When Tax Authorities Know More: Information Access and the Cost of Debt

Abstract

We examine how private lenders price expansions in the tax authority's information set. U.S. Tax Information Exchange Agreements (TIEAs) expand the IRS's access to foreign tax information without changing tax rates or substantive tax rules. Greater access can erode the after-tax cash flows available for debt repayment by making cross-border tax positions more vulnerable to challenge, while also improving the verifiability of reported income. Exploiting the staggered signing of TIEAs, we find that syndicated loan spreads of treated U.S. multinationals increase by 8.75%. The increase is larger when borrowers have more cross-border tax benefits exposed to challenge, face greater ex-ante IRS scrutiny, and have tighter repayment constraints, but is attenuated when external verification of reported income is more valuable to lenders. Following TIEAs, IRS downloads of treated firms' public filings decline, and subsequent tax settlements increase, consistent with the newly available foreign information facilitating tax enforcement. Our findings highlight that the capital-market effects of tax oversight depend on what the authority's information bears on: whether it improves verification or threatens the cash flows supporting creditors' claims.

Keywords: TIEAs; Tax enforcement; Information; Debt Contracting; Multinational Companies

JEL Classification: G21, G32, H26, F23

1. Introduction

Tax enforcement depends critically on information (Pomeranz 2015), yet tax authorities often face substantial information frictions when monitoring multinational companies (MNCs) whose activities span national borders (OECD 2015). Governments have sought to reduce these frictions through cross-border tax information-sharing arrangements. Under those arrangements, greater access to foreign tax information allows tax authorities to better detect and challenge cross-border tax evasion and income shifting, thereby improving the verifiability of reported income (Johannesen and Zucman 2014; Hanlon, Maydew, and Thornock 2015). At the same time, the resulting scrutiny can also constrain tax-planning strategies that increase these firms' after-tax cash flows (Edwards, Schwab, and Shevlin 2016). The competing effects are particularly relevant to private lenders, whose assessment of credit risk depends on both borrowers' capacity to generate cash flows for repayment and the reliability of information used to evaluate that capacity (Bharath, Sunder, and Sunder 2008; Ball, Bushman, and Vasvari 2008). We therefore study how greater IRS access to foreign tax information affects MNCs' loan pricing, using U.S. Tax Information Exchange Agreements (TIEAs), bilateral agreements that allow IRS to obtain taxpayer information held in partner jurisdictions.

TIEAs may affect debt contracting through two opposing channels. On the one hand, TIEAs may increase loan spreads for MNCs because greater IRS access to foreign tax information can constrain cross-border tax-planning arrangements and reduce after-tax cash flows available for debt repayment. MNCs generate a substantial share of their earnings abroad (Erel, Jang, and Weisbach 2021) and operate in multiple tax jurisdictions, where intrafirm transactions create opportunities to allocate income and deductions across countries. These tax-planning arrangements, including transfer-pricing structures, can increase the after-tax value of foreign

earnings. The resulting tax benefits, however, are sustainable only to the extent that underlying transaction withstand IRS scrutiny and challenge (Bennedsen and Zeume 2018). By giving the IRS greater access to foreign tax information, TIEAs increase the likelihood that these positions will be detected and contested. Such challenges can increase firms' current tax payments and induce them to modify existing arrangements, thereby limiting future tax benefits. These consequences reduce the expected after-tax cash flows available to service debt (Holmström and Tirole 1997). Therefore, lenders may charge higher loan spreads to U.S. MNCs after a TIEA takes effect in a jurisdiction where the firm has a subsidiary. We refer to this channel as the cash-flow-erosion effect of TIEAs.

On the other hand, TIEAs may lower loan spreads for U.S. MNCs because greater IRS access to foreign tax information can improve the verifiability of reported income and the quality of information available to creditors. MNCs' geographically dispersed operations and complex cross-border activities can make their operations opaque to outside stakeholders (Duru and Reeb 2002; Doukas and Pantzalis 2003). Among these firms, IRS monitoring can complement creditor oversight by enhancing the credibility of firms' reported income. Prior research finds that stronger IRS monitoring can lower the cost of debt (Guedhami and Pittman 2008) and expand bank lending by improving borrowers' information environments and loan decisions (Gallemore and Jacob 2020), and that greater transparency around tax-haven activities can benefit shareholders by constraining opportunistic behavior (Desai, Dyck, and Zingales 2007; Bennedsen and Zeume 2018). Therefore, by expanding IRS's information set and thus strengthening its oversight of MNCs' foreign operations, TIEAs can improve the credibility of reported income even when private lenders do not directly observe the information exchanged. Accordingly, loan spreads may decline for U.S. MNCs after a TIEA takes effect in a jurisdiction where the firm has a subsidiary.

We refer to this channel as the information-verification effect of TIEAs. These competing effects leave the impact of IRS's expanded access to foreign tax information on MNCs' borrowing costs an empirical question.

To examine this question, we exploit the staggered signing of TIEAs between the U.S. and partner jurisdictions and design a difference-in-differences study. The staggered feature of these agreements generates variation in treatment timing across U.S. MNCs based on the locations of their foreign subsidiaries. We classify an MNC as treated if it owns a subsidiary in a partner jurisdiction and then compare changes in its loan spreads relative to the contemporaneous changes for MNCs whose subsidiaries are located exclusively in jurisdictions that never sign a TIEA. Our sample comprises 12,998 loan tranches issued by 1,500 U.S. MNCs, of which 556 are treated. We find that loan spreads increase by 8.75%, or 17.32 basis points at the sample mean, after a TIEA takes effect. To put the economic magnitude in perspective, this increase is approximately three times the increase in loan spreads associated with a one-standard-deviation increase in tax avoidance documented by Hasan et al. (2014). Dynamic specifications show no differential pre-treatment trends between treated and control MNCs, consistent with the parallel-trends assumption underlying our design. Our results are robust to alternative fixed-effect structures and a stacked DiD design, which yields an estimate of similar economic magnitude.

We proceed with two sets of tests that shed light on the cash-flow erosion channel. First, we examine its cross-sectional implications. This channel implies that the spread response should depend on three factors: the amount of tax benefits exposed to challenge, the likelihood that the newly available information results in an effective IRS challenge, and the importance of the resulting cash-flow loss for debt repayment. First, we find that the increase in spreads is greater for firms with a larger share of foreign earnings and lower effective tax rates, consistent with these

firms having more cross-border tax benefits exposed to potential IRS challenge. Second, the increase is stronger for firms with higher ex ante audit probabilities and greater IRS attention, consistent with the IRS being more likely to examine these firms and therefore better positioned to use newly available foreign information in enforcement. Finally, the increase is more pronounced for firms with lower current ratios and greater near-term debt maturity pressure. This concentration among borrowers with greater repayment pressure supports the interpretation that lenders respond to TIEAs because of their implications for repayment capacity.

The second set of test examines whether TIEAs are followed by realized tax costs that reduce the cash flow available for debt service. We find that treated firms report larger subsequent tax settlements after TIEAs, consistent with expanded access to foreign information enabling the IRS to challenge existing tax positions and generate additional tax payments. This evidence provides a partial but more direct link between the IRS's expanded information set and the cash-flow erosion that lenders price in loan spreads.[1] Collectively, the findings are consistent with lenders pricing the erosion of cross-border tax benefits.

Although the average increase in loan spreads is consistent with the cash-flow-erosion channel, we also find evidence of the countervailing information-verification effect. If TIEAs improve the verifiability of reported income, the increase in spreads should be attenuated when lenders otherwise have a weaker basis for assessing borrowers' cash flows. Consistent with this prediction, the effect is attenuated when the information underlying reported cash flows is less reliable, as reflected in higher financial misstatement risk and weaker governance in the countries where firms operate. The increase is also smaller when borrowers have poorer public information

[1] We do not argue that tax settlements are the only source of cash-flow erosion following TIEAs. Firms may also adjust their tax-planning strategies in response to greater IRS access to foreign information, which leads to a reduction in the future tax benefits, and, in turn, the cash flows available for debt service (Li and Ma, 2022).

environments, as reflected in fewer management forecasts and wider bid–ask spreads. These patterns suggest that the verification benefits of greater IRS access partially offset lenders' concerns about the erosion of after-tax cash flows.

Finally, we examine whether TIEAs change how the IRS gathers and uses information. Because the information exchanged through TIEAs is not observable to researchers, we instead examine the change in the agency's reliance on public filings. Bozanic et al. (2017) show that IRS use of EDGAR declines when the agency receives more private tax information, consistent with substitution between public and private information sources. This evidence gives us a revealed-preference test: if TIEAs supply incrementally useful foreign information, the IRS should rely less on EDGAR for affected firms. Consistent with this prediction, IRS downloads of treated firms' filings decline following a TIEA.

Our paper contributes to the literature in the following ways. First, we contribute to the literature on tax authority oversight and capital providers. Prior research generally emphasizes the benefits of tax authority oversight to outside investors through monitoring and verifying reported income (Desai et al. 2007; Guedhami and Pittman 2008; El Ghoul, Guedhami, and Pittman 2011; Gallemore and Jacob 2020; Yost and Shu 2022), while recent work also documents costs of stronger enforcement (Belnap, Hoopes, Maydew, and Turk 2024; Gallemore and Jacob 2025). Our study extends this literature by isolating a distinct margin of tax authority oversight: the authority's information set. Effective tax enforcement depends on two margins, i.e., the likelihood that a taxpayer comes under scrutiny and the information available to the authority conditional on that scrutiny (e.g., Kleven, Knudsen, Kreiner, Pedersen, and Saez 2011; Pomeranz 2015; Sandmo 2005; Slemrod 2007). TIEAs shift the latter margin for the IRS by expanding the set of foreign records it can obtain. We show that creditors price this expansion: loan spreads increase when newly

accessible information bears on transactions supporting borrowers' tax savings, while this increase is attenuated when greater transparency improves the verification of reported income. Our evidence also complements Bennedsen and Zeume (2018), who examine the equity-market consequences of tax information exchange in an international sample of haven-exposed firms; we show that expansions in tax authority information are also reflected in the pricing of private debt for U.S. multinationals.

Second, we contribute to the literature on tax avoidance and the cost of debt. Prior studies show that lenders charge higher spreads to borrowers with more aggressive tax positions (Hasan, Hoi, Wu, and Zhang 2014; Shevlin, Urcan, and Vasvari 2020). We extend this literature by distinguishing between the magnitude of tax benefits generated by a tax position and the probability that such position survives IRS challenge. Standard measures of tax avoidance, such as effective tax rates and book-tax differences, capture both dimensions jointly and cannot identify which aspect lenders price. TIEAs provide a setting in which these dimensions can be separated because they increase IRS access to information about existing cross-border transactions without directly changing statutory tax rates or the underlying tax rules. Our findings show that creditors price not only the size of claimed tax benefits but also the likelihood that those benefits will withstand tax authority scrutiny.

Finally, we contribute to the literature on cross-border regulatory cooperation. Prior studies show that regulatory cooperation can benefit firms and investors when external regulators provide enforcement mechanisms that complement weak local institutions. For example, cross-border securities enforcement improves liquidity, increases foreign investment, and reduces financing costs (Silvers 2020; Lang, Maffett, Omartian, and Silvers 2020; Chy, Khurana, and Kyung 2025), while extraterritorial enforcement of the Foreign Corrupt Practices Act improves local economic

outcomes (Christensen, Maffett, and Rauter 2024). These settings generally involve foreign firms operating where local institutions are relatively weak, so cross-border cooperation provides additional discipline. Our setting differs because the affected firms are U.S. firms already subject to strong domestic institutions, and cooperation instead expands the IRS's access to information about transactions conducted abroad. We show that lenders charge higher spreads when this additional information increases borrowers' exposure to tax enforcement. Thus, cross-border regulatory cooperation lowers financing costs when it supplies missing governance but can raise them when it primarily closes an enforcement agency's information gap.

2. Related Literature and Hypothesis Development

2.1 Information Frictions in Tax Enforcement

Tax enforcement depends both on the likelihood that a reported position is examined and on the tax authority's access to information sufficient to evaluate the position and substantiate an adjustment. Prior corporate tax research has largely emphasized the first dimension. Hoopes, Mescall, and Pittman (2012) show that higher IRS audit probabilities deter corporate tax avoidance, while Nessa, Schwab, Stomberg, and Towery (2020) document that reductions in IRS resources weaken the corporate audit process and reduce collections. Audit probability, however, may not necessarily translate into effective enforcement when the relevant transactions cannot be independently observed or verified. The public economics literature shows that evasion is substantially lower when income is subject to third-party reporting (Kleven et al. 2011) and that transaction paper trails strengthen enforcement by allowing tax authorities to cross-check reported amounts (Pomeranz 2015). More broadly, the deterrent effect of enforcement depends not only on the likelihood of scrutiny but also on the information available to detect and establish

noncompliance (Sandmo 2005; Slemrod 2007; Konda, Patel, and Seegert 2022). Information access therefore represents a distinct but complementary margin of tax enforcement.

The information constraint is particularly salient for the enforcement on multinational firms, whose tax positions often depend on cross-border transactions for which relevant information is dispersed across jurisdictions. The IRS has legal authority under IRC §482 to challenge the pricing, characterization, and allocation of income associated with intra-group transactions (Klassen, Lisowsky, and Mescall 2017), yet exercising that authority depends on access to information about the underlying transactions and their economic substance. When the relevant records are held in foreign jurisdictions, they may lie beyond the IRS's direct reach even when the agency has legal authority to examine the resulting tax position. Effective enforcement of cross-border tax rules therefore depends not only on statutory authority and enforcement resources, but also on formal mechanisms that allow the IRS to obtain information held abroad.

2.2 TIEAs and the IRS Information Set

TIEAs are bilateral agreements through which the IRS can request taxpayer- and transaction-level information from partner jurisdictions for civil and criminal tax investigations (Internal Revenue Service 2023). Before a TIEA is in place, the IRS may have limited access to records held in other jurisdictions that are relevant to the examination of cross-border transactions, particularly in jurisdictions where local disclosure requirements are less stringent. TIEAs reduce this information friction by establishing a formal mechanism through which the IRS can obtain those records and incorporate them into its examination and enforcement process. Importantly, TIEA expands what the IRS can observe without any change to statutory tax rates, substantive tax rules, or the set of transactions that firms may lawfully undertake.

Prior studies find that TIEAs reduce round-trip tax evasion (Hanlon et al. 2015), redirect bank deposits toward less compliant havens (Johannesen and Zucman 2014), curb corporate tax planning (Li and Ma 2022), and increase the value of firms with tax-haven subsidiaries by improving transparency (Bennedsen and Zeume 2018). This strand of literature does not, however, examine how private lenders respond when the IRS gains greater access to information about MNCs' foreign activities. Because TIEAs expand the IRS's foreign information set without changing the underlying tax rules, they provide a useful setting for examining how tax-authority information affects private debt contracting.

2.3 Tax Enforcement and Private Debt Contracting

Private lenders assess credit risk based on the borrower's capacity to generate cash flows to service debt and the reliability of the information used to evaluate that capacity (Bharath et al. 2008; Ball et al. 2008). The first dimension concerns the amount of cash flow that borrowers can credibly pledge to lenders (Holmström and Tirole 1997), whereas the second concerns the quality of the accounting information used to price and monitor loan contracts (Bharath et al. 2008; Ball et al. 2008). These two dimensions are especially relevant for MNCs. Cross-border transactions create opportunities to allocate income and deductions across jurisdictions, making after-tax cash flows sensitive to tax enforcement, while geographically dispersed operations complicate outside lenders' evaluation of reported profitability and credit risk (Duru and Reeb 2002; Doukas and Pantzalis 2003).

One stream of research examines how lenders price borrowers' tax-planning activities, which can affect the after-tax cash flows available for debt repayment. Hasan et al. (2014) show that firms that engage in more tax avoidance face higher loan spreads and more restrictive non-price terms, which they attribute to the risk and opacity that aggressive tax planning introduces.

Similarly, Shevlin et al. (2020) provide related evidence that tax avoidance increases the cost of bank debt. Common measures of tax avoidance, however, capture realized tax outcomes and do not distinguish between the tax benefit generated when a position is sustained and the likelihood that the position survives a tax-authority challenge. Evidence that lenders charge more to tax-aggressive borrowers therefore cannot establish whether lenders price the magnitude of the claimed tax benefits, the fragility of those benefits, or both. Separating these components requires a setting that changes the likelihood of a successful tax challenge without changing statutory tax rates or the substantive rules governing the position.

A parallel literature emphasizes the benefits of tax-authority oversight to outside capital providers. Tax-authority monitoring can complement creditor oversight by constraining managerial diversion and enhancing the credibility of reported income (Desai et al. 2007). Consistent with this view, Guedhami and Pittman (2008) find that IRS monitoring lowers the cost of debt for private firms, and Gallemore and Jacob (2020) show that stricter tax enforcement expands bank lending by improving borrowers' information environments and loan decisions. Existing research therefore leaves unresolved how lenders respond when tax authorities gain greater access to information about MNCs' cross-border activities. Greater access can weaken the sustainability of cross-border tax benefits while improving the verifiability of reported income, creating opposing implications for private debt contracting. We develop these competing predictions in the next section.

2.4 Hypothesis Development

On the one hand, TIEAs may increase loan spreads because greater IRS access to foreign tax information can erode the after-tax cash flows available for debt service. MNCs' cross-border tax positions generate benefits that remain sustainable only when the underlying transactions

withstand IRS scrutiny and challenge (Bennedsen and Zeume 2018). A TIEA expands the records that the IRS can use to identify positions for examination and substantiate a challenge, which increases the probability that positions routed through the partner jurisdiction face a successful challenge. Positions already taken may result in adjustments that require back taxes, interest, penalties, and settlements, while firms that anticipate greater scrutiny may curtail or restructure their tax arrangements, which raises future effective tax rates and imposes direct reorganization costs (Hoopes et al. 2012; Belnap et al. 2024). Both consequences reduce the expected after-tax cash flows available for debt service and raise default risk at any given level of reported earnings, so lenders may demand higher spreads as compensation. We refer to this mechanism as the cash-flow-erosion effect and state our first hypothesis as follows:

Hypothesis 1 (Cash-Flow Erosion)*: A TIEA increases the cost of debt for U.S. MNCs, because expanded IRS access to foreign tax information raises the likelihood that cross-border tax positions are challenged and reduces the after-tax cash flows available to service debt.*

On the other hand, TIEAs may lower loan spreads for U.S. MNCs because greater IRS access to foreign tax information can improve the verifiability of reported income and the quality of information available to creditors. Banks that lend to U.S. MNCs face severe information asymmetry: institutional, regulatory, and accounting differences across countries obscure foreign operations, and complex cross-border structures make it difficult for lenders to verify a borrower's profitability and credit risk (Lee and Kwok 1988; Hope, Kang, Thomas, and Vasvari 2009). Consistent with this friction, U.S. MNCs face higher costs of debt than their domestic counterparts (Doukas and Pantzalis 2003). A TIEA allows the IRS to corroborate the income, taxes, and inter-company flows that MNCs report on their U.S. returns, and the tax authority therefore becomes a more effective external verifier. The credibility of reported income rises even though lenders do

not observe the exchanged information directly (Guedhami and Pittman 2008; Gallemore and Jacob 2020). We refer to this mechanism as the information-verification effect and state our alternative hypothesis as follows

Hypothesis 2 (Information Verification)*: A TIEA decreases the cost of debt for U.S. MNCs, because expanded IRS access to foreign tax information improves the verifiability of reported income and reduces information asymmetry between borrowers and lenders.*

The two mechanisms are not mutually exclusive, and both may operate at once. Because neither the sign of the average effect nor the relative strength of the two mechanisms is clear ex ante, the net effect of expanded IRS access to foreign tax information on MNCs' borrowing costs is an empirical question.

3. Research Design and Sample Selection

3.1 Staggered Difference-in-Differences Specification

The IRS enters TIEAs with different jurisdictions at different times, which creates variation in exposure among U.S. MNCs based on the locations of their foreign subsidiaries. Our main design employs a staggered DiD approach that compares bank loan interest spreads of treated firms and control firms before and after the signing of the TIEA (Bertrand and Mullainathan 2003; Chy et al. 2025). We estimate the following specification:

$$Log(Spread)_{i,j,t} = \beta_0 + \beta_1\, Post\ TIEA_{j,t} + \Gamma\, Loan\ Control_{i,j,t} + \Theta\, Firm\ Control_{j,t\text{-}1} + \alpha_j + \delta_t + \varepsilon_{i,j,t}, \quad (1)$$

where i indexes the loan tranche, j indexes the borrowing firm, and t indexes the year of loan origination. The dependent variable, $Log(Spread)_{i,j,t}$, represents the natural logarithm of the all-in-drawn spread over LIBOR at the inception of tranche i for firm j in year t. This variable captures the cost of borrowing faced by the firm at the tranche level. Our main independent variable of

interest is *Post TIEA*$_{j,t}$, a dummy variable equal to one if the loan tranche is issued by a treated firm after the year in which the TIEA was signed, and zero otherwise.[2]

To identify U.S. MNCs affected by TIEAs (i.e., treated firms), we proceed in the following steps. First, we manually collect information on TIEAs signed between the United States and foreign jurisdictions during our sample period from the U.S. Department of the Treasury and the Organization for Economic Co-operation and Development (OECD). When a foreign jurisdiction signs multiple agreements with the United States due to amendments, we retain only the original signing date for that jurisdiction. The list of TIEA events included in our sample is presented in Appendix A. Second, we define treated firms as those that own subsidiaries in a TIEA jurisdiction within a three-year window preceding the TIEA signing year.[3] For borrowing firms exposed to multiple TIEA shocks, we mainly focus on the first shock in our main specification. Control firms consist of MNCs that own subsidiaries exclusively in jurisdictions unaffected by TIEAs throughout the sample period. Finally, we classify a loan tranche as affected by the signing of TIEA if it was issued by a treated firm after the relevant TIEA signing. We perform our empirical analysis at the loan-tranche level to capture the effect of TIEAs on the cost of borrowing by comparing bank loan interest spread between treated and control firms before and after the signing of TIEA.

Following prior studies (Kang, Li, and Lin 2021; Khan, Lin, Ma, and Stice 2024; Chy et al. 2025), we include two sets of control variables in our regression model. The first set captures

[2] We use the signing of a TIEA as the treatment event because signing publicly establishes the commitment to future information exchange and has served as the primary event date in prior TIEA research, including Bennedsen and Zeume (2018) and Hanlon et al. (2015). These features allow us to isolate a change in the authority's information set from changes in tax law.

[3] Dyreng et al. (2020) find that firms may strategically omit significant subsidiaries from their SEC filings to avoid public scrutiny. Consequently, some firms may be misclassified as part of the control group if they withhold disclosure of subsidiaries in TIEA-affected jurisdictions. To address this potential measurement error, we track subsidiary disclosures over a three-year window prior to TIEA implementation. Our main results remain robust to changes in the length of this tracking window.

loan-level characteristics. Specifically, we control for whether the loan is underwritten by lead arrangers with prior lending relationships with the borrower (*Relationship*). We also include indicators for revolving loans (*Revolver*) and acquisition-related loans (*Deal Purpose*), as well as whether the loan contract includes performance pricing provisions (*Performance Pricing*), covenants (*Covenant*), or collateral requirements (*Collateral*). In addition, we control for loan maturity (*Maturity*), loan tranche size (*Loan Size*), and the number of lead arrangers (*Number of Lead Arrangers*), all of which are measured in natural logarithms.

The second set of control variables captures borrower-specific characteristics. Specifically, we control for the natural logarithm of total assets as a proxy for firm size (*Size*), return on assets (*ROA*), leverage ratio (*Leverage*), market-to-book ratio (*MTB*), stock return volatility (*Return Volatility*), cash flow volatility (*Cash Flow Volatility*), Altman Z-score (*Altman Z*), credit rating (*High Credit Rating*), accounting loss (*Loss*), institutional ownership (*Institutional Ownership*), and analyst coverage (*Analyst*). To mitigate the influence of outliers, we winsorize all continuous variables at the 1st and 99th percentiles of their distributions.

We also include firm (α_j) and year (δ_t) fixed effects to account for unobserved heterogeneity across firms and over time. Additionally, we cluster standard errors at the firm level to address potential correlation of the error terms within the same firm over time (Khan et al. 2024; Chy et al. 2025).

3.2 Sample Construction

Our loan tranche-level sample is constructed from several data sources. First, we begin with all origination loan tranches issued by public borrowers from the DealScan database, with tranche active dates between January 1, 1997, and December 31, 2021. Second, we obtain borrowing firm subsidiary information from the Subsidiary Data by WRDS. This dataset is parsed

from exhibits attached to SEC filings (primarily Exhibit 21, but also including 10-K, 10-Q, and related filings) (Dyreng, Hoopes, Langetieg, and Wilde 2020). Third, we collect firm-level financial statement data and credit ratings from Compustat, stock return data from CRSP, analyst coverage from I/B/E/S, and institutional ownership information from LSEG Institutional (13F) Holdings. We merge these firm-level variables into the loan tranche sample using the closest available observations prior to loan origination.[4]

Moreover, we impose several additional restrictions in constructing our sample. First, we retain only non-financial borrowing firms (SIC codes not between 6000 and 6999) for our empirical analysis. Second, we require treated firms to issue bank loans both before and after the TIEA shock. Third, we exclude loan tranches with missing data on interest spreads over LIBOR and on control variables. Finally, we require each firm-year to have at least two loan tranches to reduce potential biases in standard error estimation arising from singleton observations (Breuer and deHaan 2024). Our final test sample consists of 12,998 loan tranches extended to 1,500 unique U.S. MNCs, including 556 treated firms and 944 control firms. Within this sample period, treated firms issue 7,063 loan tranches, while control firms issue 5,935 loan tranches.

4. Empirical Results

4.1 Descriptive Statistics

Table 1 presents the summary statistics for the final sample. Among the independent variables, the mean values of *Treated* and *Post TIEA* are 0.543 and 0.229, respectively. In other words, 54.3% of loan tranches in the sample are issued to treated firms, which are firms affected by the cross-border signing of a TIEA between the U.S. and foreign jurisdictions, and 22.9% of

[4] We use the link file provided by Michael Roberts to identify U.S. public firm borrowers, which maps DealScan borrower identifiers to Compustat GVKEYs (Chava and Roberts 2008).

loan tranches are issued after the TIEA becomes effective. Specifically, treated firms issue a total of 7,063 loan tranches, of which 2,981 are issued following the implementation of the TIEA.

For the dependent variable, the all-in-drawn interest spread of loan tranches has a mean (median) of 197.94 (175) basis points over LIBOR. Turning to loan-level control variables, the average (median) tranche size is USD 548.91 (200) million, while the mean (median) maturity is 1,479 (1,826) days. On average, each loan tranche is arranged by about two lead banks. In terms of loan tranche contractual features, 49.5% of tranches are underwritten by banks with a prior lending relationship, 52.9% are structured as revolving loans, 48.5% include performance-pricing provisions, and 59.8% contain covenants. These statistics are broadly consistent with prior research (Kang et al. 2021; Khan et al. 2024).

Regarding borrowing firm-level characteristics, the mean (median) firm size is USD 10,622 (1,842) million. Because the sample focuses on U.S. multinationals, the mean firm size is relatively large, but the median is comparable to those reported in earlier studies (Kang et al. 2021). On average, borrowers have a return on assets of 14.3%, a leverage ratio of 28.9%, and stock return volatility of 0.121. These firm-level statistics are also consistent with related research (Kang et al. 2021; Khan et al. 2024).

Table 2 presents Pearson's and adjusted Spearman's rank correlation coefficients among the main variables. Consistent with prior literature (Khan et al. 2024; Chy et al. 2025), loan interest spreads are positively correlated with the presence of covenants and collateral, and negatively correlated with relationship lending and revolving loans. Regarding borrower characteristics, firms with higher financial leverage, more volatile cash flows, and accounting losses tend to face higher loan spreads. In contrast, firms with greater growth potential and stronger credit ratings are associated with lower loan spreads.

4.2 Baseline Results

Table 3 reports the effect of implementing TIEAs between the U.S. and foreign jurisdictions on the borrowing costs of U.S. MNCs. Column (1) reports the baseline specification, which includes only the *Post TIEA* indicator and firm- and year-fixed effects. Columns (2)–(4) sequentially add loan-level controls, borrower-level controls, and both sets of controls. Consistent with Hypothesis 1, the coefficients on *Post TIEA* are positive and statistically significant across all specifications. Column (4) reports the full specification corresponding to Equation (1). The estimated coefficient on *Post TIEA* is 0.0839, indicating that firms affected by TIEAs face an 8.75% higher loan spread than unaffected firms following implementation. Relative to the sample mean of loan spreads, this effect corresponds to an increase of 17.32 basis points in borrowing costs.

Moreover, estimated coefficients on the control variables generally conform to expectations and prior studies. The coefficient on *Relationship* is negative and statistically significant, indicating that loans between banks and firms with prior lending relationships carry lower spreads (Bharath, Dahiya, Saunders, and Srinivasan 2011). Regarding other control variables, the coefficient on *ROA* is negative and significant, while the coefficient on *Return Volatility* is positive and significant, consistent with the view that higher profitability reduces, and greater operating uncertainty increases, firms' credit risk and borrowing costs. These patterns provide additional support for the robustness of our main findings.

We further assess the parallel trends assumption and dynamic treatment effects for the staggered DiD estimation. Specifically, we replace *Post TIEA* in Equation (1) with a set of event-time indicators for loans issued more than three years before the TIEA signing year, in each year from t-3 through t+3, and more than three years after the signing year, where t denotes the TIEA signing year. We use the period earlier than three years before the TIEA signing as the omitted

benchmark. Panel A of Figure 1 plots the estimated coefficients on these year indicators with 90% confidence intervals. The coefficients on the three pre-TIEA indicators are all statistically insignificant, suggesting no discernible differences between loans issued by treated and control firms before the TIEA takes effect. All coefficients on the four post-TIEA indicators are positive and statistically significant, indicating a persistent impact of cross-border tax information exchange on loan pricing.

4.3 Cash-Flow-Erosion Effect of TIEAs

After establishing that loan spreads increase after the establishment of TIEA, we then proceed to shed light on the cash-flow-erosion effect. The expected cash-flow loss from a TIEA depends on the stock of cross-border tax benefits exposed to challenge and the probability that newly available information leads to a successful IRS challenge, while the effect of that loss on loan spreads depends on the sensitivity of the borrower's repayment capacity to a cash-flow shortfall. We therefore predict a larger spread response when a firm has more tax benefits subject to challenge, when the IRS has a greater ex ante likelihood of effective action, and when the firm faces tighter repayment constraints.

Table 4 presents cross-sectional tests of the cash-flow-erosion effect. Panel A tests whether the increase in spreads is greater when firms have more cross-border tax benefits subject to potential IRS challenge. We use firms' effective tax rates and foreign earnings (Foley, Hartzell, Titman, and Twite 2007; Edwards et al. 2016) as proxies for this exposure. A low effective tax rate can reflect greater benefits from tax strategies, whereas a high level of foreign earnings indicates that more foreign income may be subject to enhanced IRS access to cross-border information. In Column (1), the coefficient on the interaction between *Post TIEA* and *Low Effective Tax Rate* is positive and significant. Thus, the post-TIEA increase in loan spreads is larger for

firms with low effective tax rates than for firms with high effective tax rates. In Column (2), the coefficient on the interaction between *Post TIEA* and *High Foreign Earnings* is also positive and significant. Thus, the spread increase is larger for firms with high foreign earnings than for firms with low foreign earnings. These results are consistent with a greater spread response when a firm has more cross-border tax benefits subject to IRS challenge.

Panel B tests whether the spread response is greater when the IRS can make more effective use of new foreign information. We use the probability of an IRS audit and the number of IRS downloads of firms' 10-K filings from EDGAR as proxies for ex ante IRS scrutiny. A high audit rate captures a greater likelihood of examination, and more downloads reflect greater IRS attention. In Column (1), the coefficient on the interaction between *Post TIEA* and *High IRS Audit Probability* is positive and significant. Thus, the post-TIEA increase in loan spreads is larger for firms with high audit rates than for firms with low audit rates. In Column (2), the coefficient on the interaction between *Post TIEA* and *High IRS Attention* is also positive and significant. Thus, the spread increase is larger for firms that receive greater IRS attention. These results support the view that new foreign information has a greater effect when the IRS has a higher ex ante likelihood of effective action.

Panel C tests whether the spread response depends on the importance of a cash-flow loss for debt repayment. We use the current ratio as a proxy for short-term liquidity and debt maturity pressure as a proxy for near-term repayment needs. A low current ratio indicates fewer current assets relative to current liabilities, while high debt maturity pressure indicates more debt due within one year. A loss of after-tax cash flow should pose greater repayment risk for these firms. In Column (1), the coefficient on the interaction between *Post TIEA* and *Low Current Ratio* is positive and significant. Thus, the post-TIEA increase in loan spreads is larger for firms with low

current ratios than for firms with high current ratios. In Column (2), the coefficient on the interaction between *Post TIEA* and *High Debt Maturity Pressure* is also positive and significant. Thus, the spread increase is larger for firms with more debt due within one year. These results support the cash-flow-erosion channel. A loss of after-tax cash flow poses greater repayment risk when borrowers have fewer liquid assets or more immediate debt obligations.

Collectively, the results in Table 4 support the cash-flow-erosion effect. The spread increase is larger when more tax benefits are subject to challenge, when the IRS has a greater ex ante likelihood of effective action, and when the borrower faces tighter repayment constraints. These patterns suggest that lenders price a potential loss of cross-border tax benefits and the associated reduction in after-tax cash flows available for debt service. As additional but more direct evidence consistent with the cash-flow-erosion channel, Appendix C shows that treated firms report significantly larger tax settlement amounts following TIEAs, suggesting that expanded IRS access to foreign information is associated with more consequential challenges to firms' tax positions and greater tax-related realized enforcement costs.

4.4 Information-Verification Effect of TIEAs

We next examine the information-verification effect. TIEAs expand the IRS's access to foreign tax information and can improve the verifiability of reported income, even though private lenders do not directly observe the information exchanged. External verification has greater value when lenders otherwise have less information about a borrower. This channel therefore predicts a smaller post-TIEA spread increase for firms with weaker information environments.

Table 5 provides results regarding two aspects of the borrower's information environment. Panel A partitions on the reliability of the information that underlies the borrower's reported cash flows, and Panel B partitions on the quality of the borrower's public information environment. The

two partitions rest on different sources of variation, but both identify settings in which independently verifiable information is particularly valuable to lenders. The information-verification channel therefore predicts a smaller post-TIEA increase in loan spreads in each case.

Panel A examines information reliability. Column (1) captures reliability using *F Score*, the Dechow, Ge, Larson, and Sloan (2011) measure of ex ante financial misstatement risk, averaged over the three years preceding loan initiation. A higher *F Score* indicates that the borrower's own financial reports are less likely to be reliable, so information that lenders can corroborate from an independent source is more valuable. The coefficient on the interaction between *Post TIEA* and *High F Score* is negative and significant. Thus, the post-TIEA increase in loan spreads is smaller for firms with greater financial misstatement risk. Column (2) reports the results for *Host-Country Governance*, measured as the share of the borrower's disclosed non-U.S. subsidiaries that are located in well-governed countries, averaged over the three years preceding loan initiation. We classify a country as well governed in a given year if its composite score of the six Worldwide Governance Indicators is at or above the median across all rated countries in that year. When a larger share of a firm's foreign operations is located in jurisdictions with weaker institutions, regulatory quality, and rule of law, the information generated by those operations is more difficult for lenders to verify through other channels, so the information that the IRS obtains through a TIEA carries greater incremental verification value. The coefficient on the interaction between *Post TIEA* and *Low Host-Country Governance* is negative and significant at the 10% level. Thus, the spread increase is smaller for firms whose foreign operations are concentrated in weakly governed jurisdictions.

Panel B focuses on the borrower's public information environment. Column (1) measures information environment with *Management Forecast*, the frequency of management earnings

forecasts over the three years preceding loan initiation. Fewer management forecasts reflect less voluntary disclosure and therefore a poorer public information environment. The coefficient on the interaction *between Post TIEA* and *Low Management Forecast* is negative and significant. Thus, the post-TIEA increase in loan spreads is smaller for firms that issue fewer management forecasts. Column (2) presents the results using *Bid-Ask Spread*, the average percent quoted bid-ask spread over the same window, which captures information asymmetry in capital markets. The coefficient on the interaction between *Post TIEA* and *High Bid-Ask Spread* is negative and significant. Thus, the spread increase is smaller for firms facing greater information asymmetry. In both columns, lenders have less public information to draw on ex ante, and the third-party information that a TIEA makes available to the tax authority is correspondingly more valuable.

Collectively, the results in Table 5 support the information-verification effect. Although TIEAs are associated with higher loan spreads on average, the increase is smaller both when the information underlying the borrower's reported cash flows is less reliable and when the borrower's public information environment is poorer. These results suggest that better information verification partially offsets the adverse cash-flow effect of TIEAs when lenders otherwise have less reliable information about borrowers' cash flows.

4.5 The Effect of TIEA on the IRS' Reliance on Other Information Sources

We next provide evidence on whether TIEAs in fact expand the IRS's effective information set, a key premise underlying our interpretation of the main results. Because the information exchanged through TIEAs is not publicly observable, we cannot test this premise directly. Instead, we examine whether access to TIEA information changes the IRS's reliance on public sources of firm information. Bozanic, Hoopes, Thornock, and Williams (2017) show that the IRS uses firms' EDGAR filings to supplement its private information and, importantly, that IRS reliance on public

filings declines when private tax disclosure increases following Schedule UTP. Their evidence suggests that public and private information can serve as substitutable inputs into the IRS's information-acquisition process. Accordingly, if TIEAs provide the IRS with incrementally useful foreign information, the agency should have less need to acquire information about affected firms from EDGAR. A decline in IRS downloads following a TIEA would therefore provide revealed-preference evidence that the agreement expands the IRS's effective information set.

We therefore test whether TIEA adoption reduces IRS information acquisition from EDGAR, using a staggered DiD design consistent with our main specification. We aggregate daily SEC EDGAR access logs by the IRS to the firm-year level and construct seven proxies for the intensity and breadth of that acquisition (Bozanic et al. 2017; Fox and Wilson 2023). The sample consists of non-financial firms from 2003 through 2016; it ends in 2016 because SEC EDGAR log files from July 1, 2017 to May 18, 2020 are no longer provided by the SEC. Treated firms must have observations both before and after the treatment year, and firms still untreated as of 2016 serve as the control group. We require at least two observations per firm and winsorize continuous variables at the 1st and 99th percentiles.

$$Outcome\ Variables_{i,t} = \beta_0 + \beta_1\ Post\ TIEA_{i,t} + \Theta\ Firm\ Control_{i,t-1} + \alpha_i + \delta_t + \varepsilon_{i,t} \qquad (2)$$

In Equation (2), *i* indexes firms and *t* indexes calendar years, and outcome variables include proxies for IRS information acquisition from EDGAR. *Post TIEA* equals one for treated firm–year observations at or after the TIEA signing year and zero otherwise, and is always zero for control firms. We include firm and year fixed effects and cluster standard errors at the firm level. We expect β_1 to be negative: if TIEA information is incrementally informative, the IRS acquires less from EDGAR for affected firms.

Table 6 reports the results. IRS information acquisition from EDGAR declines after TIEA signing: downloads of 10-K filings fall by 4.05% and 10-Q filings by 5.23%, distinct 10-K filings accessed by 6.30% and distinct 10-Q filings by 2.89%, total EDGAR downloads by 9.96%, distinct form types by 7.52%, and total distinct files downloaded by 11.20%. These results indicate a broad reduction in the IRS's reliance on publicly available EDGAR filings following TIEAs. Overall, the results in Table 6 are consistent with our conjecture that TIEAs supply incrementally informative firm-level information through regulatory cooperation with foreign tax authorities, thereby strengthening the IRS's monitoring of MNCs.

4.6 Supplement Tests

4.6.1 Alternative Specification: Stacked Difference-in-Differences

In this section, we employ an alternative specification strategy to corroborate the empirical results. As a robustness exercise, we implement a stacked DiD approach to address the concern that treatment effect estimates may suffer from bias in generalized DiD settings with staggered shocks (Gormley and Matsa 2011; Baker, Larcker, and Wang 2022). We regard each TIEA event as a separate cohort, and for each TIEA cohort, we identify treated firms exposed to the TIEA and use never-treated firms as the corresponding control group. We require that loan tranches be issued by treated and control firms within a window of five years before and after the TIEA signing year. Based on this design, we construct a cohort-firm-tranche-year panel and estimate treatment effects from the following specification.

$$Log(Spread)_{c,i,j,t} = \beta_0 + \beta_1\, Treated_{c,j} \times Post_{c,t} + \Gamma\, Loan\ Control_{i,j,t}$$
$$+ \Theta\, Firm\ Control_{j,t\text{-}1} + \alpha_{c,j} + \delta_{c,t} + \varepsilon_{c,i,j,t} \quad (3)$$

In Equation (3), the indices are defined as follows: *c* indexes cohorts corresponding to each TIEA signing between the U.S. and foreign jurisdictions; *i* indexes individual loan tranches; *j*

indexes borrowing firms; and *t* indexes the years of loan issuance. This specification captures the treatment effect associated with each TIEA event, and a firm may appear as a treated firm in multiple cohorts if it is exposed to more than one TIEA shock. $Treated_{c,j}$ is a dummy variable equal to one for a treated firm that is affected by the TIEA signing in the cohort, and zero otherwise. $Post_{c,t}$ is a dummy variable that takes the value one if the loan is issued after the TIEA signing within each cohort, and zero otherwise. We include cohort × firm fixed effects ($\alpha_{c,j}$), which absorb all time-invariant firm characteristics within each cohort. We also include cohort × year fixed effects ($\delta_{c,t}$), which control for aggregate shocks common to all firms in a given year within the TIEA cohort. Moreover, we cluster standard errors at the firm level. Our fixed effects absorb the estimated coefficients on $Treated_{c,j}$ and $Post_{c,t}$, and we focus on the estimated coefficient, β_1, of the interaction term, $Treated_{c,j} \times Post_{c,t}$.

Panel A of Table 7 reports the estimation results from the stacked DiD specification based on Equation (3). Columns (1) and (2) present estimates from Equation (3) without and with control variables, respectively. In both specifications, the coefficients on *Treated* × *Post* are positive and statistically significant. Based on Column (2), the signing of a TIEA raises bank loan interest spreads by 7.58%, comparable to the main results reported in Table 3. Columns (3) and (4) include cohort × deal purpose fixed effects to account for differences in loan purposes within each cohort, and this fixed effect structure subsumes the estimated coefficient on *Deal Purpose*. Consistent with our main findings, the coefficients on *Treated* × *Post* remain positive and significant. Column (4) indicates that the signing of TIEA leads to an increase in bank loan spreads of 7.66%, almost identical to the estimate in Column (2).

Moreover, we visualize the dynamic effects under the stacked DiD specification. Panel B of Figure 1 reports the coefficients on year indicators from the stacked DiD regression along with

their 90% confidence intervals. All three pre-TIEA coefficients are statistically indistinguishable from zero. Nearly all estimated coefficients in the post-TIEA period are positive and significant. This pattern reinforces the parallel trend assumption required for the stacked DiD estimation.

4.6.2 Alternative Fixed Effects

In this section, we implement alternative fixed effects specifications to address potential concerns that the results depend on specific modeling choices and to strengthen causal identification by demonstrating robustness to different sources of unobserved heterogeneity (Breuer and deHaan 2024). The results are presented in Panel B of Table 7. First, we employ less stringent fixed effects structures as robustness checks to show that the results do not depend on high-dimensional fixed effects. Specifically, Column (1) includes only year fixed effects, and Column (2) includes year and industry fixed effects. Excluding firm fixed effects allows the estimation for the coefficient on *Treated* to reflect differences between affected and unaffected firms that are time-invariant.

We also implement more stringent fixed effects in the staggered DiD specification (Breuer and deHaan 2024). Column (3) includes firm and year × industry fixed effects, with industry defined according to the Fama-French 12 classification, to control for industry-specific time-varying shocks. Column (4) adds deal-purpose fixed effects in addition to firm and year fixed effects to capture heterogeneity in loan costs across borrowing purposes. Column (5) replaces year fixed effects with year × industry fixed effects. The coefficient on *Post TIEA* remains positive and statistically significant in all specifications. The economic magnitude ranges from 4.36% to 6.94%, consistent with our main findings in Table 3 and the stacked DiD estimates in Panel A of Table 7.

4.6.3 Alternative Samples

In this section, we make sample adjustments to further prove the robustness of our findings. Specifically, we consider the impact of COVID-19 and Tax Cuts and Jobs Act of 2017 (TCJA).

On one hand, we address potential confounding effects from the COVID-19 pandemic in 2020. The pandemic substantially increased the cost of external financing (Ellul, Erel, and Rajan 2020), which raises the concern that our estimates may capture the influence of this period of financial turmoil rather than the effect of TIEAs. Because the last TIEA in our sample was signed in 2018, we exclude all loans issued in 2020 and later. We therefore restrict the sample period to 1997–2019 and re-estimate Equation (1). All estimated coefficients on *Post TIEA* in Columns (1) and (2) of Table 7, Panel C are positive and statistically significant at the 1% level.

On the other hand, we exclude the influence of tax-related regulations that may confound the effect of TIEAs on bank loan interest spread. Under the TCJA, Section 965 of the Internal Revenue Code granted a one-time tax holiday for U.S. MNCs to repatriate undistributed post-1986 foreign earnings at reduced rates: 15.5% for cash and 8% for other assets (United States Code 2017). This provision significantly reduced the direct repatriation costs of foreign earnings, incentivizing MNCs to move cash trapped in foreign subsidiaries back to the U.S. parent. To mitigate the potential confounding effect of TCJA on our main inference, we restrict TIEA events to those signed between 2000 and 2016 and exclude loans issued in 2018 and 2019. Columns (3) and (4) of Table 7, Panel C show that the main results remain robust under these restrictions.

Overall, we construct alternative samples to conduct additional robustness tests of our main findings. The results indicate that our estimates are not sensitive to the exclusion of the COVID-19 period or the potential influence of the TCJA.

5. Concluding Remarks

Using the staggered implementation of TIEAs between the U.S. and foreign jurisdictions as shocks to the IRS's ability to obtain information about multinational firms' offshore activities, we find that affected U.S. MNCs face higher loan spreads following TIEAs. The increase is economically meaningful and remains robust across alternative difference-in-differences specifications, fixed-effect structures, and sample restrictions. Cross-sectional results are consistent with the cash-flow-erosion channel: the increase is larger when firms have more cross-border tax benefits exposed to challenge, when an effective IRS challenge is more likely, and when the resulting cash-flow loss matters more for repayment. Additionally, treated firms report larger subsequent tax settlements following TIEAs, consistent with TIEAs expanding the IRS's effective information set and facilitating enforcement. We also find that the increase is smaller for firms with weaker information credibility and poorer information environments, consistent with improved verification partially offsetting the adverse cash-flow effect. Finally, IRS downloads of treated firms' EDGAR filings decline following TIEAs, indicating that the IRS obtains incrementally useful foreign information through the agreements and therefore relies less on public filings. Overall, the evidence indicates that cross-border tax information affects loan pricing through both the sustainability of tax-related cash flows and the verifiability of reported income, with the cash-flow-erosion effect dominating on average.

Our study contributes to the literature on tax enforcement and debt contracting by showing that tax-authority access to cross-border information is itself an economically important determinant of loan pricing. Whereas prior studies primarily examine audit intensity or realized tax avoidance, the TIEA setting allows us to study an expansion in the IRS's information set without directly changing statutory tax rates or substantive tax rules. Our evidence further

highlights the dual role of such information: it can reduce the sustainability of cross-border tax benefits and weaken expected repayment capacity, while also improving the verifiability of reported income. These findings connect the tax-enforcement and creditor-information literatures by demonstrating how stronger cross-border tax information sharing can have implications for firms' borrowing costs.

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Appendix A: TIEA Country and Sign Year

Country/Region	TIEA Sign Year
Antigua and Barbuda	2000
Cayman Islands	2001
Jersey	2002
British Virgin Islands	2002
Isle of Man	2002
Bahamas	2002
Guernsey	2002
Netherlands Antilles	2002
Aruba	2003
Liechtenstein	2008
Monaco	2009
Panama	2010
Hong Kong	2014
Argentina	2016
Costa Rica	2018
Singapore	2018

Appendix B: Variable Definitions

Variable	Definition Explained	Source
Dependent Variable		
Log(Spread)	The natural logarithm of all-in-drawn interest charges (in basis points) over LIBOR.	DealScan
Independent Variables		
Treated	An indicator variable that takes the value of one if the firm had reported subsidiaries in a foreign country which signed a TIEA (Tax Information Exchange Agreement) with the United States over the three-year window prior to the signing year, and zero otherwise.	Subsidiary Data by WRDS
Post TIEA	An indicator variable that takes the value of one if the loan tranche is issued by a treated firm and issued after the year the TIEA was signed, and zero otherwise.	DealScan
Loan-Level Control Variables		
Relationship	An indicator variable that takes the value of one if any of the lead lenders was retained as the lead lender in any tranche taken by the same borrower over the last five years, and zero otherwise.	DealScan
Revolver	An indicator variable that takes the value of one if the loan is a revolver, and zero otherwise.	DealScan
Deal Purpose	An indicator variable that takes the value of one if the main purpose of a loan facility belongs to one of the following: acquisition, MBO, takeover or recapitalization, and zero otherwise.	DealScan
Performance Pricing	An indicator variable that takes the value of one if the loan contract incorporates a performance pricing option, zero otherwise.	DealScan
Covenant	An indicator variable that takes the value of one if the loan tranche includes covenant, and zero otherwise.	DealScan
Collateral	An indicator variable that takes the value of one if the loan tranche is collateralized, and zero otherwise.	DealScan
Maturity	The natural logarithm of the number of days between the loan tranche active date and the date when the tranche matures.	DealScan
Loan Size	The natural logarithm of the loan tranche amount (in USD million).	DealScan
Number of Lead Arrangers	The natural logarithm of the number of lead arrangers that underwire the tranche.	DealScan
Firm-Level Control Variables		
Size	The natural log of total assets (AT).	Compustat
ROA	Earnings before interest, taxes, depreciation, and amortization (EBITDA) scaled by lagged total assets (AT).	Compustat
Leverage	Total debt (DLTT + DLC) scaled by total assets (AT).	Compustat
MTB	Market value of equity (PRCC_F × CSHO) scaled by book value of equity (CEQ).	Compustat
Return Volatility	The standard deviation of monthly stock returns over the three-year period preceding the tranche active date.	CRSP
Cash Flow Volatility	The standard deviation of operating cash flow (OANCF) scaled by assets (AT) over the prior five years.	Compustat
Altman Z	Z-score measure of bankruptcy risk following Altman (1968), calculated by 3.3 × (EBIT / AT) + 0.99 × (SALE / AT) + 0.6 × (PRCC_C × CSHO / LT) + 1.2 × (ACT / AT) + 1.4 × (RE / AT).	Compustat

Variable	Definition Explained	Source
High Credit Rating	An indicator variable that takes the value of one if the firm has a credit rating that is above or equal to A-, and zero otherwise.	Compustat
Loss	An indicator variable that takes the value of one if net income (NI) is less than zero, and zero otherwise.	Compustat
Institutional Ownership	The number of shares held by institutional investors scaled by the number of shares outstanding.	LSEG
Analyst	The natural logarithm of one plus the number of analysts that follow the borrower during the nearest quarter before the loan tranche active date.	I/B/E/S
Cross-Sectional Variables		
Effective Tax Rate	Income taxes (TXT) paid over a five-year window scaled by pretax income (PI) over the same window (Dyreng, Hanlon, and Maydew 2008). *Low Effective Tax Rate* is an indicator equal to one if a firm's *Effective Tax Rate* falls below the annual sample median, and zero otherwise.	Compustat
Foreign Earnings	Cumulative after-tax foreign earnings ($\sum$ (PIFO - TXFO)) scaled by total assets (AT), averaged over the three years preceding the tranche active date. *High Foreign Earnings* is an indicator equal to one if a firm's *Foreign Earnings* exceeds the annual sample median, and zero otherwise.	Compustat
IRS Audit Probability	The ratio of corporate tax returns audited by the IRS to the total number of corporate tax returns filed in a given year within an asset-size group, averaged over the three years preceding the tranche active date. *High IRS Audit Probability* is an indicator equal to one if a firm's *IRS Audit Probability* exceeds the annual sample median, and zero otherwise.	TRAC[5]
IRS Attention	The number of Form 10-K filings downloaded by IP addresses associated with the IRS during the year preceding the tranche active date. *High IRS Attention* is an indicator equal to one if a firm's *IRS Attention* is positive, and zero otherwise.	SEC EDGAR
Current Ratio	Total current assets scaled by total current liabilities, averaged over the three years preceding the tranche active date. *Low Current Ratio* is an indicator equal to one if a firm's *Current Ratio* falls below the annual sample median, and zero otherwise.	Compustat
Debt Maturity Pressure	The total amount of bank loans maturing within one year from the focal loan issuance date scaled by total assets. *High Debt Maturity Pressure* is an indicator equal to one if a firm's *Debt Maturity Pressure* exceeds the annual sample median, and zero otherwise.	DealScan
Host-Country Governance	The share of a firm's non-U.S. subsidiaries that are located in well-governed countries, averaged over the three years preceding the tranche active date. Subsidiaries and their host countries are identified from Exhibit 21 of the firm's annual report, retaining the last filing within each firm-year. A country is classified as well governed in a given year if its composite Worldwide Governance Indicator score, defined as the sum of the six standardized WGI dimensions (voice and accountability, political stability, government effectiveness, regulatory quality, rule of law, and control of corruption), is at or above the median across all rated countries in that year. Subsidiaries located in countries without a WGI score remain in the denominator. *Low Host-Country Governance* is an indicator equal to one if a firm's *Host-Country Governance* falls below the annual sample median, and zero otherwise.	Exhibit 21; World Bank WGI
F Score	The financial misstatement risk score developed by Dechow et al. (2011), averaged over the three years preceding the tranche active date. *High F Score* is an indicator equal to one if a firm's *F Score* exceeds the annual sample median, and zero otherwise.	Compustat

[5] https://tracreports.org/tracirs/

Variable	Definition Explained	Source
Management Forecast	The total number of management forecasts issued by the firm, over the three years preceding the tranche active date. *Low Management Forecast* is an indicator equal to one if a firm's forecast frequency falls below the annual sample median, and zero otherwise.	I/B/E/S
Bid-Ask Spread	Percent quoted bid-ask spread calculated as $(Ask_{i,t} - Bid_{i,t}) / [(Ask_{i,t} + Bid_{i,t})/2]$, averaged over the three years preceding the tranche active date. $Ask_{i,t}$ and $Bid_{i,t}$ denote the stock's ask price and bid price at millisecond t. The daily observation equals the time-weighted average during trading hours for each day. We winsorize firm-day observations at the 1st and 99th percentiles within each year and aggregate them to the firm-year-quarter level. *High Bid-Ask Spread* is an indicator equal to one if a firm's *Bid-Ask Spread* exceeds the annual sample median, and zero otherwise.	TAQ
IRS EDGAR Search Variables		
10-K Downloads	The natural logarithm of one plus the total number of IRS downloads for a firm's 10-K filings in a given year.	SEC EDGAR
10-Q Downloads	The natural logarithm of one plus the total number of IRS downloads for a firm's 10-Q filings in a given year.	SEC EDGAR
10-K Filings	The natural logarithm of one plus the number of distinct 10-K filings downloaded by the IRS for a firm in a given year.	SEC EDGAR
10-Q Filings	The natural logarithm of one plus the number of distinct 10-Q filings downloaded by the IRS for a firm in a given year.	SEC EDGAR
Downloads	The natural logarithm of one plus the total number of SEC EDGAR download events by the IRS for a firm in a given year.	SEC EDGAR
Types	The natural logarithm of one plus the number of distinct SEC form types downloaded by the IRS for a firm in a given year.	SEC EDGAR
Breadth	The natural logarithm of one plus the number of distinct SEC filings downloaded by the IRS for a firm in a given year.	SEC EDGAR

Appendix C: The Effect of TIEA on IRS Tax Settlement

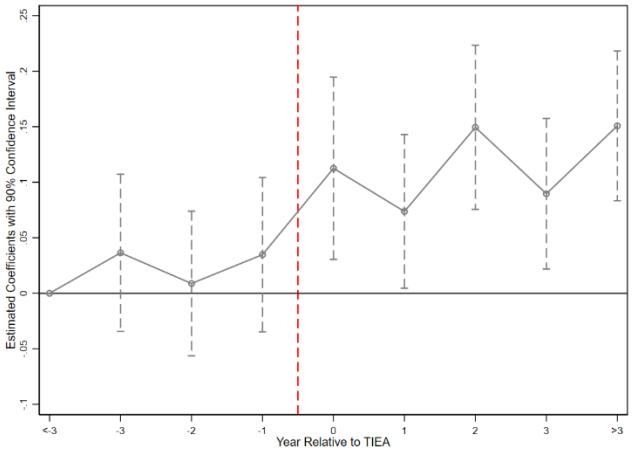
This table examines the effect of TIEAs on U.S. MNCs' future tax settlements. *Log(Tax Settlement)* is the natural logarithm of one plus the dollar value of tax settlements disclosed in the income tax footnote (Compustat item txtubsettle), with missing values set to zero (Yost and Shu 2022), measured in year t+1 in column (1), summed over years t+1 to t+2 in column (2), and summed over years t+1 to t+3 in column (3). *Post TIEA* is an indicator variable equal to one for firm–year observations in the year of, or after, the signing of a TIEA between the U.S. and the relevant foreign jurisdiction, and zero otherwise. Following Yost and Shu (2022), all columns control for the firm's current-year settlement, $Log(Tax\ Settlement)_t$, and contemporaneous IRS attention, $Log(IRS\ Downloads)_t$, the natural logarithm of one plus the total number of the firm's SEC filings downloaded by the IRS in year t, along with firm-level control variables. Because tax settlement disclosure is not available until fiscal year 2007, the sample period begins in 2007. We include firm and year fixed effects. T-statistics (two-sided) are reported in parentheses, based on robust standard errors clustered at the firm level. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)
Dependent Variable	$Log(Tax\ Settlement)_{t+1}$	$Log(Tax\ Settlement)_{[t+1,t+2]}$	$Log(Tax\ Settlement)_{[t+1,t+3]}$
Post TIEA	**0.7886*** **	**0.6301*** **	**0.4338***
	(3.79)	**(2.62)**	**(1.69)**
$Log(Tax\ Settlement)_t$	0.0513***	0.0079	-0.0247**
	(3.42)	(0.59)	(-2.13)
$Log(IRS\ Downloads)_t$	0.1797***	0.2099***	0.1952***
	(3.73)	(4.21)	(4.14)
Control Variables	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes
Observations	12,184	11,584	11,026
Adjusted R-squared	0.5160	0.6674	0.7429

Figure 1: Dynamic Effect of TIEAs on Loan Interest Spreads

Panel A: Dynamic Effect of Staggered DiD Estimations

This figure illustrates the dynamic effects of TIEAs on loan interest spreads for U.S. MNCs. We replace *Post TIEA* in the staggered DiD specification of Equation (1) with year indicators spanning from three years before to more than three years after each TIEA event. The benchmark period is defined as more than three years prior to the signing of TIEAs. We plot the point estimates for these year indicators, with dashed vertical lines representing 90% confidence intervals based on standard errors clustered at the firm level.



Panel B: Dynamic Effect of Stacked DiD Estimations

This figure illustrates the dynamic effects of TIEAs on loan interest spreads for U.S. MNCs. We replace *Treated* × *Post* in the stacked DiD specification of Equation (3) with the interaction terms between *Treated* and year indicators spanning from three years before to more than three years after each TIEA event. The benchmark period is defined as more than three years prior to the signing of TIEAs. We plot the point estimates for these interaction terms, with dashed vertical lines representing 90% confidence intervals based on standard errors clustered at the firm level.

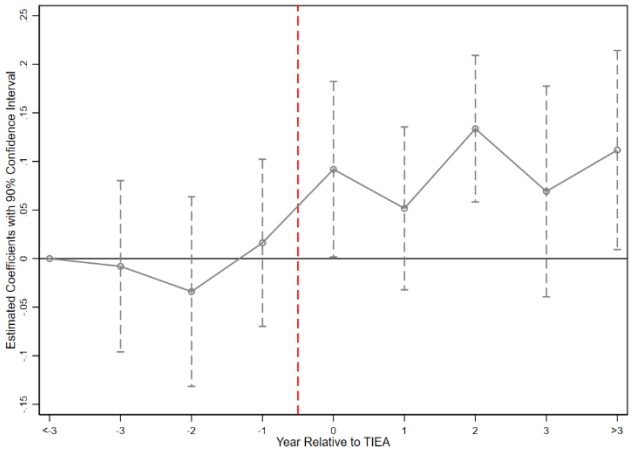


Table 1: Summary Statistics

This table presents the summary statistics for variables used in the main test. We winsorize all continuous variables at the top and bottom 1% of the distribution to minimize the effect of outliers. See Appendix B for detailed variable definitions.

Variables	N	Mean	P10	P90	Median	P75	P90	SD
Dependent Variables								
Log(Spread)	12,998	4.992	3.689	4.580	5.165	5.617	5.927	0.849
Spread	12,998	197.942	40	98	175	275	375	141.984
Independent Variables								
Treated	12,998	0.543	0	0	1	1	1	0.498
Post TIEA	12,998	0.229	0	0	0	0	1	0.420
Loan-Level Control Variables								
Relationship	12,998	0.495	0	0	0	1	1	0.5
Revolver	12,998	0.529	0	0	1	1	1	0.499
Deal Purpose	12,998	0.212	0	0	0	0	1	0.409
Performance Pricing	12,998	0.485	0	0	0	1	1	0.5
Covenant	12,998	0.598	0	0	1	1	1	0.490
Collateral	12,998	0.495	0	0	0	1	1	0.5
Maturity	12,998	7.112	5.897	6.975	7.510	7.510	7.693	0.690
Loan Size	12,998	5.245	3.219	4.317	5.298	6.215	7.131	1.501
Number of Lead Arrangers	12,998	0.449	0	0	0	0.693	1.386	0.595
Firm-Level Control Variables								
Size	12,998	7.563	5.183	6.285	7.519	8.863	9.997	1.802
ROA	12,998	0.143	0.056	0.093	0.133	0.185	0.245	0.081
Leverage	12,998	0.289	0.045	0.161	0.283	0.407	0.524	0.174
MTB	12,998	3.438	0.971	1.456	2.294	3.744	6.441	4.035
Return Volatility	12,998	0.121	0.059	0.078	0.107	0.146	0.200	0.062
Cash Flow Volatility	12,998	0.044	0.013	0.020	0.034	0.055	0.087	0.035
Altman Z	12,998	3.769	1.169	2.002	3.12	4.657	6.855	2.805
High Credit Rating	12,998	0.125	0	0	0	0	1	0.331
Loss	12,998	0.18	0	0	0	0	1	0.384
Institutional Ownership	12,998	0.647	0.219	0.497	0.706	0.856	0.948	0.269
Analyst	12,998	2.158	0	1.609	2.398	2.89	3.258	1.012

Table 2: Correlation Table

This table presents the correlation coefficients between the dependent variable, *Log(Spread)*, and all control variables. Lower-triangular cells present Pearson's correlation coefficients and upper-triangular cells are Bonferroni-adjusted Spearman's rank correlation. Correlations significant at the 5% level are shown in bold. See Appendix B for detailed variable definitions.

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Log(Spread)	(1)		**-0.19**	**-0.11**	**0.13**	**-0.16**	0	**0.58**	**0.28**	**-0.38**	**0.05**	**-0.34**
Relationship	(2)	**-0.18**		-0.02	-0.01	0.03	-0.01	**-0.13**	**-0.05**	**0.29**	**0.22**	**0.24**
Revolver	(3)	**-0.08**	-0.02		**-0.15**	**0.2**	**0.11**	-0.01	**0.07**	**-0.06**	-0.03	**-0.15**
Deal Purpose	(4)	**0.15**	-0.01	**-0.15**		**0.06**	**0.08**	**0.11**	**0.1**	**0.06**	**0.05**	**-0.09**
Performance Pricing	(5)	**-0.12**	**0.03**	**0.2**	**0.06**		**0.61**	**0.07**	0	**0.07**	**-0.04**	**-0.09**
Covenant	(6)	**0.03**	-0.01	**0.11**	**0.08**	**0.61**		**0.24**	**0.04**	**-0.04**	**-0.07**	**-0.22**
Collateral	(7)	**0.56**	**-0.13**	-0.01	**0.11**	**0.07**	**0.24**		**0.31**	**-0.31**	**-0.08**	**-0.38**
Maturity	(8)	**0.29**	**-0.06**	**0.24**	**0.06**	**0.07**	**0.08**	**0.31**		0.01	**0.21**	**-0.08**
Loan Size	(9)	**-0.37**	**0.29**	**-0.06**	**0.07**	**0.08**	**-0.04**	**-0.3**	**-0.06**		**0.45**	**0.69**
Number of Lead Arrangers	(10)	**0.09**	**0.23**	**-0.03**	**0.05**	**-0.05**	**-0.09**	**-0.07**	**0.17**	**0.43**		**0.41**
Size	(11)	**-0.35**	**0.23**	**-0.14**	**-0.09**	**-0.09**	**-0.23**	**-0.37**	**-0.14**	**0.69**	**0.41**	
ROA	(12)	**-0.27**	**0.03**	0.02	**0.05**	**0.08**	**0.04**	**-0.15**	-0.01	**0.05**	**-0.07**	**-0.06**
Leverage	(13)	**0.18**	**0.1**	**-0.1**	**-0.06**	**-0.06**	**-0.02**	**0.13**	**0.02**	**0.1**	**0.09**	**0.18**
MTB	(14)	**-0.12**	**0.05**	**-0.06**	**0.02**	**-0.04**	**-0.05**	**-0.07**	**-0.03**	**0.11**	**0.07**	**0.07**
Return Volatility	(15)	**0.37**	**-0.14**	**0.04**	**-0.06**	**-0.03**	**0.07**	**0.31**	0	**-0.32**	**-0.19**	**-0.39**
Cash Flow Volatility	(16)	**0.15**	**-0.12**	**0.08**	0	**0.02**	**0.08**	**0.17**	0	**-0.28**	**-0.19**	**-0.4**
Altman Z	(17)	**-0.18**	**-0.08**	**0.06**	**0.08**	**0.04**	**0.04**	**-0.1**	**-0.02**	**-0.12**	**-0.13**	**-0.25**
High Credit Rating	(18)	**-0.46**	**0.08**	**-0.07**	**-0.06**	**-0.08**	**-0.18**	**-0.28**	**-0.21**	**0.25**	**0.03**	**0.39**
Loss	(19)	**0.28**	**-0.06**	0.01	**-0.08**	**-0.09**	-0.01	**0.21**	-0.01	**-0.15**	**-0.04**	**-0.13**
Institutional Ownership	(20)	**-0.09**	**0.14**	0	**0.06**	0.02	**-0.04**	**-0.12**	**0.1**	**0.3**	**0.26**	**0.29**
Analyst	(21)	**-0.4**	**0.19**	**-0.06**	**0.02**	**0.02**	**-0.1**	**-0.35**	**-0.12**	**0.48**	**0.2**	**0.64**

		(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)
Log(Spread)	(1)	**-0.29**	**0.17**	**-0.26**	**0.4**	**0.14**	**-0.25**	**-0.36**	**0.3**	**-0.06**	**-0.41**
Relationship	(2)	0.02	**0.1**	**0.08**	**-0.15**	**-0.12**	**-0.06**	**0.08**	**-0.06**	**0.14**	**0.18**
Revolver	(3)	0.01	**-0.1**	**-0.07**	**0.05**	**0.09**	**0.07**	**-0.07**	0.01	0.01	**-0.08**
Deal Purpose	(4)	**0.06**	**-0.06**	**0.06**	**-0.05**	-0.01	**0.1**	**-0.06**	**-0.08**	**0.07**	0
Performance Pricing	(5)	**0.09**	**-0.06**	-0.02	0	**0.05**	**0.08**	**-0.08**	**-0.09**	0	-0.01
Covenant	(6)	**0.04**	-0.02	**-0.06**	**0.1**	**0.1**	**0.04**	**-0.18**	-0.01	**-0.04**	**-0.13**
Collateral	(7)	**-0.16**	**0.12**	**-0.16**	**0.34**	**0.18**	**-0.13**	**-0.28**	**0.21**	**-0.07**	**-0.37**
Maturity	(8)	0	**0.04**	0.03	**-0.04**	**-0.03**	**-0.03**	**-0.16**	-0.02	**0.15**	**-0.11**
Loan Size	(9)	**0.05**	**0.11**	**0.18**	**-0.36**	**-0.29**	**-0.09**	**0.25**	**-0.15**	**0.26**	**0.52**
Number of Lead Arrangers	(10)	**-0.07**	**0.09**	**0.07**	**-0.23**	**-0.22**	**-0.12**	**0.04**	**-0.05**	**0.29**	**0.23**

Size	(11)	**-0.06**	**0.18**	**0.14**	**-0.46**	**-0.43**	**-0.24**	**0.38**	**-0.13**	**0.24**	**0.69**
ROA	(12)		**-0.19**	**0.47**	**-0.19**	**0.07**	**0.56**	**0.17**	**-0.46**	**0.07**	**0.19**
Leverage	(13)	**-0.2**		**-0.04**	**0.07**	**-0.19**	**-0.65**	**-0.09**	**0.16**	**-0.07**	**-0.03**
MTB	(14)	**0.32**	**0.12**		**-0.24**	-0.03	**0.38**	**0.23**	**-0.19**	**0.15**	**0.32**
Return Volatility	(15)	**-0.18**	**0.1**	**-0.09**		**0.37**	**-0.11**	**-0.33**	**0.34**	**-0.23**	**-0.33**
Cash Flow Volatility	(16)	**0.04**	**-0.17**	**0.07**	**0.31**		**0.23**	**-0.16**	**0.09**	**-0.14**	**-0.23**
Altman Z	(17)	**0.52**	**-0.6**	**0.25**	**-0.05**	**0.21**		**0.15**	**-0.31**	**0.09**	**0.07**
High Credit Rating	(18)	**0.14**	**-0.09**	**0.15**	**-0.27**	**-0.14**	**0.08**		**-0.15**	**-0.05**	**0.34**
Loss	(19)	**-0.44**	**0.17**	**-0.06**	**0.36**	**0.1**	**-0.23**	**-0.15**		**-0.14**	**-0.19**
Institutional Ownership	(20)	**0.1**	**-0.09**	**0.09**	**-0.3**	**-0.19**	**0.06**	0.01	**-0.15**		**0.29**
Analyst	(21)	**0.19**	**-0.05**	**0.16**	**-0.3**	**-0.2**	**0.08**	**0.3**	**-0.2**	**0.41**	

Table 3: The Effect of TIEAs on Loan Interest Spreads

This table reports the results of the effect of TIEAs on bank loan interest spreads for U.S. MNCs. We include firm and year fixed effects. T-statistics (two-sided) are reported in parentheses, based on robust standard errors clustered at the firm level. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. See Appendix B for detailed variable definitions.

	(1)	(2)	(3)	(4)
Dependent Variable	*Log(Spread)*			
Post TIEA	**0.1213*** **	**0.0969*** **	**0.1007*** **	**0.0839*** **
	(3.34)	**(3.42)**	**(3.23)**	**(3.31)**
Relationship		-0.0722***		-0.0709***
		(-5.47)		(-5.57)
Revolver		-0.1537***		-0.1521***
		(-15.55)		(-16.40)
Deal Purpose		0.1872***		0.2342***
		(11.12)		(14.22)
Performance Pricing		-0.1095***		-0.0977***
		(-6.46)		(-5.96)
Covenant		-0.0197		-0.0108
		(-1.03)		(-0.58)
Collateral		0.4925***		0.4341***
		(23.59)		(20.52)
Maturity		0.1212***		0.1222***
		(10.37)		(10.94)
Loan Size		-0.1430***		-0.1334***
		(-14.90)		(-13.27)
Number of Lead Arrangers		0.0613***		0.0458***
		(3.37)		(2.69)
Size			-0.0787***	0.0333*
			(-3.87)	(1.92)
ROA			-0.9746***	-0.7296***
			(-5.71)	(-5.01)
Leverage			0.6582***	0.5844***
			(7.38)	(7.85)
MTB			-0.0011	0.0001
			(-0.38)	(0.05)
Return Volatility			1.1188***	0.9411***
			(6.17)	(6.10)
Cash Flow Volatility			0.6829**	0.5660*
			(2.00)	(1.87)
Altman Z			0.0058	0.0060
			(0.97)	(1.21)
High Credit Rating			-0.4775***	-0.4039***
			(-9.81)	(-9.20)
Loss			0.0297	0.0204
			(1.33)	(1.05)
Institutional Ownership			-0.1138**	-0.1282***
			(-2.30)	(-3.01)
Analyst			-0.1297***	-0.0963***
			(-7.84)	(-6.91)
Year FE	Y	Y	Y	Y
Firm FE	Y	Y	Y	Y
Observations	12,998	12,998	12,998	12,998
Adjusted R-squared	0.5956	0.7118	0.6401	0.7372

Table 4: Cross-sectional Analyses for the Cash Flow Erosion Channel

This table reports the results of tests examining the cash-flow-erosion channel through which TIEAs affect bank loan interest spreads for U.S. MNCs. Panel A examines the tax benefits potentially exposed by enhanced cross-border information exchange using *Effective Tax Rate* in Column (1) and *Foreign Earnings* in Column (2). Panel B examines ex ante IRS scrutiny using *IRS Audit Probability* in Column (1) and *IRS Attention* in Column (2). Panel C examines the debt repayment consequence using *Current Ratio* in Column (1) and *Debt Maturity Pressure* in Column (2). We construct indicator variables from each cross-sectional measure based on the within-year median, except for *IRS Attention*, which equals one if the IRS downloaded any of the firm's 10-K filings during the year preceding loan initiation, and zero otherwise. We include firm and year fixed effects. T-statistics (two-sided) are reported in parentheses, based on robust standard errors clustered at the firm level. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. See Appendix B for detailed variable definitions.

Panel A: Tax Benefits Potentially Exposed

	(1)	(2)
Cross-Sectional Variable	*Effective Tax Rate*	*Foreign Earnings*
Dependent Variable	*Log(Spread)*	
Post TIEA	0.0441	0.0434
	(1.35)	(1.30)
Post TIEA × Low Effective Tax Rate	**0.0705****	
	(2.10)	
Post TIEA × High Foreign Earnings		**0.0656***
		(1.78)
Low Effective Tax Rate	-0.0184	
	(-0.98)	
High Foreign Earnings		0.0105
		(0.38)
Controls	Y	Y
Year FE	Y	Y
Firm FE	Y	Y
Observations	12,998	12,998
Adjusted R-squared	0.7374	0.7374

Panel B: Ex Ante IRS Scrutiny

	(1)	(2)
Cross-Sectional Variable	*IRS Audit Probability*	*IRS Attention*
Dependent Variable	*Log(Spread)*	
Post TIEA	0.0723***	-0.0487
	(2.69)	(-0.67)
Post TIEA × High IRS Audit Probability	**0.0984****	
	(2.33)	
Post TIEA × High IRS Attention		**0.1185****
		(2.14)
High IRS Audit Probability	0.0193	
	(0.84)	
High IRS Attention		-0.0717***
		(-2.82)
Controls	Y	Y
Year FE	Y	Y
Firm FE	Y	Y

Observations	12,764	6,532
Adjusted R-squared	0.7388	0.7373

Panel C: Debt Repayment Consequence

	(1)	(2)
Cross-Sectional Variable	*Current Ratio*	*Debt Maturity Pressure*
Dependent Variable	*Log(Spread)*	
Post TIEA	0.0164	0.0458
	(0.57)	(1.58)
Post TIEA × Low Current Ratio	**0.1091*** **	
	(2.98)	
Post TIEA × High Debt Maturity Pressure		**0.0694** **
		(2.50)
Low Current Ratio	-0.0277	
	(-1.22)	
High Debt Maturity Pressure		-0.0124
		(-0.85)
Controls	Y	Y
Year FE	Y	Y
Firm FE	Y	Y
Observations	12,480	12,998
Adjusted R-squared	0.7374	0.7374

Table 5: Cross-sectional Analyses for the Information Verification Channel

This table reports the results of tests examining the information-verification channel through which TIEAs affect bank loan interest spreads for U.S. MNCs. Panel A examines the reliability of borrowers' reported cash flow information using *F Score* in Column (1) and *Host-Country Governance* in Column (2). Panel B examines the quality of borrowers' public information environment using *Management Forecast* in Column (1) and *Bid-Ask Spread* in Column (2). We construct indicator variables from each cross-sectional measure based on the within-year median. We include firm and year fixed effects. T-statistics (two-sided) are reported in parentheses, based on robust standard errors clustered at the firm level. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. See Appendix B for detailed variable definitions.

Panel A: Information Reliability

	(1)	(2)
Cross-Sectional Variable	*F Score*	*Host-Country Governance*
Dependent Variable	*Log(Spread)*	
Post TIEA	0.1190***	0.1060***
	(3.97)	(2.74)
Post TIEA × High F Score	**-0.0903****	
	(-2.49)	
Post TIEA × Low Host-Country Governance		**-0.0734***
		(-1.80)
High F Score	0.0503***	
	(2.69)	
Low Host-Country Governance		0.0100
		(0.38)
Controls	Y	Y
Year FE	Y	Y
Firm FE	Y	Y
Observations	12,834	9,253
Adjusted R-squared	0.7382	0.7517

Panel B: Public Information Environment

	(1)	(2)
Cross-Sectional Variable	*Management Forecast*	*Bid-Ask Spread*
Dependent Variable	*Log(Spread)*	
Post TIEA	0.1214***	0.1372***
	(4.08)	(4.63)
Post TIEA × Low Management Forecast	**-0.0896****	
	(-2.41)	
Post TIEA × High Bid-Ask Spread		**-0.1632*****
		(-4.61)
Low Management Forecast	0.0354*	
	(1.76)	
High Bid-Ask Spread		0.1018***
		(4.13)
Controls	Y	Y
Year FE	Y	Y
Firm FE	Y	Y
Observations	12,998	12,494
Adjusted R-squared	0.7375	0.7393

Table 6: Substitution between Information Acquisition through TIEA and through EDGAR

This table reports the results of tests examining the effect of TIEAs on the IRS's information acquisition through EDGAR. We include firm and year fixed effects. T-statistics (two-sided) are reported in parentheses, based on robust standard errors clustered at the firm level. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. See Appendix B for detailed variable definitions.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent Variable	*Log(10-K Downloads)*	*Log(10-Q Downloads)*	*Log(10-K Filings)*	*Log(10-Q Filings)*	*Log(Downloads)*	*Log(Type)*	*Log(Breadth)*
Post TIEA	**-0.0405**	**-0.0523***	**-0.0630*****	**-0.0289***	**-0.0996****	**-0.0752*****	**-0.1120*****
	(-1.18)	**(-1.89)**	**(-3.66)**	**(-1.79)**	**(-2.37)**	**(-3.58)**	**(-3.77)**
Size	0.1677***	0.0784***	0.0800***	0.0461***	0.2227***	0.1076***	0.1479***
	(11.25)	(7.31)	(9.99)	(7.49)	(11.77)	(11.38)	(11.12)
ROA	-0.1091**	-0.0436	-0.0465*	-0.0165	-0.0980	-0.0248	-0.0460
	(-2.13)	(-1.21)	(-1.71)	(-0.79)	(-1.58)	(-0.78)	(-1.06)
Leverage	-0.1696***	-0.1241**	-0.0945***	-0.0759***	-0.2123***	-0.0806**	-0.1274**
	(-2.61)	(-2.58)	(-2.73)	(-2.70)	(-2.62)	(-1.99)	(-2.22)
MTB	0.0033**	0.0009	0.0010	0.0007	0.0038**	0.0015*	0.0020*
	(2.54)	(1.03)	(1.36)	(1.30)	(2.51)	(1.83)	(1.83)
Constant	0.4889***	-0.1500**	0.3341***	-0.0843**	0.4320***	0.1500***	0.2293***
	(5.64)	(-2.42)	(7.14)	(-2.38)	(3.93)	(2.73)	(2.97)
Year FE	Y	Y	Y	Y	Y	Y	Y
Firm FE	Y	Y	Y	Y	Y	Y	Y
Observations	24,401	24,401	24,401	24,401	24,401	24,401	24,401
R-squared	0.6376	0.3397	0.6114	0.3440	0.5955	0.5052	0.5388

Table 7: The Effect of TIEAs on Loan Interest Spreads: Robustness Tests

This table reports the results of robustness tests for the effect of TIEAs on bank loan interest spreads for U.S. MNCs. Panel A reports the stacked DiD specification in Equation (3). Panel B reports alternative fixed-effect specifications. Panel C uses alternative sample periods. We include firm and year fixed effects in Panel C. T-statistics (two-sided) are reported in parentheses, based on robust standard errors clustered at the firm level. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. See Appendix B for detailed variable definitions.

Panel A: Stacked DiD Estimation

	(1)	(2)	(3)	(4)
Dependent Variable		*Log(Spread)*		
Treated × Post	**0.1068****	**0.0758****	**0.0969****	**0.0766****
	(2.01)	**(2.00)**	**(2.13)**	**(2.30)**
Control		Y		Y
Cohort-Year FE	Y	Y	Y	Y
Cohort-Firm FE	Y	Y	Y	Y
Cohort-Deal Purpose FE			Y	Y
Observations	38,548	38,548	38,527	38,527
Adjusted R-squared	0.6488	0.7486	0.7025	0.7690

Panel B: Alternative Fixed Effects

	(1)	(2)	(3)	(4)	(5)
Dependent Variable			*Log(Spread)*		
Post TIEA	**0.0694*****	**0.0682*****	**0.0659****	**0.0613*****	**0.0436***
	(2.98)	**(2.98)**	**(2.57)**	**(2.58)**	**(1.82)**
Treated	-0.0488**	-0.0333*			
	(-2.42)	(-1.65)			
Controls	Y	Y	Y	Y	Y
Firm FE			Y	Y	Y
Year FE	Y	Y		Y	
Industry FE		Y			
Deal Purpose FE				Y	Y
Year × Industry FE			Y		Y
Observations	12,998	12,998	12,997	12,995	12,994
Adjusted R-squared	0.6638	0.6670	0.7455	0.7610	0.7687

Panel C: Alternative Sample Periods

	(1)	(2)	(3)	(4)
	Excluding COVID-19		Excluding TCJA	
Dependent Variable		*Log(Spread)*		
Post TIEA	**0.1350*****	**0.0916*****	**0.1707*****	**0.1182*****
	(3.53)	**(3.43)**	**(4.17)**	**(4.13)**
Controls		Y		Y
Year FE	Y	Y	Y	Y
Firm FE	Y	Y	Y	Y
Observations	12,660	12,660	11,827	11,827
Adjusted R-squared	0.5995	0.7394	0.6173	0.7484