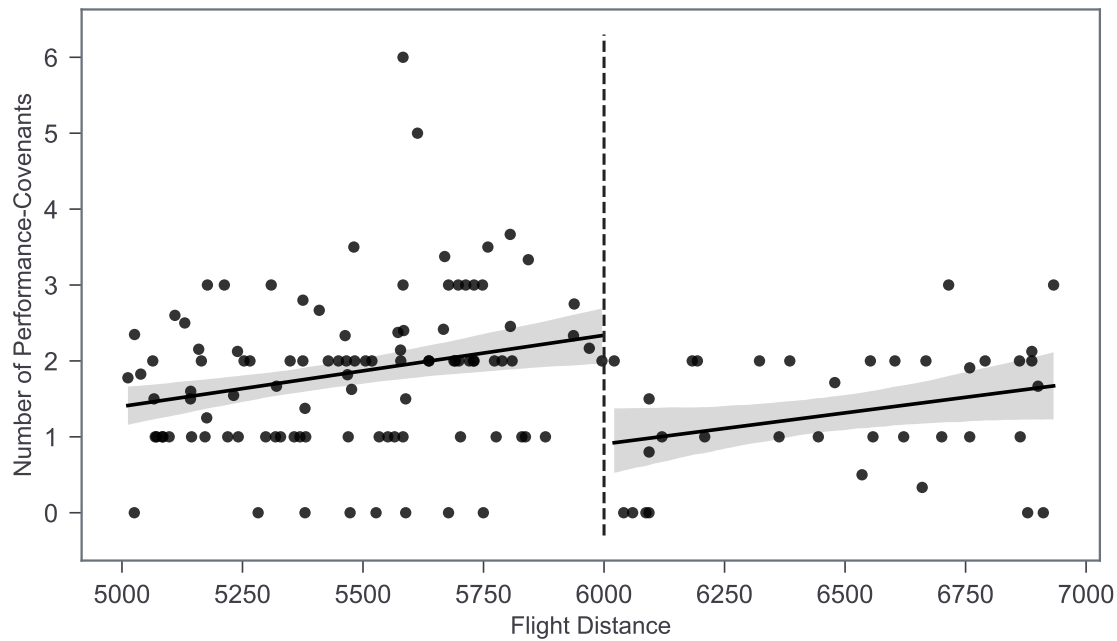
**Panel C. Cubic Estimation**



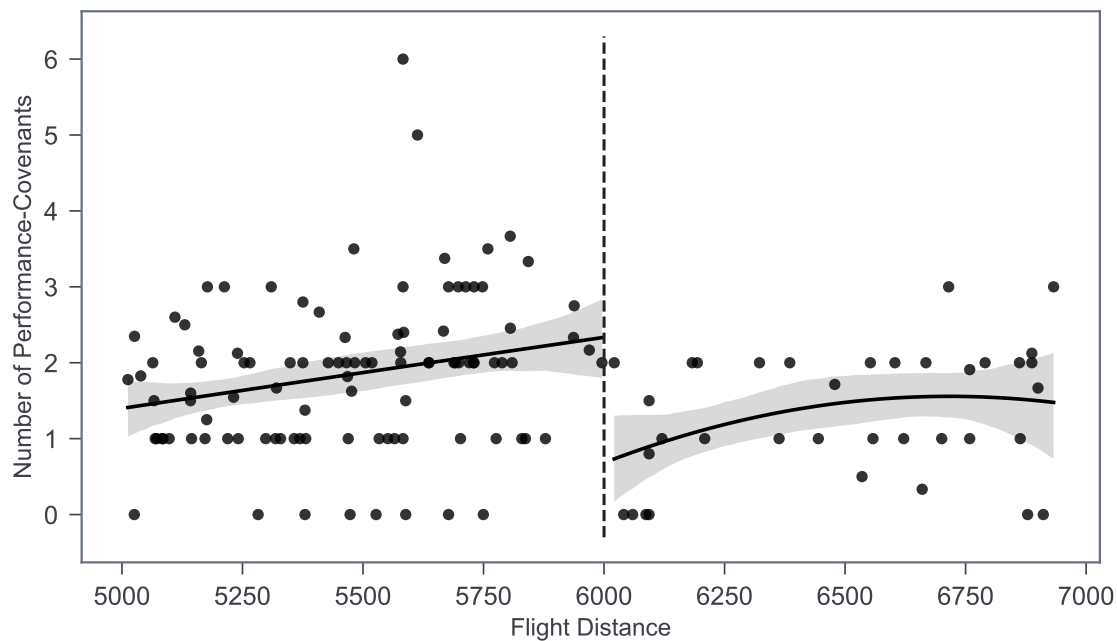
**Figure A2. Regression Discontinuity Design: Number of Performance-covenant**

This figure plots the fitted linear, quadratic, and cubic estimates with 90% confidence intervals around the fitted value. The x-axis is the flight distance between borrower and lead arranger, and the y-axis is the number of performance-covenants of loan facilities. The dots depict the average number of performance-covenants of each borrower-lender city pair within a margin of 1000 miles around the 6000-mile cut-off. The light gray area corresponds to the 90% confidence intervals of the fitted curve.

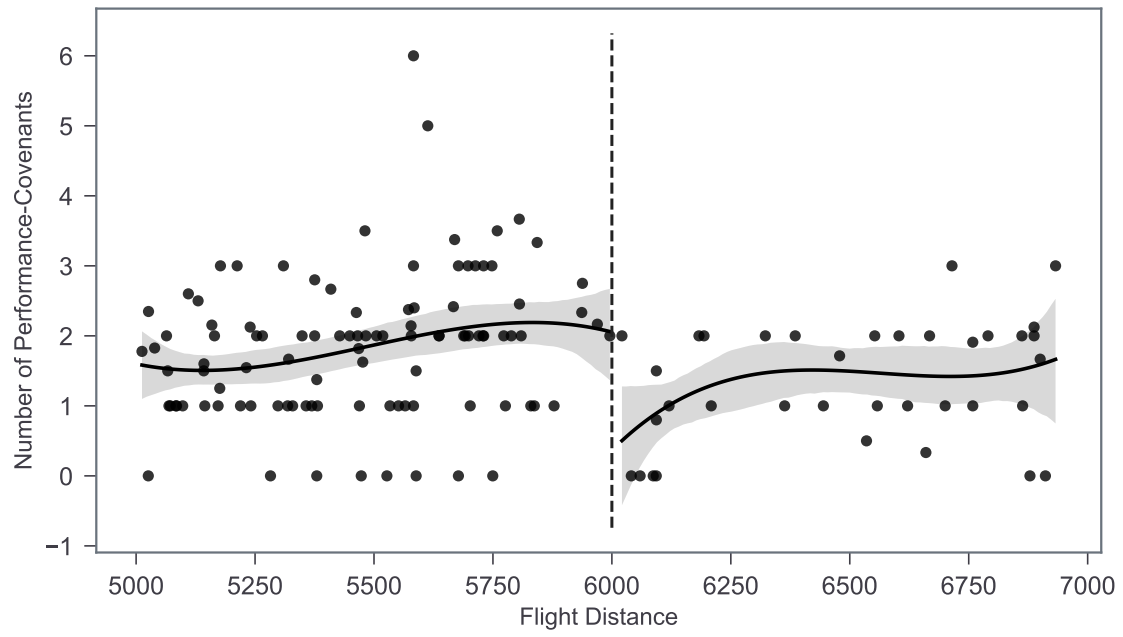
**Panel A. Linear Estimation**



**Panel B. Quadratic Estimation**



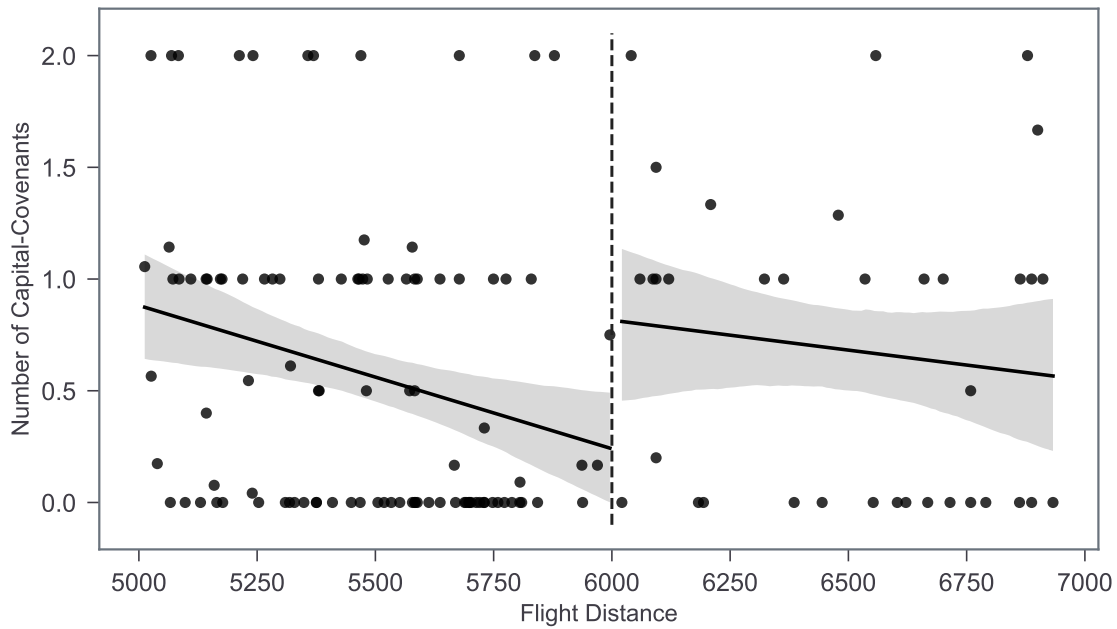
**Panel C. Cubic Estimation**



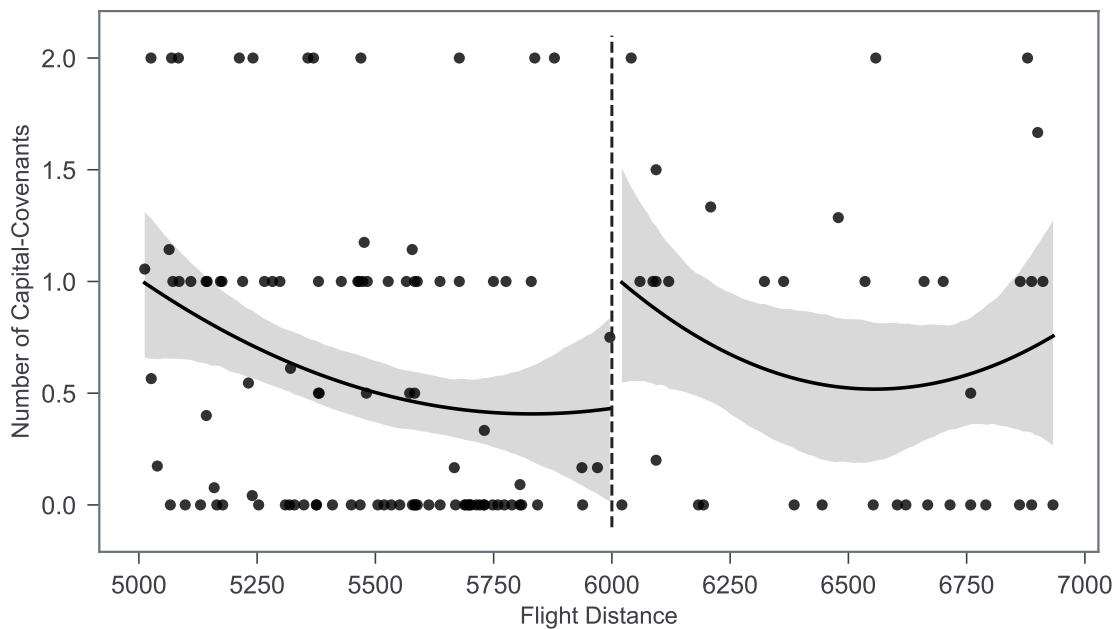
### Figure A3. Regression Discontinuity Design: Number of Capital-covenant

This figure plots the fitted linear, quadratic, and cubic estimates with 90% confidence intervals around the fitted value. The x-axis is the flight distance between borrower and lead arranger, and the y-axis is the number of capital-covenants of loan facilities. The dots depict the average number of capital-covenants of each borrower-lender city pair within a margin of 1000 miles around the 6000-mile cut-off. The light gray area corresponds to the 90% confidence intervals of the fitted curve.

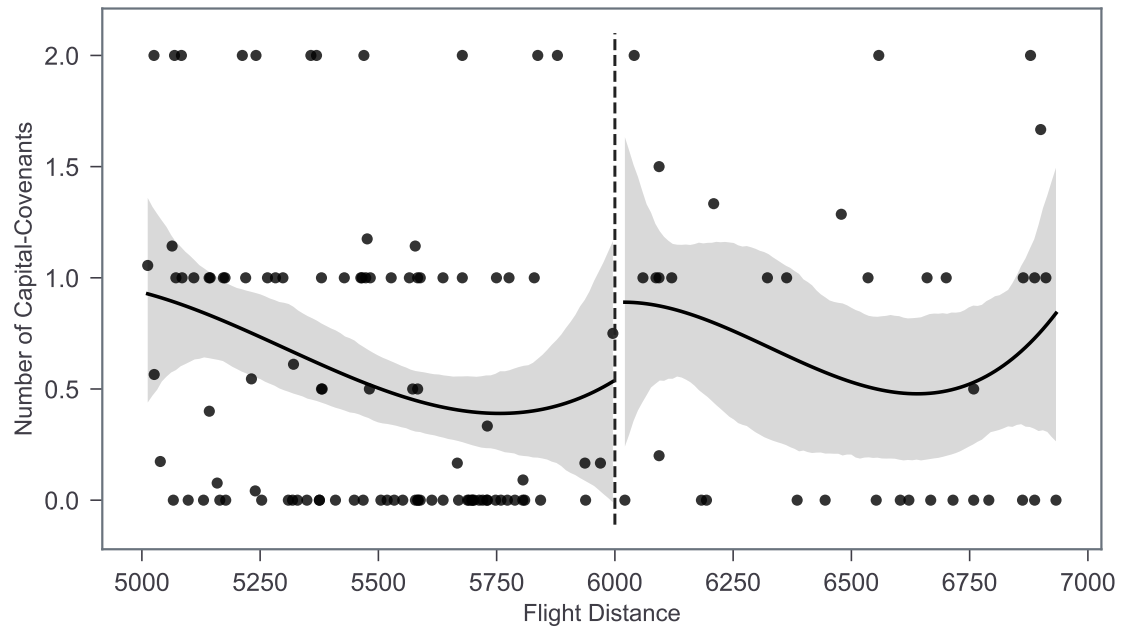
**Panel A. Linear Estimation**



**Panel B. Quadratic Estimation**



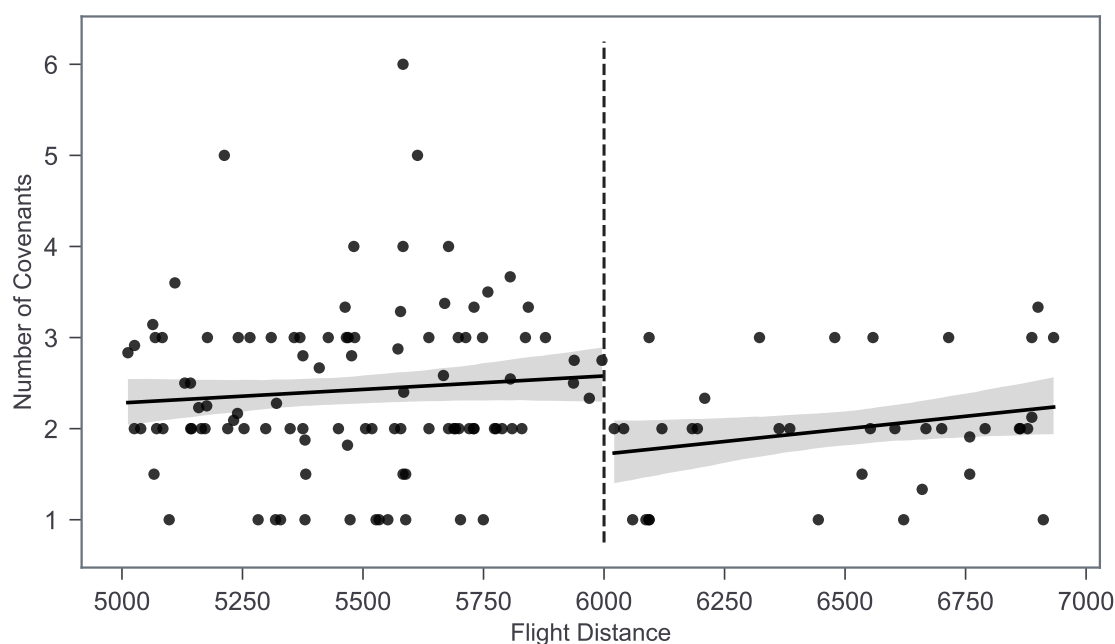
**Panel C. Cubic Estimation**



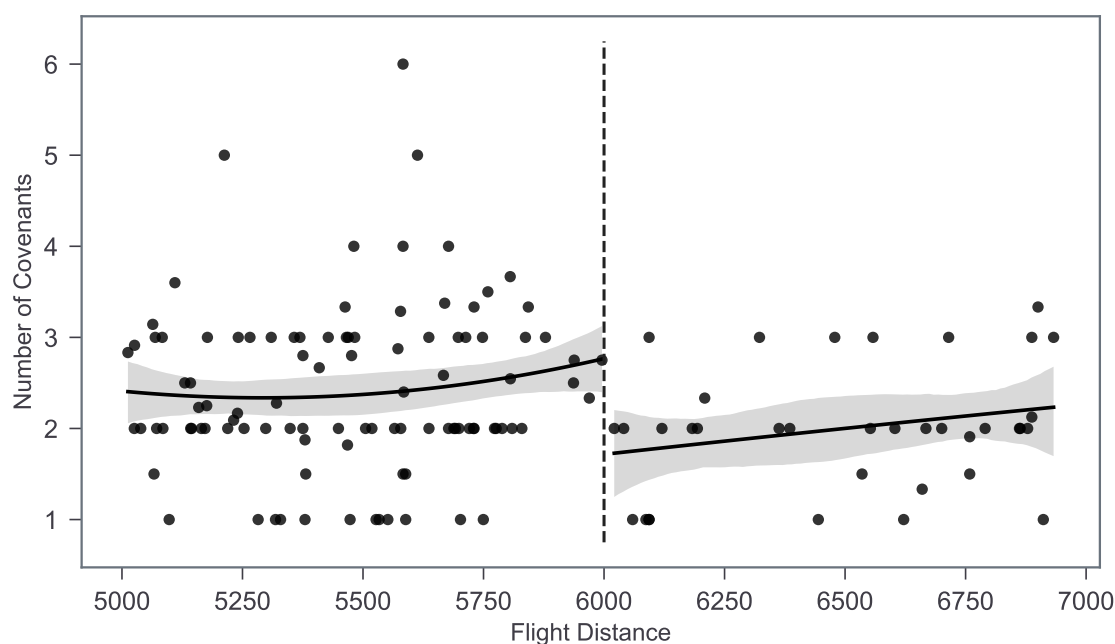
# **Figure A4. Global Regression Discontinuity Design: Loan Spread Regression** **Discontinuity Design: Number of Covenant**

This figure plots the fitted linear, quadratic, and cubic estimates with 90% confidence intervals around the fitted value. The x-axis is the flight distance between borrower and lead arranger, and the y-axis is the number of covenants of loan facilities. The dots depict the average number of covenants of each borrower-lender city pair within a margin of 1000 miles around the 6000-mile cut-off. The light gray area corresponds to the 90% confidence intervals of the fitted curve.

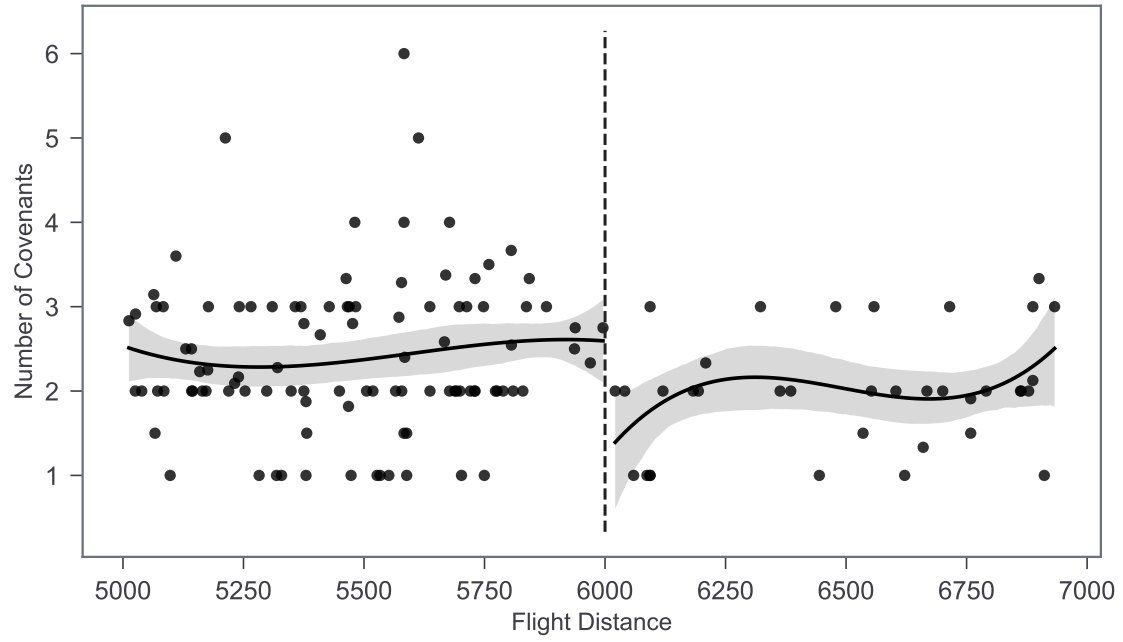
**Panel A. Linear Estimation**



**Panel B. Quadratic Estimation**



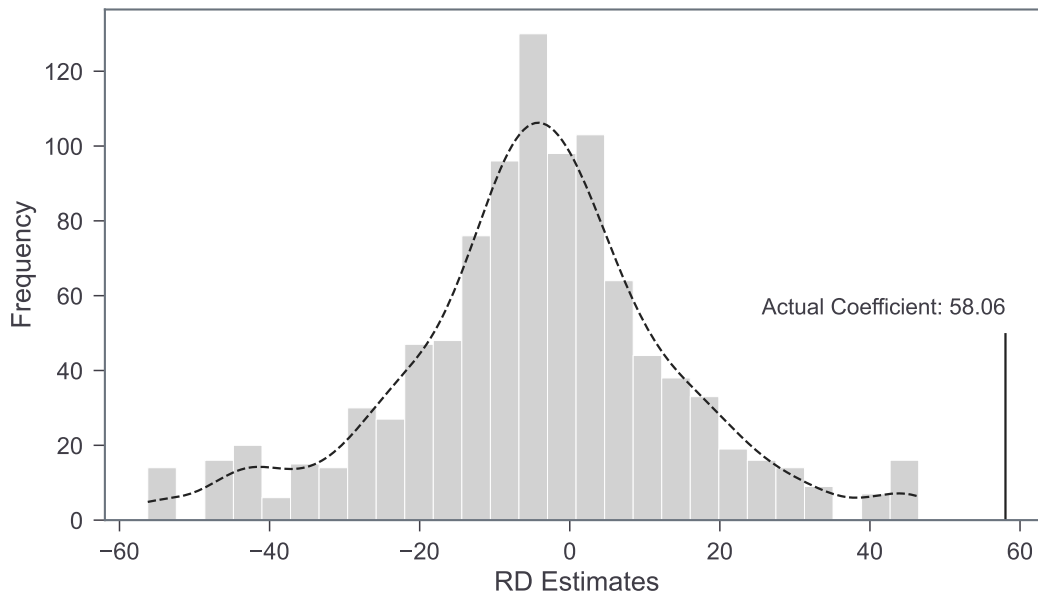
**Panel C. Cubic Estimation**



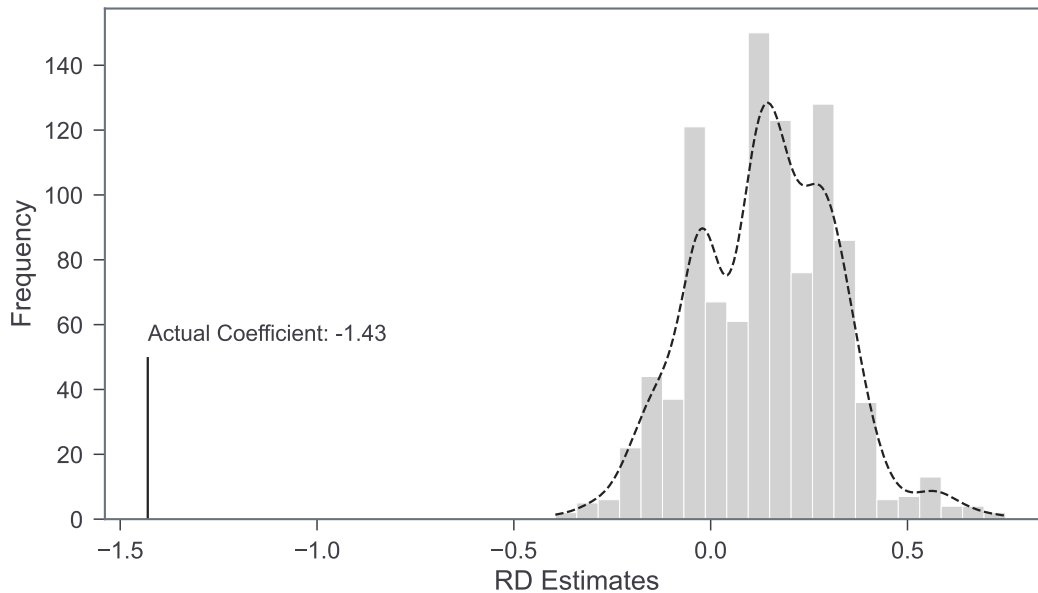
### Figure A5. Regression Discontinuity Design: Placebo Test

This figure plots the histogram (and kernel approximation) for regression discontinuity estimates using pseudo cut-off randomly selected between 4,500-5,750 miles and 6,250-7,500 miles for 1,000 times. The specifications use linear polynomial, uniform kernel, and a margin of 1000 miles. The dashed curve is the kernel density estimate, and the vertical line depicts the estimate using the 6000-mile as the cut-off. Panel A, B and C present the results using loan spread, number of performance-covenants and number of capital-covenants as the dependent variables, respectively.

**Panel A. Loan Spread**

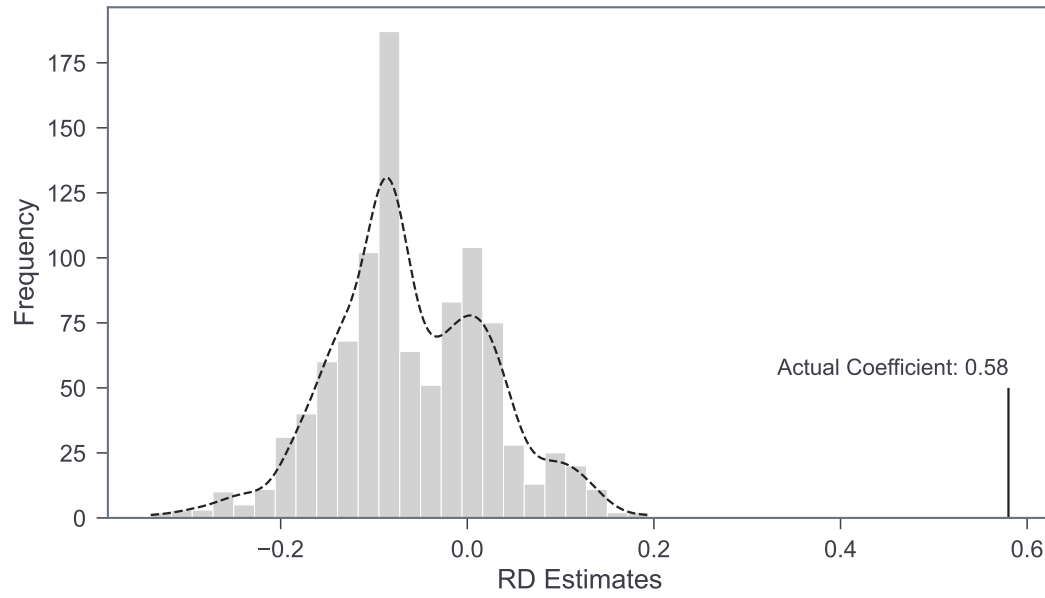


**Panel B. Number of Performance-covenant**





**Panel C. Number of Capital-covenant**



**Table A1. Variable Definition**

| <i>Variable</i>                     | <i>Definition</i>                                                                                                                                                                                                                                                                               | <i>Source</i>         |
|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| <b><i>Dependent Variables</i></b>   |                                                                                                                                                                                                                                                                                                 |                       |
| Loan Spread                         | The all-in-drawn spread over the London Interbank Offered Rate (LIBOR) charged by the lender for the loan facility, in basis points, including fees paid to the lender group.                                                                                                                   | <i>Dealscan</i>       |
| Covenant Intensity                  | Number of financial covenants of the loan.                                                                                                                                                                                                                                                      | <i>Dealscan</i>       |
| P-Covenant Intensity                | Number of performance covenants of the loan, the classification of performance covenants are based on <a href="#">Christensen and Nikolaev (2012)</a> .                                                                                                                                         | <i>Dealscan</i>       |
| C-Covenant Intensity                | Number of capital covenants of the loan, the classification of capital covenants are based on <a href="#">Christensen and Nikolaev (2012)</a> .                                                                                                                                                 | <i>Dealscan</i>       |
| Covenant Mix                        | Number of performance covenants scaled by total number of financial covenants.                                                                                                                                                                                                                  | <i>Dealscan</i>       |
| Covenant Tightness                  | Aggregate probability of violation across all covenant constructed by <a href="#">Demerjian and Owens (2016)</a> .                                                                                                                                                                              | <i>Dealscan</i>       |
| P-Covenant Tightness                | Aggregate probability of violation across all performance-covenant constructed by <a href="#">Demerjian and Owens (2016)</a> .                                                                                                                                                                  | <i>Dealscan</i>       |
| C-Covenant Tightness                | Aggregate probability of violation across all capital-covenant constructed by <a href="#">Demerjian and Owens (2016)</a> .                                                                                                                                                                      | <i>Dealscan</i>       |
| <b><i>Independent Variables</i></b> |                                                                                                                                                                                                                                                                                                 |                       |
| Direct Flight (Lead Arranger)       | The ratio of lead arrangers with weekly direct round-trip passenger flights to the borrower to the total number of lead arrangers.                                                                                                                                                              | <i>Dealscan, ICAO</i> |
| Flight Number (Lead Arranger)       | The natural logarithm of the total number of passenger flights between the borrower and lead arrangers scaled by the total number of lead arrangers.                                                                                                                                            | <i>Dealscan, ICAO</i> |
| Direct Cargo Flight (Lead Arranger) | The number of lead arrangers with weekly direct cargo flights to the borrower scaled by the total number of lead arrangers.                                                                                                                                                                     | <i>Dealscan, ICAO</i> |
| Cargo Flight Number (Lead Arranger) | The total number of passenger cargo flights between the borrower and lead arrangers scaled by the total number of lead arrangers.                                                                                                                                                               | <i>Dealscan, ICAO</i> |
| Direct Flight (Participant)         | The number of participant lenders with weekly direct passenger flights to the borrower scaled by the total number of participant lenders.                                                                                                                                                       | <i>Dealscan, ICAO</i> |
| Flight Number (Participant)         | The total number of passenger flights between the borrower and participant lenders scaled by the total number of participant lenders.                                                                                                                                                           | <i>Dealscan, ICAO</i> |
| Analyst Coverage                    | Natural logarithm of the number of analysts following the firm in a year.                                                                                                                                                                                                                       | <i>IBES</i>           |
| KZ                                  | Financial constraint index by <a href="#">Kaplan and Zingales (1997)</a> , calculated as: $[-1.001*(\text{Cash Flow} / \text{PPENT}) + 0.2823*\text{Tobin's Q} + 3.139*(\text{Debt} / \text{Total Capital}) - 39.368*(\text{Dividends} / \text{PPENT}) - 1.315*(\text{Cash} / \text{PPENT})]$ . | <i>Worldscope</i>     |

Continued on next page

**Table A1. Variable Definition - Continued**

|                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                       |
|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| WW                          | Financial constraint index by <a href="#">Whited and Wu (2006)</a> , calculated as: $-0.091 * (\text{Cash Flow} / \text{Total Assets}) - 0.062 * 1(\text{Dividend}) + 0.021 * (\text{Long Term Debt} / \text{Total Assets}) - 0.044 * \ln(\text{Total Assets}) + 0.102 * (\text{Industry Sales Growth}) - 0.035 * \text{Sales Growth}$ . Industry Sales Growth is the average sales growth by two-digit SIC and year.                                                                                                                                | <i>Worldscope</i>     |
| Abnormal Accrual            | Residual values of the <a href="#">Jones (1991)</a> model:<br>$ACC_{i,t} = \alpha + \beta_1 \Delta REV_{i,t} + \beta_2 PPE_{i,t} + \epsilon$ where $ACC$ is the accounting accrual, $\Delta REV$ is the change of revenue and $PPE$ is the property, plant and equipment. All variables are scaled by lagged total assets. We estimated the model in cross-section for each two-digit SIC industry and year.                                                                                                                                         | <i>Worldscope</i>     |
| Acct Quality                | The standard deviation of residual values $\epsilon$ from the past eight fiscal years, where $\epsilon$ is from the <a href="#">Francis et al. (2005)</a> model:<br>$CF_{i,t} = \alpha + \beta_1 CF_{i,t-1} + \beta_2 ACC_{i,t-1} + \epsilon$ where $CF$ is the operation cashflow and $ACC$ is the accounting accrual. All variables are scaled by lagged total assets. We estimated the model in cross-section for each two-digit SIC industry and year. The value is multiplied by -1 and a higher value correspond to better accounting quality. | <i>Worldscope</i>     |
| <b>Control Variables</b>    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                       |
| GeoDistance (Lead Arranger) | The natural logarithm of the average distance (in miles) between the borrower and the lead arrangers.                                                                                                                                                                                                                                                                                                                                                                                                                                                | <i>Dealscan, ICAO</i> |
| GeoDistance (Participant)   | The natural logarithm of the average distance (in miles) between the borrower and the participant lenders.                                                                                                                                                                                                                                                                                                                                                                                                                                           | <i>Dealscan, ICAO</i> |
| Maturity                    | Months to maturity given to the loan facility.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <i>Dealscan</i>       |
| LoanSize                    | The natural logarithm of loan facility amount in USD.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <i>Dealscan</i>       |
| LoanSizePast5Y              | Natural logarithm of the total loan amount in USD between the borrower and the lead arrangers in the past five years.                                                                                                                                                                                                                                                                                                                                                                                                                                | <i>Dealscan</i>       |
| Assets                      | Natural logarithm of total assets in USD.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <i>Worldscope</i>     |
| MarketBookRatio             | Price to book ratio, calculated as $(\text{Market Value of Equity} + \text{Book Value of Liabilities}) / \text{Total Assets}$ .                                                                                                                                                                                                                                                                                                                                                                                                                      | <i>Worldscope</i>     |
| Profitability               | Earnings Before Interest and Taxes / Total Assets.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <i>Worldscope</i>     |
| Leverage                    | $(\text{Long Term Debt} + \text{Debt in Current Liabilities}) / \text{Total Assets}$ .                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <i>Worldscope</i>     |
| CashFlowVolatility          | Standard deviation of $(\text{Cash Flow from Operating Activities} / \text{Total Assets})$ over the last five fiscal years.                                                                                                                                                                                                                                                                                                                                                                                                                          | <i>Worldscope</i>     |
| Tangibility                 | Net Property, Plant and Equipment / Total Assets.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <i>Worldscope</i>     |