Analysts' Capital Expenditure Forecasts and Bank Debt Contracting

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Abstract

This study investigates the role of financial analysts' capital expenditure (capex) forecasts in shaping bank loan contracting terms, particularly loan pricing. While prior research has largely focused on earnings forecasts and equity market outcomes, we explore how capex forecasts, an increasingly prevalent and informative signal, are associated with lenders' debt financing. We argue that analyst capex forecasts provide lenders with credible, external assessments of firms' growth opportunities and investment plans, thereby reducing information asymmetry and agency concerns. Using a comprehensive sample of U.S. bank loans, we find that a greater number of analyst capex forecasts is significantly associated with lower loan spreads. This effect is more pronounced when forecasts are issued by analysts with greater firm-specific experience, industry expertise, or a strong track record of forecast accuracy. We also find that the association is stronger for borrowers with higher information asymmetry and weaker when lenders are more sophisticated and experienced. Furthermore, analyst capex forecasts are linked to more favorable non-price loan terms, including a lower likelihood of collateral requirements and capex-related covenant restrictions. Our findings extend the growing literature on the informational role of analysts in debt markets and highlights the broader economic relevance of non-earnings forecasts.

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Keywords: Analyst forecasts; Capital expenditures (Capex); Bank loan pricing; Information asymmetry

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1. Introduction

A large literature in accounting and finance investigates the economic impact of analyst forecasts and their attributes (e.g., Brennan et al., 1993; Barth and Hutton, 2000; Hong et al., 2000; Guo et al., 2020; Azevedo and Müller, 2024). A majority of these analyses focus solely on earnings forecasts, rather than forecasts of cash flows or capital expenditures (hereafter, capex). This research has further predominantly examined equity market economic outcomes of analyst forecasts, with limited research of their debt market consequences (e.g., Mansi et al., 2011, Call et al., 2022). However, in addition to earnings forecasts, particularly over the last fifteen years, analysts' forecasts of a variety of alternative performance measures and financial benchmarks have become increasingly available—including analysts' capex forecasts. Furthermore, these alternative (i.e., in addition to earnings) forecasts likely influence a wide variety of market participants outside of the capital markets, such as lenders, credit rating agencies, regulators, competitors, and corporate managers. This study examines the extent to which analysts' capex forecasts influence lenders' debt financing by increasing the information available to lenders with respect to firm growth opportunities and external expectations thereby decreasing lenders' processing costs.

Focusing on bank loan pricing represents an ideal context for examining the effect of analyst capex forecasts on the cost of borrowing. Analyst forecasts, especially those related to capex, offer insights into a company's future investment plans, which directly influence a lender's assessment of risk, expected cash flows, and overall creditworthiness. According to traditional banking theory, the most significant type of risk faced by banks when they provide loans is credit risk (Freixas and Rochet, 1997; Graham et al., 2008) and that credit risk (or the likelihood of default) is the primary determinant of bank loan pricing (Hasan et al., 2012). Analyst capex forecasts should reflect firms' investment potential from a separate, but credible, source and relay information about firms' future growth opportunities that is incrementally

useful to investors beyond what is already known to them through other information sources. In fact, Choi et al. (2020) provide evidence that managers themselves benefit from analysts' capex forecasts, helping them invest more efficiently (i.e., at levels aligned with their growth opportunities) because such forecasts essentially enlist increased investor monitoring and oversight.

Since bank loans are typically privately negotiated, lenders can tailor loan terms (i.e., interest rates, covenants, and collateral requirements) to their own firm growth and investment projections. Given the inherent uncertainty and difficulty in forecasting, lenders likely seek many alternative and viable sources of information available to them when performing this task. Thus, analysts' capex forecasts could serve as a credible, public signal that can shape their perceptions and provide benchmarks for comparing firms across and within industries and time. In this way, this study essentially asks the question of whether information intermediaries external to the firm, i.e., financial analysts, can aid lenders in their firm-related decision-making. However, because lenders can be viewed as a type of insider to the firm (i.e., given they are not subject to Regulation Fair Disclosure and are typically offered unique access to the firm), there is significant reason to believe that analysts external to the firm have little to offer lenders in terms of analysis and insight.

Analyst capex forecasts incorporate information about firms' growth opportunities, and the corresponding risks of firm default, and therefore may be associated with lender perceptions reflected in interest rates in an incremental and useful manner for at least two main reasons. First, analysts possess a unique expertise in allocating resources to investments, effectively justifying the amount of investment firms will make to materialize their growth opportunities. While managers are expected to possess better firm-specific information than analysts, analysts' opportunity to cover many firms and abilities to apply fundamental analysis in a variety of contexts should endow them with a better understanding of the macro economy-wide

and industry factors which could affect firm growth (Hutton et al., 2012; Kadan et al., 2012; Choi et al., 2020; Ali et al., 2023). Analysts may also obtain public and private industry-related signals from multiple firms in an industry, making their industry-related information superior to that of firm managers (Choi et al., 2020; Ali et al., 2023). That is, the process of gathering and assimilating firm, industry, and macroeconomic information from several sources (e.g., Piotroski and Roulstone, 2004; Bradshaw, 2011; Call et al., 2022), likely results in analysts possessing a competitive advantage over others in understanding how factors external to firms could affect their growth potential and plans. Thus, the fact that analysts are knowledgeable and independent assessors of firms' growth prospects should reassure lenders about the firms' need to secure funding to promote these opportunities and reduce their information acquisition, processing, and integration costs (Blankespoor et al., 2020).

Second, analyst capex forecasts should reduce information asymmetries and agency concerns by lenders when granting funding to firms. Analysts' signal for firm growth potential via their capex forecasts makes managers' unjustifiable deviations from analysts' expectations more difficult (Choi et al., 2020). Thus, such forecasts should enhance the firms' economic environment and facilitate external monitoring. While bank lenders should be able to better monitor their borrowers than public debt investors and obtain information directly from borrowing firms (e.g., Fama 1985; Diamond 1991), analyst forecasts provide an additional opportunity for lenders to expand their information set, lessen their own processing costs, and have assistance in their monitoring endeavors. Therefore, analyst capex forecasts likely help reduce borrowing frictions by improving firms' information environment and lowering lenders' assessment of default risk.

Yet, as noted earlier, banks have greater access to information on their borrowers than analysts, due to Regulation Fair Disclosure, as they can often proprietarily access information on firms thanks to relationship lending (e.g., Berger and Udell, 1995; Peterson and Rajan,

1995), with a particular emphasis on attaining industry-specific knowledge (Berger et al., 2017; Blickle et al., 2025). Research has also shown that analysts may often lack sophistication, be excessively busy, or systematically issue biased forecasts (e.g., Bradshaw et al., 2012; Bradshaw et al., 2016; Hsu and Wang, 2021). Such circumstances suggest that analysts' capex forecasts may not be particularly helpful for lenders' debt financing decisions, making the overall effect of analyst capex forecasts on loan spreads ultimately an empirical question.

The availability of detailed bank loan data through financial databases, combined with increasing numbers of analysts' capex forecasts, makes it feasible to empirically test the association between analyst capex forecasts and bank loan pricing, making this a rich and practical area for research. Using bank loan data from Dealscan, firm financial data from Compustat, and IBES analyst capex forecasts from 2008 to 2020, we examine our research question. We find that the number of analyst capex forecasts is negatively associated with bank loan spreads. The effect we document is economically significant: a one standard deviation increase in the number of analyst capex forecasts leads to a decrease of 10.58 basis points in the loan spread. Our evidence is consistent with analyst capex forecasts representing external independent opinions about firms' justified investment, as well as signals about the plausibility of firms' growth opportunities and the investment necessary to materialize these opportunities, helping reduce information asymmetry and agency concerns between lenders and borrowers.

Our results are robust to the use of loan purpose, industry and year fixed effects, and incremental to any information conveyed to lenders through analyst earnings, rather than capex forecasts, and managers' own earnings guidance for the firm. As analysts' decisions to issue capex forecasts are not random, unobserved analyst characteristics likely significantly influence the observed variation in the decision to issue capex forecasts, and also the quality of the forecasts (Choi et al., 2020). There could be also potential omitted factors that simultaneously affect both lenders' loan pricing and analysts' capex forecast decisions. To

mitigate these potential endogeneity concerns, we apply an instrumental variable analysis and entropy balancing approach and results are robust to these and various alternative specifications.

We next examine three channels potentially moderating the association between analyst capex forecasts and bank loan pricing. First, based on the expectation that analyst capex forecasts should function as an expert and independent estimate of anticipated firms' growth potential, we examine whether our results are stronger when analysts are more competent and experienced. We repeat our analysis for forecasts by analysts with greater experience on the firm, greater industry expertise, and analysts who have provided more accurate forecasts in the past. We find that the effect on bank loan spreads is more pronounced when analysts are more knowledgeable about the firm, its industry, and when analysts have a better forecast accuracy track record. This finding confirms that analyst capex forecasts work in the form of objective evidence of an expert's assessment of firms' growth potential, ultimately helping reduce the cost of their raised capital as it lessens frictions in the debt market, improving the information environment.

Second, we test whether the association between analyst capex forecasts and loan pricing is stronger where agency and information-asymmetry frictions are more severe, since such frictions typically raise the cost of bank debt. Thus, we anticipate that our findings on a negative effect of analyst forecasts on loan spreads should be stronger when moral hazard and agency considerations are also stronger. We use two proxies for the strength of possible information asymmetries and agency considerations. We expect that information asymmetry problems should be higher for firms more able to finance their growth through internally generated cash flow (i.e., firms less dependent on external financing to raise capital). That is, lower dependence on external financing implies greater reliance on internal cash flows and fewer external monitors, increasing managerial discretion and potential moral hazards.

Information asymmetry should also be greater for firms with more complex operations, which is the case for firms extending their operations across multiple operating segments. Consistent with our expectations, we find that the effect of analyst capex forecasts on reducing loan spreads is stronger for borrowers with less dependence on external financing and increasing business complexity. These results suggest that analyst capex forecasts improve the information environment of firms with repercussions on the cost of their bank lending.

Third, we examine whether lenders' own expertise and sophistication moderates the association between analysts' capex forecasts and loan spreads. We focus on lead-borrower or lead-participant relationship in a loan, and also lender experience in providing financing to the industry where the borrower belongs. Lead lenders with existing working relationships with the borrower may need to rely less on independent analyst data to decide upon lending terms. This is because their lending relationship enables lenders to better assess borrower risk and tailor loan terms accordingly (Banerjee et al., 2021). Similarly, when the lead bank and other members of the syndicate (participant lenders) have had existing lending relationships, information asymmetry and agency costs among syndicate members are reduced (Bushman et al., 2017; Call et al., 2022). In such contexts, the lead lender may have less need to use independent analyst data to explain debt contracting terms to other participant lenders. Furthermore, lenders' reliance on analyst forecasts when evaluating loan pricing is likely to be significantly lower when they possess industry expertise in financing firms from the same sector. Consistent with our expectations, we find that the effect of analyst capex forecasts on reducing loan spreads is weaker when there is an existing lead-borrower or lead-participant relationship in the loan, and when lenders possess industry-specific knowledge for their borrowers.

We further examine whether analyst capex forecasts are associated with non-price loan contract terms. That is, loans have various attributes that are associated with the default risk of

the loan and monitoring costs. In additional analyses, we find a negative association between the number of analyst capex forecasts and the probability a loan involves collateral or the probability a loan incorporates capex-related covenants. These findings are consistent with analyst capex forecasts reducing the need for lenders to impose collateral obligations on borrowers, thus, improving the financing terms for borrowers. Regarding the negative effect of capex forecasts on the incorporation of capex-related covenants within borrowing contracts, this finding is consistent with lenders considering the amount of capex supported through their loans as increasingly justifiable in the presence of analysts' capex forecasts, thus reducing the necessity of incorporating additional capex investment-related terms in loan agreements.

Our paper contributes to the literature in several ways. First, we contribute to the emerging research on the economic impact of analyst capex forecasts. Our results suggest that analyst capex forecasts not only help firms invest more efficiently (Choi et al., 2020) but also help them secure funding at better rates, with less collateral, and fewer covenants. Our findings are consistent with analyst capex forecasts helping convince lenders to grant funding to firms at better terms, by showing lenders that loans to materialize firms' growth potential are less risky and increasingly justified. Thus, we extend Choi et al. (2020) by providing tangible evidence on how firm financing conditions due to analyst capex forecasts can be improved. In this way, our study shows that a firm's outsiders, as is the case with financial analysts, can ultimately provide decision-relevant information to a firm's insiders, considering the proprietary access of banks to their borrowers' books.

Second, we contribute to research on the impact of analysts' forecasts on debt (rather than equity) markets and debt contracting in general, by providing initial evidence on how a relatively underexplored analyst forecast measure, as is the case with capex forecasts, can influence debt market outcomes such as loan pricing and other loan terms and conditions. Finally, we contribute to research on bank loan pricing terms and conditions, by showing that

analyst capex forecasts, in addition to other analyst-generated information or forecasts, can significantly affect the terms of bank financing.

2. Literature review and hypothesis development

2.1 Literature review

2.1.1 Analyst forecasts

A long line of research establishes the economic significance of analyst forecasts, with a predominant focus on earnings forecasts and equity market outcomes (e.g., Lys and Sohn, 1990; Brennan et al. 1993; Francis and Soffer, 1997; Barth and Hutton 2000; Hong et al., 2000; Guo et al., 2020; Azevedo and Müller, 2024). A more limited stream of research has shown that analyst forecasts can be economically meaningful for debt market pricing as well. Specifically, Masi et al. (2012) show that analyst forecast characteristics (forecast accuracy and dispersion, and revision volatility) are related to firms' cost of debt financing in public debt markets. Their findings that analyst forecasts help reduce bond yield spreads are stronger in uncertainty, providing evidence that analyst-produced information also improves firms' information environments for debt markets. Call et al. (2022) provides evidence that lenders use analyst forecasts of borrowers' earnings in the form of inputs when deciding on covenant thresholds in private lending, with lenders setting earnings thresholds closer to analyst forecasts when analysts have historically shown greater forecast accuracy. Furthermore, findings by Chin et al. (2018) that firms meeting analyst expectations benefit from better price and nonprice terms in private debt markets, and Ferrer et al. (2019), who show that analyst forecast accuracy helps reduce the average interest-based cost of debt, is consistent with analysts' influence in debt market outcomes.

Analyst research has mainly focused on earnings forecasts, with more limited research on cash flow (e.g., DeFond and Hung, 2003) and revenue (Keong, 2010) forecasts. Research on analysts' capex forecasts is particularly limited. Recently, Choi et al. (2020) significantly

advanced research on analyst capex forecasts, both in terms of documenting the prevalence of capex forecasts and regarding the factors that elicit analysts' capex forecasts. They show that the prevalence of capex forecasts has been steadily increasing (higher than 75% over the last decade), while these forecasts tend to span across all industries and be triggered by analyst ability and industry knowledge. A relevant question relates to the expectation of whether analysts 1) have incentives to be optimistic about capex forecasts, as has been consistently shown to be the case for earnings forecasts, and 2) produce capex forecasts with a significant degree of accuracy. Choi et al. (2020) do not identify any motivation by analysts to be optimistic in their capex forecasts, in order, e.g., to secure privileged access to firm management. They do consider, however, that analysts should have strong incentives to predict the optimal amount of firms' investment, which should simultaneously account for firms' growth opportunities, financial constraints, and ability to raise capital if needed, as such a prediction would provide them with the opportunity to signal their industry knowledge to investors.

Choi et al. (2020) further examine the economic impact of analyst capex forecasts, showing that such forecasts improve investment efficiency by reducing both under- and over-investment. They expect that analyst capex forecasts should significantly affect investment efficiency in a direct (by improving the managers' signal) and in an indirect way. In this last case, they hypothesize and obtain evidence in favor of a financing and a monitoring channel explaining their results. The first channel predicts that information conveyed in analyst capex forecasts should help capital providers to better assess firm investment opportunities, thus serving as a strong signal about the quality of the investment made by firms, ultimately facilitating the provision of capital by investors. The second channel predicts that analyst capex forecast information should facilitate the efficient monitoring by investors, and thus curb

managerial behaviors such as empire-building, ultimately protecting from over-investment (Choi et al., 2020).

Other recent research has focused on managerial, rather than on analyst capex forecasts. Specifically, Bae et al. (2022) provide evidence that managers' voluntary capex guidance has a positive effect on efficient corporate investing and firm value, while this effect stems, at least in part, from the feedback that analysts receive through managerial capex guidance. Ali and Fan (2025) also focus on managerial capex forecasts and show that managerial capex guidance is positively associated with firm investment efficiency and negatively associated with bank loan spreads.

A relevant question is whether managers or analysts possess a superior information advantage to help them predict the future performance of firms. Research is generally consistent with information advantages by managers at the firm, and by analysts at the industry and macroeconomic level (Choi et al., 2020; Bae et al., 2022), expecting that analysts possess information that is incrementally useful to managers and external market participants (Choi et al., 2020). Specifically, Hutton et al. (2012) compare the relative information advantages between the two groups and conclude that analysts (managers) have a comparable information advantage at the macroeconomic (firm) level, and comparable forecasting abilities at the industry level. Other research has focused on relative industry information advantages, providing evidence that analysts exhibit across-industry expertise (Kadan et al., 2012), while they possess information advantages over managers at the industry level, especially when firm performance is more sensitive to industry-level external economic forces, which falls outside the scope of managers' general experience (Ali et al., 2023).

2.2.2 Bank loan terms and conditions

Bank lending decisions involve both the amount of funding granted to firms as well as a set of loan terms and conditions which incorporate both information risk, as well as risk

associated with creditor protection (e.g., Djankov et al., 2007). Bank lending has been hypothesized and shown to possess distinct characteristics compared to other types of borrowing and extensive research examines the determinants of bank loan contract terms. Risker firms and firms more prone to information asymmetry and agency concerns (i.e., smaller firms, more cash-constrained and highly levered firms, and firms more difficult to value by outsiders) face a higher cost of financing, referring to loan spreads (Chava et al., 2009; Strahan, 1999; Boubakri and Ghouma, 2010). Research on other loan terms, e.g., covenants (Berlin and Loeys, 1988; Berlin and Mester, 1992; Brick and Palia, 2007), collateral (Berger and Udell, 1990, 1995; Jiménez et al., 2006), and maturity (Erhemjamts et al., 2010), also indicates that greater borrower risk negatively affects loan contracting terms. Thus, borrowers, with more predictable earnings streams tend to borrow under longer maturities, fewer covenants, and fewer collateral terms (Hasan et al., 2012).

Regarding the importance of loan terms and conditions other than loan spreads, one stream of research considers the price (i.e., the spread or interest rate) and non-price terms of loans are jointly or simultaneously determined as lenders deal with moral hazard problems by borrowers (Strahan, 1999; Jimenez et al., 2006; Brick and Palia, 2007; Bharath et al., 2008; Hasan et al., 2012). According to this research, credit contracts should be viewed in the form of a 'package,' where the price represents only one of these terms (Melnik and Plaut, 1986). However, there is considerable research that suggests that non-price terms in debt contracts, for both bonds and loans, tend to be 'boilerplate' and significantly less sensitive than price terms to changes in risk and performance (Nash et al. 2003; Billett et al. 2007; Kubick et al. 2024; Kubick et al., 2025). This literature also suggests performance pricing provisions may be substituted for less restrictive non-price terms (e.g., covenants) to protect lenders against subsequent adverse changes in firm performance (Asquith et al., 2005; Saavedra, 2018; Kubick et al., 2025).

2.2 Hypothesis development

Economic theory suggests that loan terms and conditions incorporate risk on the future performance and likelihood of repayment for firms and the protection of their creditors (Qian and Strahan, 2007; Bae and Goyal, 2009; Chava et al., 2009; Boubakri and Ghouma, 2010; Francis et al., 2012). We expect that analyst capex forecasts are associated with creditor perceptions reflected on bank loan spreads by incorporating information about firms' growth opportunities, corresponding risk of default conditional on firms' growth opportunities in a way incrementally useful to other information sources available to bank lenders. We initially focus on loan spreads, rather than other loan terms because the priced cost of borrowing directly incorporates borrower risk. We base our prediction on several arguments.

Analyst capex forecasts should provide an expert and knowledgeable estimate of firms' anticipated growth opportunities, and, thus, justify the anticipated level of investment that should be made by firms to achieve this growth. Firms' investment opportunities depend on firm-specific, industry and macroeconomic factors. Predicting the optimal amount of investment for a firm requires judgement to simultaneously assess a firm's growth opportunities, financial constraints, and ability to raise capital, if necessary, through a process of analyzing corporate operating environments, supply chain partners, competitors, and general industry factors (Choi et al., 2020). Therefore, if analysts external to the firm consider that a firm should engage in a certain economically justifiable level of capex, it should be easier for firms to secure financing to implement this investment at a lower cost.

Analysts should not have better firm-specific information than managers about firms' growth opportunities, however, analysts are widely considered to have a better understanding of macroeconomic and industry factors than managers, possessing superior industry and macroeconomic information (Hutton et al., 2012; Kadan et al., 2012; Ali et al., 2023). Furthermore, analysts' capex forecasts are likely to substantially reduce the information costs

bank lenders face in acquiring, processing, and integrating (Chin et al., 2018; Blankespoor et al., 2020) firm investment and growth prospects when deciding on loan pricing terms. The public nature of and easy access to these external information bytes could prove useful to lenders and managers alike, alternatively, they could be less informed and biased.

Macroeconomic conditions (e.g., economy-wide liquidity shocks) play a determining role in the amount of credit granted and overall bank lending (Schnabl, 2012). The importance of macroeconomic factors for debt contracting should be directly affect bank loan pricing, given that macroeconomic factors, on an independent basis, have been considered to influence the probability of firm default (Bhimani et al., 2013), and analysts are expected to be able to process this information very efficiently. Thus, we expect that analyst capex forecasts could mitigate the cost of debt by bringing new information to the attention of lenders and by improving firms' information environments. This process should reduce asymmetrical information, and corresponding agency considerations affecting default risk assessment by lenders, leading to negative effect on bank loan pricing.

Additionally, analyst capex forecasts have been shown to enhance corporate investment efficiency by improving managers' signals and through facilitated access to financing and better monitoring by capital providers (Choi et al., 2020). To the extent that capex forecasts by analysts make firms invest at levels that minimally deviate from justified investment based on their growth opportunities, and corresponding reduced risk of default by profiting from these opportunities (if realized), we expect that bank lenders should consider this information when they grant financing to firms and adjust their loan pricing accordingly.

The above argumentation implicitly assumes that analysts function as external and independent assessors of firms' growth opportunities, providing reassurance as to whether any firm borrowing to promote these opportunities should be justified or not. Yet, being external, analysts are not privy to all managers plans or opportunities. Analysts have also shown

significant propensity to issue biased forecasts, be overly busy, and in some cases even lack sophistication (Bradshaw et al., 2012; Cen et al., 2013; Bradshaw et al., 2016; Driskill et al., 2020; Hsu and Wang, 2021). Furthermore, banks may not necessarily need more information on firms, especially when they have relationships with those firms and have easy access to greater amounts of firm information than external analysts are privy to (Fama 1985; Diamond 1991; Berger and Udell, 1995; Peterson and Rajan, 1995). Banks could also have accumulated their own proprietary information and experience thanks to systematically providing funding to the borrower or to firms from its industry sector, thus developing industry-specific knowledge through their own operations (e.g., Berger et al., 2017; Blickle et al., 2025). Therefore, it might be the case that analyst forecasts do not possess any superior information with reference to what is known already to bank lenders about firms' growth potential and corresponding default risk.

Overall, analysts may possess information that provides external validity by knowledgeable experts about firms' growth opportunities, representing an objective justification and validation about the level of capex firms should engage in, expending the information sets of firms available to lenders. However, analysts may lack enough firm-specific knowledge to produce value-relevant capex forecasts and lenders themselves may develop industry-specific knowledge through their own operations. Thus, the overall effect of analyst capex forecasts on loan spreads is unclear, making it an empirical question. Stated in the alternative:

H1: *Analyst capex forecasts are not associated with the bank debt cost of borrowing.*

3. Data and methodology

3.1 Sample selection

We obtain data on loan contract terms from the Dealscan database. To obtain accounting information, we merge the Dealscan data with the Compustat data using the linking table

provided by Chava and Roberts (2008).[1] Data on analyst capex forecasts are collected from the I/B/E/S Detail file. We select 2008 as a starting year of our sample period because analysts' capex forecasts became largely available from this year (Choi et al., 2020). Our sample ends in 2020 as the Compustat-Dealscan linking table is only available up until this year.[2] We treat each loan facility as a separate observation because loan contract terms, such as interest spreads, vary across facilities within the same deal (e.g., Kim et al., 2011; Bushman et al., 2021). Loans issued to financial firms (SIC codes 6000 – 6999) and utilities firms (SIC codes 4900 – 4999) are excluded from the sample. After requiring non-missing data needed in our main analyses, our final sample includes 13,391 loans issued to 2,084 US-domiciled firms over the period from 2008 to 2020.

3.2 Research design

We estimate the following model to examine the effect of analyst capex forecasts on the cost of bank borrowing:

$$Loan\ spread = \alpha_0 + \alpha_1 N\_CPXAF + Controls \qquad (1)$$

In this model, *Loan spread* measures the cost of bank borrowing defined as the natural logarithm of the all-in-drawn interest spread.[3] To capture the effect of analyst capex forecasts, following Choi et al. (2020), we define a variable, *N_CPXAF*, which is the natural logarithm of one plus the number of unique financial analysts who issue capex forecasts for the borrower's year *t* prior to loan contract inception.[4] The coefficient on *N_CPXAF* is expected to be negative if analyst capex forecasts reduce loan spreads.

[1] We thank Michael Roberts for making this linking table publicly available. The file is accessible at: https://finance.wharton.upenn.edu/~mrrobert/research.html.

[2] Matching between Dealscan and Compustat was performed using the Roberts Dealscan-Compustat Linking Database, which covers years until 2020 as of year 2025. Extending coverage beyond 2020 would combine widely used data linked in top-tier research with naturally less reliable manually matched data.

[3] It is common to use the natural logarithm of the loan spread in the private debt contracting literature (e.g., Graham et al., 2008; Balachandran and Duong, 2019; Kubick et al., 2025). Our results do not change if we use the level of loan spread.

[4] We calculate *N_CPXAF* based on forecasts issued during the first quarter of the year prior to the loan origination. This enables us to better capture analysts' original prediction of firms' capital expenditures (Choi et al., 2020).

Controls is a vector of control variables selected following prior studies (e.g. Bushman et al., 2017; Chen et al., 2016; Graham et al., 2008; Kubick et al., 2025). Specifically, we include analyst earnings forecasts (*N_EPSAF*) and management capex guidance (*CPXGD*) to control for the effects of other forecasts on loan contract terms. *N_EPSAF* is defined as the natural logarithm of one plus the number of unique financial analysts who issue earnings forecasts for the borrower's year t prior to loan contract inception. The variable is 0 for firms with capex forecasts as virtually all borrowers in our sample that have an analyst capex forecast also have an analyst earnings forecast.[5] *CPXGD* is defined as an indicator variable that equals one if a borrower issues management capex guidance.

We also control for loan-specific attributes that are likely to affect loan spread (e.g., Chen et al., 2016; Kubick et al., 2025). These involve revolvers (*Revolver*), the size of the loan contract (*Loan size*), number of financial covenants (*Financial covenants*), the existence of a capex covenant (*Capex covenant*), loan maturity (*Maturity*), the number of lenders in the loan (*N_Lenders*), the existence of performance pricing provisions (*PP*), secured loans (*Collateral*), and loan purpose fixed effects. Additionally, we control for borrower characteristics that are likely to affect credit quality and thereby the pricing of bank loans (e.g., Balachandran et al., 2019; Campello and Gao, 2017; Cohen et al., 2022 ; Graham et al., 2008; Kubick et al., 2025): firm size (*Firm size*), market-to-book ratio (*MTB*), leverage (*Leverage*), return on assets (*Profitability*), asset tangibility (*Tangibility*), cash flow volatility (*CFO volatility*), bankruptcy risk (*Z-score*), and a dummy variable for whether the borrower is rated (*Rated*). Following the literature, these variables are measured in the year prior to the loan issuance. Finally, we control for year and industry fixed-effects and compute standard errors using two-way firm and year clusters. Detailed definitions of each variable are provided in Appendix 1.

[5] We find that 99.78% of borrowers in our sample that have an analyst capex forecast also have an analyst earnings forecast. However, 32.57% of our sample borrowers that have an analyst earnings forecast have no analyst capex forecasts.

4. Empirical findings

4.1 Descriptive statistics

Table 1 reports the descriptive statistics for our sample. The average number of analyst capex forecasts is 1.96, consistent with the relevant number reported by Choi et al. (2020). The average loan spread is 253 basis points over LIBOR or the LIBOR-equivalent rate, loan size is $593 million, and loan maturity is 51 months. Furthermore, 58% of loan facilities are secured, and 26% of loans facilities have performance pricing provisions. On average, firms in our sample have a leverage ratio of 0.337 and return on assets of 12.6 percent. Average tangible assets amount to approximately 27% of the firm's total assets, while 39% of the borrowers in our sample are rated.

4.2 Baseline results

Table 2 reports the results of estimating our baseline equation (1). Column (1) of Table 2 reports the results for the model where an indicator variable for the existence of management capex guidance (*CPXGD*) is included. The estimated coefficient on *CPXGD* is negative and marginally significant, suggesting that when analyst capex forecasts are not considered, management capex guidance is negatively associated with bank loan spreads. Column (2) reports the results when including an indicator variable for the number of analyst earnings forecasts for borrowers that have no analyst capex forecasts (*N_EPSAF*). As the coefficient on *N_EPSAF* is insignificant, we observe that the number of analysts' earnings forecasts does not affect loan spreads when analysts forecast earnings, but not capex forecasts, for the borrower. Finally, Column (3) reports the results for the full model which includes the number of analyst capex forecasts variable (*N_CPXAF*) along with *N_EPSAF* and *CPXGD* as independent variables. We observe from Column (3) that the estimated coefficient on *N_CPXAF* is negative and significant at the 1 percent level, indicating that the number of analyst capex forecasts is negatively associated with bank loan spreads. However, when the *N_CPXAF* variable is added

to the model, the estimated coefficient on *CPXGD* becomes statistically insignificant. This indicates that the existence of management capex forecasts does not significantly affect loan spreads when considering information from analyst capex forecasts. Furthermore, when including the *N_CPXAF* variable in our estimation, the coefficient on *N_EPSAF* is significant, but it is significantly less negative than *N_CPXAF* (*p*-value = 0.032). This suggests that analysts' capex forecasts have a stronger and more direct effect on lenders' loan pricing decisions, even when incorporating information from management capex forecasts and the number of analyst earnings forecasts.

We further observe that the effect of analyst capex forecasts on loan spreads is economically significant. As the dependent variable is a natural logarithm, the estimated coefficient on *N_CPXAF* in the full model suggests that a one unit increase in number of analyst capex forecasts is associated with a 5.3% change in the loan spread. As such, a one standard deviation increase in number of analyst capex forecasts leads to a decrease of 4.18% (78.9% × 5.3%) in the loan spread. Given that the mean loan spread is 253 basis points, a one standard deviation increase in number of analyst capex forecasts leads to a decrease of 10.58 basis points (4.18% × 253 basis points) in the loan spread.

Taken together, the results in Table 2 provide compelling evidence that analyst capex forecasts are negatively and strongly significantly associated with the bank debt cost of borrowing, consistent with such forecasts providing information to lenders incremental to the information obtained from their own sources, and relative to analysts' EPS forecasts and management capex forecasts, when deciding on loan pricing for borrowers.

4.3 Endogeneity analysis

While our results suggest that analyst capex forecasts are associated with cost of debt, these results might be subject to endogeneity concerns. Specifically, as analysts' decisions to issue capex forecasts are not random, unobserved analyst characteristics could significantly

influence the observed variation in analysts' decision to issue capex forecasts, and also the quality of these forecasts (Choi et al., 2020). There could also exist potential omitted factors that simultaneously affect both lenders' loan pricing and analysts' capex forecast decisions, such as, for example, variations in firms' growth opportunities and earnings generation potential, affecting the decision of analysts to issue capex forecasts together with lenders' loan pricing patterns. Although we incorporate several control variables and various types of fixed effects in our main analysis, to mitigate such concerns, we apply an instrumental variable analysis and an entropy balancing approach to further examine our research question.

First, we conduct an instrumental variable analysis using the median broker size across all analysts issuing capex forecasts (*Broker size*) as an instrumental variable for analysts' capex forecasts. We expect this variable to be highly correlated with analyst capex forecast coverage (and as such satisfies the relevance condition) but not independently associated with bank loan spreads (and as such satisfies the exclusion restriction). Choi et al. (2020) provide evidence that *Broker size* is highly correlated with analyst capex forecast coverage, satisfying the relevance condition. The explanation for this association is that analysts from larger brokerage firms have more resources and better access to information, enabling them to produce forecasts beyond just earnings estimates. However, it is unlikely that *Broker size* directly affects lenders' loan pricing decisions except through its effect on analysts' decisions to issue a capex forecast for a borrower.

Table 3 shows the two-stage least squares estimation results. In the first-stage regression, we regress number of analyst capex forecasts (*N_CPXAF*) on the instrumental variable *Broker size* and the control variables used in our baseline model (1). Column (1) shows that the estimated coefficient on *Broker size* is positive and significant. This indicates that analysts issue more capex forecasts when they are from larger brokerages, thus satisfying the

relevance condition.[6] In the second-stage regression, we estimate our baseline model (1) using the predicted values for the number of analyst capex forecasts (*Pred*(*N_CPXAF*)) as the regressor obtained from the first-stage regression. Column (2) indicates that the estimated coefficient on *Pred*(*N_CPXAF*) is negative and significant. These results are in line with our main findings, as reported in Table 2.

Next, we apply entropy balancing for borrowers with and without analyst capex forecasts *(CPXAF*). This approach generates well-balanced samples where borrowers with and without analyst capex forecasts are not significantly different on observable firm characteristics. Table 4 presents the results of estimating our baseline model (1) using the entropy balanced sample. We observe from Table 4 that the estimated coefficients are negative and significant for both the indicator variable *CPXAF* and *N_CPXAF*, consistent with our main findings, as reported in Table 2.

4.4 Robustness analysis

To further validate that our main results are not driven by other sources of information available to lenders (i.e., other than analyst capex forecasts), we perform several robustness tests. First, although we control for analyst earnings forecasts in all our analyses, the effect of analyst capex forecasts on loan spreads may still be influenced by the effect of analyst earnings forecasts on loan spreads. To rule out this possibility, we scale the number of analyst capex forecasts by the number of analyst earnings forecasts (*N_CPXAF over N_EPSAF*).[7] If analyst capex forecasts are an important source of information for lenders, we should expect to find that this ratio is negatively associated with loan spreads. To test this expectation, we regress loan spreads on *N_CPXAF over N_EPSAF* along with the controls used in the baseline model (1). The results are reported in Table 5, column (1). As predicted, the estimated coefficient on

[6] Furthermore, as reported in Table 3, the Hansen *J* statistics in the overidentification test do not reject the null of valid instruments, suggesting that our instrument is valid.

[7] We can calculate this ratio as virtually all borrowers in our sample that have an analyst capex forecast also have an analyst earnings forecast.

N_CPXAF over N_EPSAF is negative and significant. This suggests that lenders charge lower interest rates when analysts issue more capex forecasts relative to earnings forecasts for borrowers.

Second, although we control for management capex forecasts in all our analyses, it might be possible that these forecasts drive the relation between analyst capex forecasts and loan spreads. To address this possibility, we exclude from our sample all borrowers that issue management capex forecasts. The results in Table 5, column (2) show that the estimated coefficient on *N_CPXAF* remains negative and significant, suggesting that our main results are robust to the exclusion of borrowers that issue management capex forecasts. Third, although we control for credit ratings in all our analyses, it could be the case that lenders use information provided by sell-side debt analysts and this drives the relation between analyst capex forecasts and loan spreads. To reduce this likelihood, we exclude all borrowers with credit ratings from our sample. Results are reported in Table 5, column (3), and show that we continue to find a negative and significant coefficient on *N_CPXAF*.

Fourth, firms may borrow from banks not to fund their capex investment, but for other unrelated reasons, e.g., to address their working capital needs. In such cases, analyst capex forecasts might not be directly useful for lenders when deciding on loan spreads for their borrowers. Although we control for loan purposes in all our analyses, to mitigate this concern, we exclude all loans whose primary purpose is to serve working capital needs from our sample. The results reported in Table 5, column (4) show that the estimated coefficient on *N_CPXAF* remains negative and significant. Finally, analyst capex forecasts may not be so useful for lenders when they are issued for new economy firms. These firms tend to invest more intensively in intangible, rather than tangible, assets, potentially making analyst capex forecasts less useful for lenders (Murphy, 2003). To confirm whether our results hold for firms regardless of their reliance on assets of the new economy, we exclude from our sample all new economy

firms which, following Murphy (2003), are defined as companies with primary SIC codes 3570, 3571, 3572, 3576, 3577, 3661, 3674, 4812, 4813, 5045, 5961, 7370, 7371, 7372, and 7373. The results in Table 5, column (5) indicate that we continue to find a negative and significant coefficient on *N_CPXAF*.

4.5 Channel analysis

So far, the results are consistent with analyst capex forecasts expanding the information set of lenders when the latter make loan pricing decisions, because such forecasts convey incrementally useful information to what is known already to lenders about firm growth potential and corresponding default risks, while also helping to mitigate potential information asymmetry concerns for their borrowers. To examine whether analyst capex forecasts are associated with better loan terms due to these anticipated benefits, we repeat our baseline analysis a) for forecasts made by analysts with different levels of experience and evidence of competency, b) for borrowing firms with different levels of information asymmetry, and c) when lenders themselves possess different levels of industry expertise (especially in the borrower's sector), and more experience in supplying financing to the borrower. We expect that if analyst capex forecasts support lender decision-making by enriching their information set on borrowers and reducing some agency concerns about the borrower, our results should be more pronounced or less under these scenarios. Specifically, we examine cross-sectional results where analysts' capex forecasts are more useful to lenders (i.e., if they are produced by analysts with greater industry expertise and a track record of forecast quality) and for borrowers exhibiting stronger information asymmetry with their external capital providers. We expect the effects to be stronger in these cross sections. However, results should be less pronounced when lenders themselves possess more experience in lending to the firm due to the benefits of relationship lending, or when they possess industry expertise in the borrower's sector, relying less on analysts' industry expertise and experiencing fewer information asymmetries.

4.5.1 Analyst expertise channel

We explore an analyst expertise channel by examining whether our results are stronger when analysts are more competent and experienced. High-ability analysts have superior access to private information and provide more informative forecasts that are incrementally useful to lenders. We use three measures to proxy for analyst expertise. The first proxy we consider is analysts' firm-specific forecasting experience. Analysts with a high level of firm-specific experience can better recognize economic trends and understand the idiosyncrasies of a particular firm's reporting practices (Kim et al., 2019). We partition our sample of borrowers with analyst capex forecasts into two subgroups based on the level of analysts' firm-specific experience, defined as the average number of years that analysts have issued a capex forecast for a given firm (*Firm experience*), and classify analysts with capex forecasts as *High expertise* if *Firm experience* is in the top quartile and analysts with capex forecasts as *Low expertise* if *Firm experience* is in the bottom three quartiles.[8] When we regress loan spreads on these two indicator variables along with the controls used in the baseline model (1), results reported in Table 6, column (1) show that the estimated coefficient on *High expertise* is negative and significant. Importantly, the coefficient on *High expertise* is significantly smaller than the one on *Low expertise*, suggesting that lenders rely more on analyst capex forecasts when these forecasts are issued by analysts that have higher level of firm-specific forecasting experience.

Industry knowledge by analysts is the second proxy for analyst expertise. The quality of capex forecasts should be dependent not only on an analyst's firm-specific experience, but also on the analyst's industry knowledge. Analysts with greater industry knowledge are expected to more thoroughly analyze the firm's operating environment, its supply chain partners, competitors, and overall industry and, thus, issue higher quality forecasts regarding the optimal amount of investment for a given firm (Choi et al., 2020). We again partition our

[8] We use top vs. bottom stratifications to define high vs. low analyst expertise, following Choi et al. (2020).

sample of borrowers with analyst capex forecasts into two subgroups based on the number of industry specialist analysts issuing capex forecasts for a given firm (*Industry knowledge*).[9] Analysts are classified as *High expertise* if they issue capex forecasts and their *Industry knowledge* is in the top quartile, while analysts with capex forecasts are classified as *Low expertise* if *Industry knowledge* is in the bottom three quartiles. We regress loan spreads on these two indicator variables along with the controls used in the baseline model (1). We observe from results reported in Table 6, column (2) that the estimated coefficient on *High expertise* is negative and significant, while the coefficient on *High expertise* is significantly smaller than that on *Low expertise*. This evidence suggests that lenders rely more on analyst capex forecasts when these forecasts are issued by analysts with more focus on the industry of the borrower.

Finally, we consider analyst capex forecast accuracy as a measure of analyst competence and expertise, because the accuracy of analyst forecasts should increase the usefulness of analyst forecasts to accounting information users (Clement and Tse, 2003). We focus on the historical accuracy of the analysts' capex forecasts (*Forecast accuracy*), defined as negative one multiplied by the absolute value of the actual capex in year *t* prior to loan contract inception minus the median analyst capex forecast for the same period scaled by the lagged net property, plant, and equipment.[10] Our sample of borrowers with analyst capex forecasts is divided into two subgroups based on *Forecast accuracy*, classifying analysts with capex forecasts as *High expertise* if *Forecast accuracy* is in the top quartile, and analysts with capex forecasts as *Low expertise* if *Forecast accuracy* is in the bottom three quartiles. We then regress loan spreads on these two indicator variables incorporated into the baseline model (1), and results from Table 6, column (3) show that the estimated coefficient on *High expertise* is negative and significant. Corroborating the direction of our findings from columns (1) and (2)

[9] Following Choi et al. (2020), we define an analyst as an industry specialist if the analyst follows fewer than or equal to three industries (4-digit SICs).

[10] The results do not change if we use mean analyst capex forecasts.

of Table 6, the coefficient on *High expertise* is significantly smaller than that on *Low expertise*, suggesting that lenders rely more on analyst capex forecasts when these forecasts are issued by analysts who have provided more accurate capex forecasts in the past. Overall, results from Table 6 indicate that analyst capex forecasts are more effective for reducing loan spreads when analysts have more firm knowledge, industry focus, and historical forecast accuracy, consistent with lenders relying more on analysts' capex forecasts when they are more likely to be issued by analysts with greater financial acumen.

4.5.2 Borrower information asymmetry channel

We next examine whether our baseline finding is stronger when information asymmetry about the borrower is higher. We test this because lenders' incentives to use information from external sources, e.g., financial analysts, should increase with borrower information asymmetries (Call et al., 2022). That is, lenders should need to expand their information sources in the presence of more obscure or limited information about the borrower. We use two measures to proxy for borrower information asymmetries.

First, we consider external financing dependence as a proxy for borrower information asymmetry. Asymmetrical information problems are stronger for firms that are more able to finance their growth through internally generated cash flow because such firms are less dependent on external financing to raise capital and, thus, do not face the same level of disclosure incentives to reduce information asymmetry (Li et al., 2018). Following Hombert and Matray (2017), firm-level external financing dependence is calculated as earnings before interest, tax, depreciation, and amortization minus investment divided by investment (*Financing dependence*), with higher values of the variable indicating less reliance on external financing. To test our expectation that our main findings should be stronger when borrowers have less external financing dependence, we include *Financing dependence* and its interaction with the number of analyst capex forecasts (*N_CPXAF*) in our baseline equation (1). The results

are reported in Table 7. We observe from Column (1) that the estimated coefficient on the interaction between *N_CPXAF* and *Financing dependence* is negative and significant, suggesting that the effect of analyst capex forecasts on reducing loan spreads is stronger for borrowers with increased information asymmetries.

We then consider firm complexity as a second proxy for information asymmetry based on the assumption that firms with more complex operations are more likely to have information asymmetries. We measure firm complexity using firms with multiple operating segments (Ghaly et al., 2020).[11] This is because it is likely difficult for debt providers to value and assess complex firms (i.e., lenders have more incentive to rely on analyst capex forecasts to set loan spreads when borrowers have increasingly more business segments). To test this conjecture, we include the number of business segments (*Firm complexity*) and its interaction with the number of analyst capex forecasts (*N_CPXAF*) in our baseline equation. The results are reported in Table 7 Column (2), showing that the estimated coefficient on the interaction between *N_CPXAF* and *Firm complexity* is negative and significant. This finding suggests that the effect of analyst capex forecasts on reducing loan spreads is more pronounced for borrowers with greater information asymmetries due to the complexity of their business operations. Consequently, results from Table 7 overall show that analyst capex forecasts more sharply reduce the cost of debt financing when borrowing firms face greater information asymmetries.

4.5.3 Lender expertise and sophistication channel

The third channel we consider is the degree of lender expertise and sophistication, using lead-borrower and lead-participant relationships, and lender industry expertise. Lenders can have extensive knowledge about borrowers' business operations and future plans when they have previously transacted with them (Bharath et al. 2011). This knowledge enables lenders to

[11] Following prior studies (e.g., Ashbaugh-Skaife et al., 2008), we also consider whether the borrower has foreign sales as a proxy for firm complexity and find similar results. More specifically, we find that the effect of analyst capex forecasts on reducing loan spreads is stronger for borrowers with foreign sales.

better assess borrower risk and tailor loan terms accordingly. In support of this view, prior studies have shown that borrowers obtain loans at favorable terms when they have had a prior lending relationship with lead lenders (Berger and Udell, 1995; Bharath et al., 2011). We anticipate that lead lenders are less likely to use analysts' capex forecasts when they have had a previous lending relationship with borrowers, thanks to access to financial information and insights on the borrowers they have accumulated and developed through their working relationship with them in the past, making them less reliant on analyst capex forecasts to retrieve information about borrowers.

Following Bushman et al. (2017), we define a lead-borrower lending relationship as an indicator variable equal to one if a loan's lead bank arranged more than 50% of a borrower's prior loans by number over the five-year period preceding the loan contract inception, and zero otherwise (*Lead-Borrower relation*). To test our expectation, we include *Lead-Borrower relation* and its interaction with the number of analyst capex forecasts (*N_CPXAF*) in our baseline model equation (1) and report the results in Table 8, Column (1). The estimated coefficient on the interaction between *N_CPXAF* and *Lead-Borrower relation* is positive and significant, consistent with analysts providing less incremental information (i.e., via analyst capex forecasts) when the lead lender a lending relationship with the borrowing firm.

We next consider lead-participant relationships as a measure of lender experience. When the lead bank and other members of the syndicate (participant lenders) have had existing and ongoing lending relationships, information asymmetry and agency costs among syndicate members are reduced (Bushman et al., 2017; Call et al., 2022). In such contexts, the lead lender may have less need to use observable and independent data to explain debt contracting terms to other participant lenders (Call et al., 2022). Thus, our main finding should be less pronounced when lead lenders have stronger lending relationships with participant lenders. Following Zhang et al. (2024), we define a lead-participant relationship as the average

relationship between a lead bank and all participant lenders over the five-year period preceding the loan contract inception (*Lead-Participant relation*). We include *Lead-Participant relation* and its interaction with the number of analyst capex forecasts (*N_CPXAF*) in the baseline model to test our conjecture. Column (2) of Table 8 documents that the estimated coefficient on the interaction between *N_CPXAF* and *Lead-Participant relation* is positive and significant. This evidence indicates that the drop in loan spreads due to analyst capex forecasts is smaller when the lead lender has stronger lending relationships with participant lenders of a loan.

Finally, we use lender industry expertise as a measure for lender capability. We expect that analyst capex forecasts should be less useful for lenders with significant experience in granting loans to firms from the industry sector of their borrowers. To test this expectation, we include an interaction term between *Lender industry expertise* and the number of analyst capex forecasts (*N_CPXAF*) in equation (1). *Lender industry expertise* is an indicator variable that equals one if a loan's lead bank is an expert lender. In the spirit of Ma et al. (2024), a lead bank is considered as an expert lender if the total number of loans it has issued to a borrower's industry are in the top tercile of the total number of loans made in that industry in the past five years. Relevant results are reported in Column (3) of Table 8, showing a positive and significant coefficient between *Lender industry expertise* and the number of analyst capex forecasts. This finding is consistent with lenders relying less on analyst capex forecasts in making loan pricing decisions when they already have the requisite knowledge to make their own assessments.

Overall, results from Table 8 indicate that when lenders possess reliable experience and sophisticated knowledge allowing them to make more informed lending decisions, they benefit less from information extracted through analyst capex forecasts. Thus, these findings confirm the ability of capex forecasts made by analysts to expand the information set of lenders, becoming most useful when lenders are less experienced or less able to extract information from other sources.

5. Additional analysis - Non-price loan terms

In addition to loan pricing, lenders may use various non-price loan contract terms to monitor their borrowers. Prior studies show that collateral requirements and covenant restrictions play a significant role as monitoring mechanisms (e.g., Balachandran et al., 2019; Dechow and Dichev, 2002). Therefore, we examine whether analyst capex forecasts affect the probability of lenders to include requirements for collateral or covenant restrictions in debt contracts, in addition to the observed effect of capex forecasts on loan spreads obtained through our baseline analysis. To the extent that analyst capex forecasts provide useful information to lenders, there might be less of a need to include collateral requirements and covenant restrictions in debt contracts. Thus, in accordance with the direction of the main results reported in Table 2, we expect that the number of analyst capex forecasts should be negatively associated with the probability of a loan to include collateral and to incorporate capex-related covenants.

To test these expectations, we apply a probit regression and regress collateral requirements (*Collateral*) and capex covenant restrictions (*Capex covenant*) on the number of analyst capex forecasts (*N_CPXAF*) along with the control variables used in our baseline model (1). The results are reported in Table 9. Column (1) shows a negative and significant association between *N_CPXAF* and *Collateral* which is consistent with analyst capex forecasts reducing the need for lenders to impose collateral obligations on borrowers. Results from Column (2) of Table 9 show a negative and significant association between *N_CPXAF* and *Capex covenant* which is also in line with lenders considering the amount of capex supported through their loans as increasingly justifiable in the presence of analysts' capex forecasts, helping reduce the need to incorporate additional capex investment-related terms in loan agreements.

6. Conclusion

This study provides new evidence on a potential role for analysts' capex forecasts in shaping the terms of bank debt contracting. While prior research has largely focused on

earnings forecasts and their implications for equity markets, our findings highlight the growing relevance of alternative forecast types—specifically capex forecasts—in the context of private debt markets. We show that analyst capex forecasts serve as an external signal to lenders, reducing information asymmetry and agency concerns, and ultimately seemingly affecting the pricing and structure of bank loans. Our empirical analysis reveals a robust negative association between the number of analyst capex forecasts and loan spreads. Economically, the effect is meaningful and suggests that lenders view analyst capex forecasts as credible and incrementally informative signals of firms' investment plans and growth potential.

We further investigate several mechanisms potentially underlying this association and find that the effect of analyst capex forecasts on loan pricing is stronger when analysts are more experienced, possess greater industry expertise, and have a track record of accurate forecasting. These findings support the notion that analyst forecasts are not homogeneous in value and that lenders are able to discern and respond to differences in analyst quality. Moreover, we find that the association is more pronounced for firms with higher levels of information asymmetry—specifically, those with lower external financing dependence and greater operational complexity. This is consistent with analysts' capex forecasts increasing in consequence in settings where internal firm information is less transparent or more difficult to interpret. Finally, we find that the negative association between analysts' capex forecasts and loan spreads is weaker when there is an existing lead-borrower or lead-participant relationship in the loan, and when lenders have greater experience in financing firms from the borrower's sector. Therefore, lenders with more industry experience and borrower information need to rely less on analyst capex forecasts for relevant insights when making loan pricing decisions.

Beyond loan pricing, we also document that analyst capex forecasts are associated with more favorable non-price loan terms. Firms with greater analyst capex forecast coverage are less likely to face collateral requirements and are less likely to have capex-related covenants

included in their loan contracts. These findings suggest that analyst forecasts not only reduce the cost of borrowing but also ease other contractual frictions in the lending process.

Taken together, our findings have several relevant implications. First, they underscore the broader economic significance of analyst forecasts beyond earnings and equity markets. Capex forecasts appear to play a meaningful role in shaping debt contracting outcomes. Second, our results highlight the salience of forecast quality and analyst expertise in determining the usefulness of analyst-generated information. Lenders appear to rely more heavily on forecasts from analysts with demonstrated competence, suggesting that the informational role of analysts is conditional on their perceived credibility. Finally, our study contributes to the growing body of research on the determinants of bank loan terms and the role of information in private debt markets. By identifying analyst capex forecasts as a novel and economically significant input into the loan pricing process, we provide new insights into how external information sources can shape the behavior of financial intermediaries. This has implications for firms seeking to improve their financing conditions, as well as for regulators and standard setters interested in understanding the broader consequences of financial disclosure and analyst activity.

Appendix 1. Variable Definitions

Forecast Variables	
N_CPXAF	The natural logarithm of one plus the number of unique financial analysts who issue capex forecasts for the borrower's year *t* prior to loan contract inception.
N_EPSAF	The natural logarithm of one plus the number of unique financial analysts who issue earnings forecasts for the borrower's year t prior to loan contract inception. This variable includes a number of analyst earnings forecasts only for those borrowers that have no analyst capex forecasts and takes the value of zero for firms with analyst capex forecasts.
CPXGD	An indicator variable that equals one if the borrower issues capex guidance for year *t* prior to loan contract inception, and zero otherwise.
Loan-Specific Variables	
Loan spread	The natural logarithm of the all-in-drawn interest spread in the Dealscan database. All-in-drawn spread is defined as the number of basis points over LIBOR or LIBOR equivalents for each dollar drawn down.
Revolver	An indicator variable that equals one if the loan is a revolver, and zero otherwise.
Loan size	The natural logarithm of the loan amount (in dollars).
Financial covenants	Total number of financial covenants included in the loan contract.
Capex covenant	An indicator variable that equals one if the loan contract includes a capex covenant, and zero otherwise.
Maturity	The natural logarithm of the loan maturity in months.
N_Lenders	The natural logarithm of the number of lenders in the loan facility.
PP	An indicator variable that equals one if the loan contract includes a performance pricing provision, and zero otherwise.
Collateral	An indicator variable that equals one if the loan is secured by collateral, and zero otherwise.
Loan purpose	A group of indicator variables for primary loan purposes, including corporate purposes, working capital, takeover, and acquisition line.
Borrower-Specific Variables	
Firm size	The natural logarithm of total assets, measured in the year prior to entering into a loan contract.
MTB	The market value of equity scaled by the book value of equity, measured in the year prior to entering into a loan contract.
Leverage	Long-term debt plus debt in current liabilities scaled by total assets, measured in the year prior to entering into a loan contract.
Profitability	Earnings before interest, tax, depreciation, and amortization scaled by total assets, measured in the year prior to entering into a loan contract.
Tangibility	Net property, plant, and equipment scaled by total assets, measured in the year prior to entering into a loan contract.
CFO volatility	The standard deviation of quarterly cash flows from operations over previous four years, scaled by total assets.
Z-score	Modified Altman's (1968) Z-score = (1.2 × working capital + 1.4 × retained earnings + 3.3 × pretax income + 0.999 × sales) / total assets, measured in the year prior to entering into a loan contract.
Rated	An indicator variable that equals one if the borrower has a Standard & Poor's long-term debt rating, and zero otherwise.

Robustness Test Variables

Broker size	Median broker size across all analysts issuing capex forecasts.
CPXAF	An indicator variable that equals one if the borrower has analysts' capex forecasts for year *t* prior to loan contract inception, and zero otherwise.
N_CPXAF over N_EPSAF	The number of unique financial analysts who issue capex forecasts for the borrower's year *t* prior to loan contract inception over the number of unique financial analysts who issue earnings forecasts for the borrower's year *t* prior to loan contract inception.

Cross-sectional Test Variables

Firm experience	The average number of years that analysts have issued a capex forecast for a given borrower's year *t* prior to loan contract inception.
Industry knowledge	The number of industry-specialist analysts issuing capex forecasts for the borrower's year *t* prior to loan contract inception. Industry-specialist analysts are defined as analysts who follow less than or equal to three industries.
Forecast accuracy	The absolute value of the actual capex in year *t* prior to loan contract inception minus the median analyst capex forecast for the same period scaled by the lagged net property, plant, and equipment. The variable is multiplied by negative one
High expertise	An indicator variable that equals one if analysts' capex forecast exists and *Firm experience* (or *Industry knowledge* or *Forecast accuracy*) is in the top quartile, and zero otherwise.
Low expertise	An indicator variable that equals one if analysts' capex forecast exists and *Firm experience* (or *Industry knowledge* or *Forecast accuracy*) is in the bottom three quartiles, and zero otherwise.
Financing dependence	Earnings before interest, tax, depreciation, and amortization minus investment divided by investment, measured in the year prior to entering into a loan contract.
Firm complexity	The natural logarithm of the number of business segments in which the borrower operates, measured in the year prior to entering into a loan contract.
Lead-Borrower relation	An indicator variable that equals one if a loan's lead bank arranged more than 50% of a borrower's prior loans by number over the five-year period preceding the loan contract inception, and zero otherwise, following Bushman et al. (2017).
Lead-Participant relation	The average relationship between the lead bank and all participant lenders. The relationship between the lead and a participant lender is computed as the number of loans participated in by the participant lender scaled by the total number of loans arranged by the lead lender of the current loan in the past five years.
Lender industry expertise	An indicator variable that equals one if a loan's lead bank is an expert lender, and zero otherwise. A lead bank is considered as an expert lender if the total number of loans it has issued to a borrower's industry are in the top tercile of the total number of loans made in that industry in the past five years.

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Table 1. Summary Statistics

	N	Mean	SD	25th	Median	75th
Loan spread	13,391	5.378	0.555	5.011	5.298	5.745
N_CPXAF	13,391	0.749	0.789	0.000	0.693	1.386
N_EPSAF	13,391	0.206	0.531	0.000	0.000	0.000
CPXGD	13,391	0.458	0.498	0.000	0.000	1.000
Revolver	13,391	0.557	0.497	0.000	1.000	1.000
Loan size	13,391	5.514	1.451	4.605	5.646	6.551
Financial covenants	13,391	0.937	1.019	0.000	1.000	2.000
Capex covenant	13,391	0.093	0.290	0.000	0.000	0.000
Maturity	13,391	3.815	0.550	3.638	4.094	4.094
N_Lenders	13,391	1.715	0.873	1.099	1.792	2.303
PP	13,391	0.257	0.437	0.000	0.000	1.000
Collateral	13,391	0.578	0.494	0.000	1.000	1.000
Firm size	13,391	7.777	1.654	6.655	7.752	8.860
MTB	13,391	3.050	7.712	1.265	2.222	3.813
Leverage	13,391	0.337	0.224	0.180	0.309	0.464
Profitability	13,391	0.126	0.081	0.089	0.123	0.164
Tangibility	13,391	0.271	0.235	0.088	0.186	0.398
CFO volatility	13,391	0.029	0.027	0.011	0.021	0.038
Z-score	13,391	1.400	1.387	0.658	1.425	2.253
Rated	13,391	0.387	0.487	0.000	0.000	1.000

Note: This table reports descriptive statistics for the variables used in our main analysis. All variables are defined in Appendix 1.

Table 2. Analysts' capex forecasts and loan pricing

	Loan spread		
	(1)	(2)	(3)
N_CPXAF			-0.053***
			(-6.021)
N_EPSAF		-0.008	-0.030***
		(-0.777)	(-2.626)
CPXGD	-0.018*		-0.005
	(-1.758)		(-0.454)
Revolver	-0.208***	-0.208***	-0.207***
	(-26.537)	(-26.518)	(-26.416)
Loan size	-0.083***	-0.082***	-0.083***
	(-16.285)	(-16.178)	(-16.524)
Financial covenants	-0.054***	-0.054***	-0.053***
	(-9.854)	(-9.953)	(-9.830)
Capex covenant	0.070***	0.070***	0.070***
	(2.702)	(2.703)	(2.739)
Maturity	0.079***	0.079***	0.079***
	(7.503)	(7.471)	(7.566)
N_Lenders	-0.040***	-0.040***	-0.041***
	(-5.608)	(-5.583)	(-5.838)
PP	-0.098***	-0.098***	-0.094***
	(-8.631)	(-8.641)	(-8.396)
Collateral	0.293***	0.294***	0.289***
	(25.461)	(25.417)	(24.915)
Firm size	-0.014***	-0.015***	-0.006
	(-2.831)	(-2.967)	(-1.234)
MTB	-0.001*	-0.001*	-0.001*
	(-1.686)	(-1.724)	(-1.664)
Leverage	0.285***	0.284***	0.272***
	(9.127)	(9.103)	(8.785)
Profitability	-0.646***	-0.653***	-0.597***
	(-7.043)	(-7.115)	(-6.574)
Tangibility	0.082**	0.075**	0.086**
	(2.243)	(2.061)	(2.345)
CFO volatility	0.078	0.073	0.091
	(0.305)	(0.287)	(0.359)
Z-score	-0.041***	-0.041***	-0.041***
	(-7.406)	(-7.453)	(-7.578)
Rated	-0.083***	-0.086***	-0.074***
	(-7.003)	(-7.275)	(-6.226)
Constant	5.789***	5.799***	5.744***
	(59.816)	(59.808)	(59.344)
Loan purpose FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Observations	13,391	13,391	13,391
Adjusted R-squared	0.522	0.521	0.525

Note: This table presents the results for the effect of analysts' capex forecasts on loan pricing. All variables are defined in Appendix 1. The *t-statistics* (in parentheses) are based on standard errors clustered by year and firm. ***/**/* indicate significance at 1%/5%/10% levels, respectively.

Table 3. Analysts' capex forecasts and loan pricing: Instrumental variable test

	N_CPXAF	*Loan spread*
	(1)	(2)
Broker size	0.358***	
	(76.547)	
N_CPXAF		-0.063***
		(-5.641)
N_EPSAF	-0.017***	-0.034***
	(-2.689)	(-2.834)
CPXGD	0.004	-0.002
	(0.280)	(-0.211)
Revolver	0.011*	-0.207***
	(1.655)	(-26.496)
Loan size	-0.002	-0.083***
	(-0.288)	(-16.607)
Financial covenants	-0.002	-0.053***
	(-0.342)	(-9.853)
Capex covenant	0.025	0.070***
	(1.455)	(2.754)
Maturity	-0.020**	0.079***
	(-2.324)	(7.600)
N_Lenders	-0.023***	-0.041***
	(-3.028)	(-5.902)
PP	0.043***	-0.093***
	(3.482)	(-8.414)
Collateral	-0.044***	0.288***
	(-3.205)	(24.963)
Firm size	0.084***	-0.005
	(13.107)	(-0.908)
MTB	-0.000	-0.001*
	(-0.183)	(-1.656)
Leverage	-0.129***	0.270***
	(-3.764)	(8.707)
Profitability	0.467***	-0.587***
	(4.636)	(-6.444)
Tangibility	0.121**	0.087**
	(2.572)	(2.368)
CFO volatility	0.695***	0.095
	(3.471)	(0.375)
Z-score	-0.027***	-0.042***
	(-4.749)	(-7.643)
Rated	0.045***	-0.072***
	(2.986)	(-6.084)
Constant	-0.568***	5.733***
	(-6.943)	(59.336)
Loan purpose FE	Yes	Yes
Industry FE	Yes	Yes
Year FE	Yes	Yes
Observations	13,391	13,391
Adjusted R-squared	0.768	0.525
Over-identifying restriction test	χ^2=2.050 (p=0.152)	

Note: This table presents the results for the effect of analysts' capex forecasts on loan pricing using the 2-stage least squares (2SLS) regression method. All variables are defined in Appendix 1. The *t-statistics* (in parentheses) are based on standard errors clustered by year and firm. ***/**/* indicate significance at 1%/5%/10% levels, respectively.

Table 4. Analysts' capex forecasts and loan pricing: Entropy-balanced sample regression

	Loan spread	
	(1)	(2)
CPXAF	-0.074***	
	(-4.571)	
N_CPXAF		-0.043***
		(-4.072)
N_EPSAF	-0.024	-0.003
	(-0.599)	(-0.070)
CPXGD	0.016	0.015
	(1.028)	(1.002)
Revolver	-0.175***	-0.174***
	(-14.948)	(-14.972)
Loan size	-0.081***	-0.080***
	(-11.832)	(-11.844)
Financial covenants	-0.052***	-0.052***
	(-6.525)	(-6.537)
Capex covenant	0.007	0.006
	(0.233)	(0.205)
Maturity	0.082***	0.082***
	(5.550)	(5.516)
N_Lenders	-0.057***	-0.058***
	(-5.845)	(-5.836)
PP	-0.076***	-0.076***
	(-4.718)	(-4.654)
Collateral	0.297***	0.297***
	(18.568)	(18.507)
Firm size	-0.033***	-0.029***
	(-4.535)	(-3.913)
MTB	-0.000	-0.000
	(-0.263)	(-0.239)
Leverage	0.311***	0.312***
	(6.400)	(6.375)
Profitability	-0.688***	-0.658***
	(-4.416)	(-4.139)
Tangibility	0.043	0.044
	(0.805)	(0.826)
CFO volatility	0.067	0.074
	(0.210)	(0.235)
Z-score	-0.038***	-0.039***
	(-4.447)	(-4.530)
Rated	-0.059***	-0.058***
	(-3.412)	(-3.352)
Constant	5.991***	5.935***
	(56.275)	(56.814)
Loan purpose FE	Yes	Yes
Industry FE	Yes	Yes
Year FE	Yes	Yes
Observations	13,391	13,391
Adjusted R-squared	0.523	0.522

Note: This table presents the results for the effect of analysts' capex forecasts on loan pricing using the entropy balancing method. All variables are defined in Appendix 1. The *t-statistics* (in parentheses) are based on standard errors clustered by year and firm. ***/**/* indicate significance at 1%/5%/10% levels, respectively.

Table 5. Analysts' capex forecasts and loan pricing: Robustness tests

	Loan spread				
	(1)	(2)	(3)	(4)	(5)
N_CPXAF over N_EPSAF	-0.066***				
	(-2.689)				
N_CPXAF		-0.052***	-0.053***	-0.049***	-0.064***
		(-4.696)	(-4.382)	(-5.398)	(-6.880)
N_EPSAF		-0.025*	-0.020	-0.026**	-0.037***
		(-1.789)	(-1.502)	(-2.303)	(-2.904)
CPXGD	-0.013		-0.025*	-0.015	-0.001
	(-1.312)		(-1.900)	(-1.353)	(-0.062)
Revolver	-0.208***	-0.227***	-0.247***	-0.249***	-0.208***
	(-26.527)	(-20.884)	(-22.999)	(-31.028)	(-24.313)
Loan size	-0.083***	-0.084***	-0.091***	-0.083***	-0.081***
	(-16.371)	(-12.903)	(-14.722)	(-15.761)	(-15.647)
Financial covenants	-0.054***	-0.061***	-0.062***	-0.061***	-0.053***
	(-9.863)	(-8.444)	(-8.793)	(-10.521)	(-9.116)
Capex covenant	0.070***	0.091***	0.079***	0.052**	0.077***
	(2.719)	(3.044)	(2.843)	(2.412)	(2.769)
Maturity	0.080***	0.085***	0.070***	0.081***	0.076***
	(7.568)	(6.320)	(4.609)	(7.771)	(6.725)
N_Lenders	-0.040***	-0.040***	-0.045***	-0.042***	-0.044***
	(-5.634)	(-4.188)	(-4.975)	(-5.702)	(-5.683)
PP	-0.097***	-0.101***	-0.120***	-0.082***	-0.091***
	(-8.591)	(-6.457)	(-7.717)	(-7.259)	(-7.639)
Collateral	0.293***	0.293***	0.280***	0.303***	0.284***
	(25.417)	(18.805)	(18.935)	(24.499)	(22.914)
Firm size	-0.013***	-0.004	0.022***	-0.011**	-0.004
	(-2.614)	(-0.620)	(3.949)	(-2.155)	(-0.830)
MTB	-0.001*	-0.002**	-0.002**	-0.001	-0.001
	(-1.656)	(-2.022)	(-2.513)	(-1.179)	(-1.426)
Leverage	0.283***	0.221***	0.265***	0.230***	0.270***
	(9.092)	(5.617)	(7.035)	(7.176)	(8.285)
Profitability	-0.636***	-0.519***	-0.438***	-0.544***	-0.659***
	(-6.956)	(-4.851)	(-4.348)	(-5.564)	(-6.624)
Tangibility	0.085**	0.078*	0.073	0.057	0.042
	(2.330)	(1.664)	(1.581)	(1.549)	(1.181)
CFO volatility	0.077	0.094	0.382	-0.263	0.156
	(0.302)	(0.292)	(1.218)	(-0.924)	(0.551)
Z-score	-0.041***	-0.046***	-0.045***	-0.047***	-0.039***
	(-7.438)	(-7.067)	(-7.024)	(-7.755)	(-6.095)
Rated	-0.080***	-0.095***		-0.076***	-0.083***
	(-6.762)	(-5.507)		(-6.157)	(-6.551)
Constant	5.782***	5.664***	5.717***	5.721***	5.761***
	(59.816)	(44.199)	(56.345)	(58.511)	(58.003)
Loan purpose FE	Yes	Yes	Yes	No	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Observations	13,391	7,253	8,210	12,013	11,607
Adjusted R-squared	0.522	0.524	0.472	0.521	0.530

Note: This table presents results for several robustness tests. Column 1 provides results for our main test of loan pricing when the number of analysts' capex forecasts scaled by the number of analysts' earnings forecasts. Column 2 provides results for our main test of loan pricing excluding borrowers that issue management capex forecasts. Column 3 provides results for our main test of loan pricing excluding borrowers with credit ratings. Column 4 provides results for our main test of loan pricing excluding loans whose primary purpose is to finance working capital. Column 5 provides results for our main test of loan pricing excluding borrowers operating in new economy industries. All variables are defined in Appendix 1. The *t-statistics* (in parentheses) are based on standard errors clustered by year and firm. ***/**/* indicate significance at 1%/5%/10% levels, respectively.

Table 6. Analysts' capex forecasts and loan pricing: Analyst expertise channel

		Loan spread		
		Firm experience	*Industry knowledge*	*Forecast accuracy*
		(1)	(2)	(3)
High expertise	(1)	-0.096***	-0.098***	-0.105***
		(-5.317)	(-4.924)	(-5.604)
Low expertise	(2)	-0.067***	-0.067***	-0.075***
		(-4.857)	(-4.800)	(-4.962)
N_EPSAF		-0.035***	-0.034***	-0.037***
		(-2.844)	(-2.761)	(-3.036)
CPXGD		-0.001	-0.002	0.004
		(-0.124)	(-0.228)	(0.375)
Revolver		-0.207***	-0.207***	-0.212***
		(-26.378)	(-26.361)	(-25.137)
Loan size		-0.083***	-0.083***	-0.081***
		(-16.400)	(-16.383)	(-15.035)
Financial covenants		-0.053***	-0.053***	-0.055***
		(-9.765)	(-9.755)	(-9.477)
Capex covenant		0.067***	0.068***	0.074***
		(2.661)	(2.680)	(2.682)
Maturity		0.080***	0.080***	0.083***
		(7.599)	(7.633)	(7.632)
N_Lenders		-0.040***	-0.040***	-0.038***
		(-5.692)	(-5.693)	(-4.997)
PP		-0.096***	-0.096***	-0.094***
		(-8.552)	(-8.604)	(-7.799)
Collateral		0.290***	0.290***	0.289***
		(25.018)	(25.146)	(22.899)
Firm size		-0.011**	-0.009*	-0.010*
		(-2.142)	(-1.885)	(-1.951)
MTB		-0.001*	-0.001*	-0.001**
		(-1.707)	(-1.749)	(-1.964)
Leverage		0.275***	0.273***	0.265***
		(8.913)	(8.820)	(8.112)
Profitability		-0.617***	-0.609***	-0.617***
		(-6.809)	(-6.704)	(-6.582)
Tangibility		0.083**	0.083**	0.082**
		(2.280)	(2.273)	(2.082)
CFO volatility		0.051	0.060	0.002
		(0.199)	(0.235)	(0.008)
Z-score		-0.040***	-0.040***	-0.040***
		(-7.251)	(-7.340)	(-7.028)
Rated		-0.075***	-0.077***	-0.075***
		(-6.272)	(-6.479)	(-5.840)
Constant		5.782***	5.773***	5.739***
		(59.142)	(58.900)	(51.253)
Loan purpose FE		Yes	Yes	Yes
Industry FE		Yes	Yes	Yes
Year FE		Yes	Yes	Yes
Observations		13,391	13,391	11,594
Adjusted R-squared		0.524	0.524	0.532
p-value for the coefficient difference between (1) and (2)		0.048	0.096	0.062

Note: This table presents the results of testing the role of analyst expertise in explaining the effect of analysts' capex forecasts on loan pricing. All variables are defined in Appendix 1. The *t-statistics* (in parentheses) are based on standard errors clustered by year and firm. ***/**/* indicate significance at 1%/5%/10% levels, respectively.

Table 7. Analysts' capex forecasts and loan pricing: Borrower information asymmetry channel

	Loan spread	
	Financing dependence	*Firm complexity*
	(1)	(2)
N_CPXAF	-0.043***	-0.030**
	(-4.564)	(-2.367)
Asymmetry	0.006***	0.028***
	(2.971)	(2.880)
N_CPXAF × Asymmetry	-0.005***	-0.020**
	(-2.914)	(-2.289)
N_EPSAF	-0.028**	-0.028**
	(-2.471)	(-2.444)
CPXGD	-0.006	-0.002
	(-0.556)	(-0.217)
Revolver	-0.208***	-0.206***
	(-26.076)	(-26.173)
Loan size	-0.079***	-0.081***
	(-15.480)	(-16.005)
Financial covenants	-0.056***	-0.052***
	(-10.077)	(-9.655)
Capex covenant	0.068***	0.070***
	(2.667)	(2.701)
Maturity	0.072***	0.084***
	(6.609)	(7.990)
N_Lenders	-0.043***	-0.042***
	(-5.961)	(-5.881)
PP	-0.096***	-0.092***
	(-8.254)	(-8.215)
Collateral	0.281***	0.280***
	(23.574)	(23.576)
Firm size	-0.003	-0.011**
	(-0.671)	(-2.145)
MTB	-0.001	-0.001
	(-1.169)	(-1.113)
Leverage	0.266***	0.291***
	(8.265)	(8.990)
Profitability	-0.635***	-0.632***
	(-6.598)	(-6.645)
Tangibility	0.102***	0.098***
	(2.702)	(2.695)
CFO volatility	0.275	0.231
	(1.044)	(0.835)
Z-score	-0.045***	-0.046***
	(-8.134)	(-8.081)
Rated	-0.073***	-0.073***
	(-5.958)	(-6.056)
Constant	5.739***	5.699***
	(58.737)	(57.313)
Loan purpose FE	Yes	Yes
Industry FE	Yes	Yes
Year FE	Yes	Yes
Observations	12,727	13,187
Adjusted R-squared	0.518	0.523

Note: This table presents the results of testing the role of borrower information asymmetry in explaining the effect of analysts' capex forecasts on loan pricing. All variables are defined in Appendix 1. The *t-statistics* (in parentheses) are based on standard errors clustered by year and firm. ***/**/* indicate significance at 1%/5%/10% levels, respectively.

Table 8. Analysts' capex forecasts and loan pricing: Lender expertise and sophistication channel

	Loan spread		
	Lead-Borrower relation	*Lead-Participant relation*	*Lender industry expertise*
	(1)	(2)	(3)
N_CPXAF	-0.065***	-0.070***	-0.072***
	(-5.907)	(-5.027)	(-6.361)
Lender	-0.053***	-0.761***	-0.040***
	(-3.586)	(-6.204)	(-2.604)
N_CPXAF × Lender	0.026**	0.256**	0.038***
	(2.161)	(2.436)	(3.055)
N_EPSAF	-0.029***	-0.020*	-0.031***
	(-2.631)	(-1.795)	(-2.633)
CPXGD	-0.005	-0.008	-0.008
	(-0.436)	(-0.747)	(-0.766)
Revolver	-0.207***	-0.182***	-0.210***
	(-26.420)	(-22.639)	(-25.914)
Loan size	-0.083***	-0.081***	-0.082***
	(-16.567)	(-14.494)	(-16.249)
Financial covenants	-0.052***	-0.047***	-0.053***
	(-9.549)	(-8.420)	(-9.409)
Capex covenant	0.069***	0.070***	0.075***
	(2.735)	(2.899)	(2.884)
Maturity	0.078***	0.072***	0.086***
	(7.507)	(6.387)	(7.929)
N_Lenders	-0.038***	-0.041***	-0.042***
	(-5.377)	(-4.526)	(-5.793)
PP	-0.099***	-0.082***	-0.092***
	(-8.760)	(-7.114)	(-8.022)
Collateral	0.293***	0.279***	0.288***
	(25.218)	(23.180)	(24.091)
Firm size	-0.006	-0.015***	-0.007
	(-1.274)	(-2.648)	(-1.275)
MTB	-0.001	-0.001	-0.001*
	(-1.605)	(-1.062)	(-1.756)
Leverage	0.277***	0.278***	0.254***
	(8.926)	(8.287)	(7.850)
Profitability	-0.624***	-0.568***	-0.594***
	(-6.891)	(-5.767)	(-6.365)
Tangibility	0.088**	0.068*	0.089**
	(2.366)	(1.895)	(2.325)
CFO volatility	0.089	-0.136	0.056
	(0.349)	(-0.463)	(0.210)
Z-score	-0.039***	-0.042***	-0.041***
	(-7.141)	(-6.799)	(-7.238)
Rated	-0.074***	-0.063***	-0.069***
	(-6.171)	(-4.973)	(-5.616)
Constant	5.764***	5.900***	5.762***
	(59.262)	(61.975)	(58.700)
Loan purpose FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Observations	13,280	10,875	12,470
Adjusted R-squared	0.528	0.532	0.526

Note: This table presents the results of testing the role of lender expertise and sophistication in explaining the effect of analysts' capex forecasts on loan pricing. All variables are defined in Appendix 1. The *t-statistics* (in parentheses) are based on standard errors clustered by year and firm. ***/**/* indicate significance at 1%/5%/10% levels, respectively.

Table 9. Analysts' capex forecasts and non-pricing loan terms: Collateral and Capex Covenants

	Collateral	*Capex covenants*
	(1)	(2)
N_CPXAF	-0.080**	-0.123*
	(-2.402)	(-1.900)
N_EPSAF	-0.031	-0.034
	(-0.806)	(-0.577)
CPXGD	0.023	0.086
	(0.563)	(1.203)
Revolver	0.034	0.102**
	(1.264)	(2.558)
Loan size	0.161***	-0.025
	(9.129)	(-1.095)
Financial covenants	0.273***	0.554***
	(12.504)	(16.679)
Capex covenant	0.844***	
	(9.301)	
Maturity	0.425***	-0.252***
	(11.807)	(-4.439)
N_Lenders	-0.312***	-0.023
	(-11.258)	(-0.581)
PP	0.105**	-0.067
	(2.443)	(-1.081)
Collateral		0.705***
		(9.210)
Loan spread	1.187***	0.334***
	(23.352)	(4.571)
Firm size	-0.045**	-0.139***
	(-2.467)	(-4.395)
MTB	0.002	-0.003
	(0.885)	(-0.753)
Leverage	1.194***	0.457***
	(9.879)	(2.631)
Profitability	-0.698**	-0.103
	(-2.120)	(-0.213)
Tangibility	-0.301**	-0.115
	(-2.242)	(-0.519)
CFO volatility	-2.483**	-0.971
	(-2.435)	(-0.815)
Z-score	-0.036	0.011
	(-1.591)	(0.342)
Rated	-0.190***	-0.105
	(-3.937)	(-1.224)
Constant	-7.928***	-2.012**
	(-16.992)	(-2.493)
Loan purpose FE	Yes	Yes
Industry FE	Yes	Yes
Year FE	Yes	Yes
Observations	13,391	13,109
Pseudo R^2	0.296	0.370

Note: This table presents the results for the effect of analysts' capex forecasts on loan collateral requirements and capex covenant restrictions. All variables are defined in Appendix 1. The *t-statistics* (in parentheses) are based on standard errors clustered by year and firm. ***/**/* indicate significance at 1%/5%/10% levels, respectively.