Real Effects of Coordination Failure between Accounting and Prudential Regulators: Evidence from CECL

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ABSTRACT

This paper examines the real effects of coordination failure between accounting standard setters and prudential regulators. Using the recent introduction of the Current Expected Credit Losses (CECL) standard, we examine whether uncertainty due to lack of coordination between accounting standard setters and bank regulators affects banks' lending practices, thereby impacting firm investments. We hypothesize and find that banks significantly reduce the lending amount and restrict loan terms during the uncertainty period compared to nonbanks. Consequently, we show that reduced credit supply adversely affects investments for firms dependent on banks compared to those not dependent on banks. Cross-sectional tests based on the frequency of borrowing, availability of public rating, and firm size show that the effect is stronger for highly impacted firms. Finally, tests based on market reaction and textual analysis of bank 10-Ks suggest that uncertainty due to coordination failure is driving our results. The findings document the importance of regulatory alignment for the smooth functioning of economic activities.

Keywords: Real Effects; Debt Contracting; CECL; Accounting Standards; Prudential Regulation

JEL Classification: G21, G28, M48

I. Introduction

The Financial Accounting Standard Board (FASB) aims to provide financial information about the reporting entity that is useful to existing and potential investors (FASB Concepts Statement No. 8). Importantly, accounting standards from the FASB operate within a broader economic and regulatory context. The successful introduction and implementation of standards can depend on the extent to which the FASB's efforts are consistent with those of other pertinent regulators. The literature has to some extent studied the FASB's interactions with the SEC, which enforces reporting standards (Smith 1981, Bens and Johnston 2009, Allen and Ramanna 2013), and the PCAOB, which audits financial reports based on these standards (Mayew et al. 2015, Palmrose and Kinney 2018). An important missing link arises from the growing literature documenting that accounting choices and in particular mandated accounting standards can have real consequences, sometimes unintendedly so, on firms' operational and investment decisions (see Roychowdhury, Shroff, and Verdi 2019 for a review of this literature). In turn, real decisions and outcomes in certain industries are of interest to prudential regulators other than those involved with enforcing or auditing accounting standards. There are few studies examining the importance of coordination between such industry regulators and the accounting standard-setter. Our goal is to address this gap in the literature.

Our paper focuses on the banking industry. The FASB bears the primary responsibility of promulgating reporting standards for the banking industry. Meanwhile, bank operations are highly regulated to ensure prudential norms, falling under the regulatory purview of the Federal Deposit Insurance Corporation (FDIC), Office of the Comptroller of Currency (OCC), and the Federal Reserve (Fed), hereafter collectively referred to as "bank regulators or prudential regulators". We examine the real effects of uncertainty resulting from the lack of coordination between FASB and bank regulators during the recent

introduction of the Current Expected Credit Loss (CECL) standard. Our objective is to highlight the potential benefits of coordination by documenting real outcomes arising from a *failure* to coordinate.

For the past 40 years, banks in the United States have used the incurred loss standard to calculate their allowance for loan and lease losses (ALLL). The pro-cyclicality of the incurred loss standard, which can result in ALLL being "too little too late," motivated the FASB to re-examine the incurred loss standard. In June 2016, FASB issued its revised ALLL standard as the current expected credit loss standard (CECL). Under CECL, when a bank originates a loan, the total expected credit losses over the contractual life of the exposure are also recognized. CECL requires a forward-looking approach that would allow for ALLL to build in anticipation of expected losses and earlier than under the incurred loss standard, resulting in greater transparency of expected losses at an earlier date during the life of a loan (Chae, Sarama, Vojtech, and Wang 2018).

Immediately following the FASB's announcement of CECL but *before* its implementation, banking industry professionals raised several concerns about the standard.[1] In the absence of any concurrent guidance from bank regulators, banks' primary concern centered on the difficulty in capital planning due to the uncertainty about the economic environment at the time of CECL adoption. Banks argued that CECL requires banking organizations to consider current and future expected economic conditions to estimate allowances and therefore could result in higher-than-expected loan loss reserves. This would adversely affect their regulatory capital and impact their economic activity. In addition, banks raised concerns about the effects of CECL on regulatory capital on a more continuous

[1] Even before the introduction of CECL (i.e., before June 2016), several banks had expressed concerns in their comment letters to FASB when they had requested comments on CECL proposal in 2013. However, they only voted to proceed with a final accounting standard update in late 2015. https://www.fasb.org/cs/ContentServer?c=FASBContent_C&cid=1176167531729&d=Touch&pagename=FASB%2FFASBContent_C%2FNewsPage

basis.[2] A critical issue the banks pointed to was banking regulators' silence on how they would view CECL's imminent effects on regulatory capital while determining a bank's solvency and in supervisory stress tests.

Eventually, to address banks' concerns and reduce uncertainty, on December 21, 2018, the Fed, the FDIC, and the OCC released a joint final rule to revise their regulatory capital rules to address CECL's *upcoming* implementation. The joint rule provided an optional three-year phase-in period for the day-one adverse regulatory capital effects that banks were expected to experience upon adopting CECL. The Fed also allowed banks to maintain the current framework for calculating allowances on loans in the supervisory stress tests until the impact of CECL on banking organizations' financial reporting is better known and understood.

We identify FASB's initial announcement of CECL in June 2016 as an event that lacked coordination with regulators who oversee banking operations that in turn are affected by CECL's effects on bank income and regulatory capital. Banking regulators' clarifications issued in December 2018 significantly resolved the uncertainty banks faced and represented a credible attempt to coordinate banking regulations with CECL's implementation. Notably, both dates preceded the actual implementation of CECL, which eventually occurred in March 2020. Thus, the period between June 2016 and December of 2018 when coordination was lacking, or the *"uncertainty period"*, allows us to observe the impact of a coordination failure between the accounting standard-setter and the banking regulators on banks' operations. Anecdotal evidence in the media is consistent with our assumption of increased uncertainty during the period characterized by a lack of coordination.[3] We study two specific

[2] OCC, Regulatory Capital Rules: Implementation and Transition of the Current Expected Credit Losses Methodology for Allowances and Related Adjustments to the Regulatory Capital Rules and Conforming Amendments to Other Regulations, April 17, 2018, p. 20, at https://www.occ.treas.gov/news-issuances/news-releases/2018/nr-ia-2018-39.html

[3] https://home.kpmg/us/en/home/media/press-releases/2017/10/uncertainty-slows-financial-institutions-implementation-of-new-cecl-standard-kpmg-survey.html

effects, namely (a) the influence of the uncertainty period on banks' lending decisions and (b) the spillover effects of the uncertainty period on their borrowers' investment decisions.

The identification challenge with assessing the impact of the uncertainty period on banks' lending outcomes and borrowers' investments is that the CECL standard applies to *all* financial institutions. To address this challenge, our identification strategy relies on the comparison between banks and nonbank financial companies (henceforth, nonbanks).[4] We study the differential effect of the uncertainty period on the lending decisions by banks relative to those of nonbanks, as well as on the investment decisions of corporates borrowing exclusively from banks as opposed to those borrowing from banks and nonbanks.

For our analysis, we use data from the US syndicated loan market during the period 2014 – 2020. We employ two distinct research designs to test our hypothesis. In the first, the time between July 2016 and December 2018 is designated as the uncertainty period (*Uncertain* = 1). The periods between January 2014 and June 2016 as well as between January 2019 and June 2020 are designated as no-uncertainty period (*Uncertain* = 1). Our goal is to compare changes between lending decisions of banks and investment decisions of borrowers during the uncertainty period relative to those in the no-uncertainty period. Nonbanks and borrowers not exclusively borrowing from banks serve as the control sample.

In the second research design, the period between January 2014 and June 2016 is designated as a pre-uncertainty period. The period between January 2019 and June 2020 is designated as the post-resolution period, signifying the resolution of uncertainty that had resulted from a failure coordinate between the FASB and bank regulators. As part of this second research design, we estimate two sets of tests. The first compares banks and their borrowers' decisions during the uncertainty period relative to that in the pre-uncertainty period (FASB sample). The second test compares banks and their borrowers' decisions

[4] While non-banks also have to comply with CECL, their capital impact is not as severe as banks as they faced lighter regulation compared to banks.

during the post-resolution period relative to that in the uncertainty period (Fed/OCC sample).

We begin our analysis by investigating the terms of the contract and find that banks have higher spreads, smaller loan amounts, and are more likely to be secured by collateral during the uncertainty period, compared to non-banks. In terms of economic magnitude, we find that banks are 0.2% more likely to impose a collateral requirement, charge 32 bps higher spread, and reduce the lending amount by 17.8 percentage points during the uncertainty period, compared to non-banks. Our results are robust to the inclusion of a variety of bank, firm, loan-purpose, and time-fixed effects.

We then assess the consequences of deteriorating credit conditions for firm outcomes. We exploit the variation generated by coordination failure-induced uncertainty across firms that borrow exclusively from banks and firms that borrow from both banks and nonbanks. By comparing firm outcomes for bank-dependent firms and other firms, we hope to isolate the effect of supply shock on firm investments. We find that bank-dependent firms are less likely to invest compared to other firms during the uncertainty period. Other results show that bank-dependent firms observe a decrease in capital expenditure, research and development expenditures during the uncertainty period. In our tests, we control for several proxies of firm risk, growth opportunities, and other firm characteristics that might influence the firm investment during the uncertainty period.

A key issue in our analysis is that the average borrower from a bank is fundamentally different from the average borrower who borrows from both banks and nonbanks. Several studies find that borrowers from nonbanks are riskier and less profitable than those from banks (see e.g., Carey, Post, and Sharpe, 1998; Denis and Mihov, 2003; Chernenko, Erel, and Prilmeier, 2018). To address this issue, we use entropy-balanced matching to match bank-dependent borrowers to other borrowers (e.g., (Hainmueller 2012; McMullin and

Schonberger 2019; Shroff, Verdi, and Yost, 2017, Bonsall and Miller 2017). This approach ensures that our treatment firms (i.e., borrowers from banks) and control firms (i.e., borrowers from both banks and nonbanks) are similar in their lending, thus allowing us to more comfortably interpret the effect on lending standards and firm outcomes in response to coordination failure induced uncertainty.

Next, we provide suggestive evidence for a causal interpretation of these findings, which we confirm at the bank level. As our results rely on the assumption that banks were uncertain about the impact of CECL, we conduct two types of analyses. First, we examine the market reaction to the CECL announcement by FASB in June-2016 and subsequent clarification from bank regulators on December 21, 2018. Consistent with the uncertainty argument, we expect a negative market reaction for financial institutions at the announcement of the CECL standard by FASB. Since the joint statement by bank regulators provided clarity on the standard and allowed banks discretion concerning CECL adoption, we expect a positive market reaction for financial institutions. Consistent with our expectations, we find a negative market reaction to FASB's announcement of the CECL standard and a positive market reaction to the joint statement by bank regulators.

Next, we investigate banks' disclosures regarding the expected financial statement impact of the new loss standard. The Securities and Exchange Commission (SEC) requires firms to provide information about the expected financial statement impact of recently issued accounting standards that have yet to be adopted. We investigate firm disclosures provided in 10-K filings for the uncertainty period and compare it to the non-uncertainty period. We extract paragraphs from bank filings containing strings CECL and/or ASU 2016-13 standard. We look at several textual measures and find that banks were less likely to discuss CECL standard during the uncertainty period, the length of the discussion was shorter, had a lower frequency of the string – CECL, and had a less positive sentiment. We

also search for "uncertainty" words in the text and find that banks used more uncertain language in their discussion during the uncertain period compared to nonbanks, suggesting that coordination failure-related uncertainty is driving our main results. Overall, the results suggest that coordination failure between the accounting regulator and bank regulators created uncertainty for banks, leading to a shock to credit supply and adverse firm outcomes.

Our study makes three contributions. First, our paper shows that a lack of coordination between standard setters and bank regulators can result in adverse outcomes. In their theoretical paper, Mahieux, Sapra, and Zhang 2020 show how loan-loss provisioning interacts with prudential regulation to affect banks' behavior. To the best of our knowledge, ours is the first empirical study that provides evidence consistent with Mahieux, Sapra, and Zhang 2020. Our paper also relates to Stice-Lawrence (2020), which suggests the need to better understand the informational effects of coordination across multiple branches of the same regulator. Our study, however, is significantly different from Stice-Lawrence (2020) as it focuses on overall coordination between two distinct regulators.

Second, our evidence on the effect of CECL provisioning provides important insights to help manage the regulatory tradeoff between economic growth (we study real effects induced by changes in credit supply) and financial stability. Our setting offers new and unique opportunities for the empirical identification of the effect of CECL provisioning on the supply of credit even before the standard has been implemented.

Finally, by showing that the accounting for loan loss provisions has important firm-level real effects (via changes in banks' credit supply), we contribute to the literature on the effects of the financial system on the real economy (Ivashina and Scharfstein, 2010; Bolton et al., 2016; Di Maggio et al., 2017; Beck et al., 2018; Agarwal et al., 2018; Jiménez et al., 2019), a stream of research which is mainly focused on the real effects of financial crises and monetary policies, and thus rarely touches on the role of accounting rules.

II. Institutional Setting and Hypothesis Development

Overview of Bank Loan Loss Provisions

Traditionally, bank loan loss allowances have been estimated based on the Incurred Credit Loss (ICL) model, according to which a loan loss provision is created if there is objective evidence of impairment. In the aftermath of the 2007/2008 global financial crisis, numerous regulators, policy-makers, and accounting researchers raised concerns that the ICL model exacerbated the severity and the length of the financial crisis by providing "too little, too late" provisioning (Bischof, Laux, and Leuz, 2019).[5] The two foremost concerns regarding the ICL model are: (i) it requires delaying the recognition of impairment losses until there is objective evidence that the impairment of an asset is 'probable' (i.e. the probability of loss is at least 70%) and estimable and (ii) it requires that the estimation of loan loss allowance be based only on past loss experiences and current conditions. These two features often result in financial managers building up too little credit-loss reserves as well as in reinforcing the pro-cyclical bias, particularly during the recessionary phase of the economic cycle (O'Hanlon, Hashim, and Li, 2015).

In response to these concerns, the International Accounting Standards Board (IASB) and the Financial Accounting Standards Board (FASB) began working on a joint project for almost four years (2009 – 2012), with the goal of developing a single flexible and forward-looking model to overcome ICL model's weaknesses. On January 31st, 2011, the FASB and IASB proposed a common solution for impairment accounting, based on a "dual-measurement approach," to better reflect the changes in the credit quality of financial assets. However, after five months of joint meetings, FASB members directed their staff "to explore an alternative expected loss model that (a) does not utilize a dual-measurement

[5] United States Government Accountability Office – Report to Congressional Committees (January 2013), Financial Institutions – Causes and Consequences of Recent Bank Failures. Available at https://www.gao.gov/assets/660/651154.pdf

approach, and (b) reflects all credit risk in the portfolio. Subsequently, both the IASB and FASB proceeded to develop their new impairment models independently (Gomaa, Kanagaretnam, Mestelman, and Shehata 2021).

CECL Induced Uncertainty

On June 16, 2016, FASB issued the final version of its impairment model, which introduced the Current Expected Credit Losses (CECL) model for estimating allowances for credit losses. The FASB based its new accounting standard on a single credit-loss measurement approach, in which entities measure and recognize lifetime expected credit losses at the initiation of a new loan. At the end of each reporting period, the entity should update the loan loss allowance to reflect changes in the credit quality since the previous reporting period. It will also continue to measure loan loss allowances at the present value of expected credit shortfalls over the loan's remaining lifespan. The effective date of CECL varies for different banking organizations; however, by 2022 all banking organizations will be subject to CECL.

The objective of CECL is to correct the major weaknesses in the ICL model. To address these weaknesses, CECL introduces, among other requirements, two major changes: (i) it eliminates the minimum 'probable' threshold condition for the recognition of financial assets impairment, and (ii) it requires managers to base their periodic estimates of credit loss provisions not only on past loss experiences and current conditions but also on forward-looking information about expected events and conditions. The FASB asserts that these proposed changes are expected to enhance the adequacy (sufficiency) of the amount of reserves, and hence increase an entity's loss-absorbing capacity.

A banking organization's implementation of CECL would impact its retained earnings, deferred tax assets, allowances, and as a result, its regulatory capital ratios. Retained earnings are a key component of a banking organization's common equity tier 1

(CET1) capital. An increase in banking organization's allowances, including those estimated under CECL, generally will reduce the banking organization's earnings or retained earnings, and therefore its CET1 capital. According to one estimate, the transition to CECL will likely increase loan loss reserves of between $50 billion and $100 billion for banks. The increased reserves are expected to affect common equity ratios across the banking system by 25-50 basis points (.25%-.50%) As these projections are in aggregate across the banking industry, some banks might need to significantly increase their credit reserves whereas others might need to adjust less. In one instance, the bank indicated it would need to increase its credit reserves by 10% to 20% based on a 2017 preliminary analysis.[6]

Given CECL's regulatory capital implications, several banking organizations expressed concerns about the difficulty in capital planning due to the uncertainty about the economic environment at the time of CECL adoption. This is largely because CECL requires banking organizations to consider current and future expected economic conditions to estimate allowances and these conditions would not have been known until closer to a banking organization's CECL adoption date.[7] Therefore, it is possible that despite adequate capital planning, uncertainty about the economic environment at the time of CECL adoption could result in higher-than-anticipated increases in credit loss allowances. Such increases can have adverse implications for regulatory capital ratios.[8]

To address banks' concerns, on December 21, 2018, the Federal Reserve, the FDIC,

[6] Citigroup Inc., Form 10-K, Annual Report as of December 31, 2017, February 23, 2018, p. 124, Available at https://www.citigroup.com/citi/investor/annual-reports.html.

[7] The current pandemic COVID-19 is a case in point. The implementation of CECL in March-2020 coincided with the COVID-19 pandemic. The significant deterioration of credit conditions as a consequence of COVID-19 implied a significant increase in provisions, leading to lower earnings, lower capital ratios, and credit contraction for banking organizations.

[8] Regulatory Capital Rule: Implementation and Transition of the Current Expected Credit Losses Methodology for Allowances and Related Adjustments to the Regulatory Capital Rule and Conforming Amendments to Other Regulations, 84 Fed. Reg. 4222 (December 21, 2018)

and the OCC released a joint final rule to revise their regulatory capital rules to address the implementation of the CECL accounting standard under U.S. GAAP, provide an optional three-year phase-in period for the day-one adverse regulatory capital effects that banking organizations are expected to experience upon adopting CECL, and require the use of CECL in stress tests beginning with the 2020 capital planning and stress testing cycle for banking organizations. The agencies also noted that many commenters requested that the agencies take action to neutralize the effects of CECL on regulatory capital on a more permanent basis. Although the agencies declined to do so, they stated that they "recognize commenters' concerns about CECL's effects on regulatory capital" and added that they "are committed to closely monitoring the effects of CECL on regulatory capital and bank lending practices."[9]

The clarification from prudential regulators provided much-needed relief to banking organizations and resolved several uncertainties regarding CECL implementation. In particular, it addressed banking organizations' concerns related to capital inadequacy and stress-testing requirements.

In this paper, we examine the direct and indirect (real) effects of CECL related uncertainty during June 2016 and December 2018 (hereafter, uncertainty period), resulting from coordination failure between accounting regulators and prudential regulators, on bank lending and firm investments, respectively.

Hypotheses Development

Prior literature suggests that banks decrease their future capital inadequacy concerns by reducing lending (Beatty and Liao 2011). We argue that uncertainty about the economic environment at the time of CECL adoption results in future capital inadequacy concerns for

[9] Sullivan and Cromwell LLP (December 27, 2018). Bank Capital Requirements: Federal Banking Agencies Release Final Rule Regarding the Implementation of CECL, and Federal Reserve Provides Guidance on CECL and CCAR. Available at https://www.sullcrom.com/cecl-final-rule-on-phase-in-and-frb-guidance-on-cecl-and-ccar

banks. In other words, the introduction of the CECL standard without any capital adequacy reliefs from prudential regulators resulted in an exogenous inward shift in the supply of bank loans. Anecdotal evidence in the press supports this hypothesis. For example, Credit Union National Association's comment letter for CECL related congressional hearing said,

> *"We ask this committee to convey the industry's concerns to FASB in hopes it will review the standard tor opportunities to reduce necessary compliance challenges as well as develop compliance resources in coordination with prudential banking regulators."*[10]

We state our first hypothesis in its null form:

> H1A: The failure of coordination between accounting regulators and prudential regulators while introducing CECL has no impact on bank lending amount.

To further disentangle the effects of demand vs. supply, we conduct additional tests related to loan terms. By studying pricing and other loan terms, we can establish whether the reduction in lending is driven by demand or supply-side concerns. If lending drops due to reduced demand and not due to CECL related uncertainty, we expect loan prices to fall simultaneously. However, if supply-side concerns drive a reduction in lending, prices on loans originated by banks will increase. Our next hypothesis, therefore, in its null form is as follows:

> H1B: The failure of coordination between accounting regulators and prudential regulators while introducing CECL has no impact on bank pricing.

In terms of other lending terms, we examine the effect of CECL uncertainty on collateral and maturity. FDIC loan loss guidelines suggest that loans that are fully collateralized do not require any allowances for loan and lease losses.[11] Therefore, we expect banks to increase their collateral requirement for loans during the uncertainty period. CECL also requires that banking organizations recognize the estimate of lifetime expected credit

[10] Assessing the impact of FASB's Current Expected Credit Loss (CECL) accounting standard on financial institutions and the economy: Hearing before the subcommittee on financial institutions and consumer credit of the committee on financial services U.S. House of Representatives, 115th Cong. (2018) (Letter from the Credit Union National Association)

[11] https://www.fdic.gov/regulations/laws/rules/5000-4650.html

losses as an allowance. For loans with a longer maturity, an estimate of lifetime expected credit losses will be significantly higher than loans for shorter maturity. If banks are concerned about capital inadequacy at the time of CECL implementation, they may reduce the maturity of loans originating during the uncertainty period. We, therefore, expect loan maturity to decrease during the uncertainty period. Our next hypothesis in the null form is as follows:

> H1C: The failure of coordination between accounting regulators and prudential regulators while introducing CECL has no impact on the bank's loan collateral and maturity requirement.

This setting also allows us to trace a causal link between bank uncertainty and borrowers' investment decisions. If a firm can easily access external capital markets or switch from one source of private capital to another, then its performance should be insensitive to the shocks experienced by its capital providers. Adverse selection and moral hazard frictions, however, can limit a firm's ability to raise external capital or to substitute between private sources of capital (Holmstrom and Tirole 1997). With such frictions in the economy, shocks that affect banks' ability to supply capital might result in negative real effects for firms that primarily depend on them. Consistent with this claim, prior literature shows that credit supply shocks adversely affects firm investment (Chava and Purnanandam 2011, Cingano, Manaresi, and Sette 2014, Alfaro, Garcia-Santana, and Moral-Benito 2021), innovation (Amore, Schneider, and Zaldokas 2013), and firm value, employment, and output (Cingano, Manaresi, and Sette 2014, Alfaro, Garcia-Santana, and Moral-Benito 2021). Therefore, we expect that capital adequacy uncertainty for banks related to CECL implementation would adversely affect firm investments over and above the firm-specific demand-side characteristics, leading to our next hypothesis:

> H2: The failure of coordination between accounting regulators and prudential regulators while introducing CECL has no impact on investments for bank-dependent firms.

III. Empirical Methodology

Identification Strategy

In this paper, we examine how uncertainty related to CECL implementation affects the supply of credit, thereby resulting in negative real effects on the economy. Specifically, we are interested in understanding whether coordination failure between accounting regulators and prudential regulators while introducing the CECL standard resulted in uncertainty for banks, leading to the credit crunch and adverse credit terms for firms, and eventually resulting in lower investments for bank-dependent firms.

To estimate the causal effect of regulatory coordination failure on banks' lending activity, we would need a control group that is unaffected by the introduction of the CECL standard. Since CECL affects almost all banks, credit unions, and private lenders it is not obvious to think of a perfect control group. Therefore, we rely on the distinction between bank and nonbank to tease out the effect of regulatory coordination failure on bank lending. Nonbanks include hedge funds, pension funds, insurance companies, investment banks, and corporations like Blackstone Group LP, Greenhill Capital Partners LLP, or PayPal Holdings Inc., which offer financial services but do not have a banking charter. In recent years, collateralized loan obligations (CLOs) and mutual funds have grown substantially and now account for 80% of nonbank investments in the market. Nonbank lenders, while also subject to CECL accounting, do not have strict regulatory capital requirements akin to banks.[12] Therefore, we expect a lending activity for nonbanks to stay largely unaffected during the uncertainty period, providing us with a required control group to estimate the causal effect of regulatory coordination failure. Anecdotal evidence further strengthens our conjecture. For example, during the CECL related congressional hearing, Denny Heck, the Lieutenant Governor of Washington made the following remarks about non-banks:

[12] https://www.fitchratings.com/research/non-bank-financial-institutions/us-banks-student-loan-sales-unintended-consequence-of-cecl-11-08-2020

"... on the one hand, you will have the banks and the credit unions overseen by Federal regulators with respect to how it is that they construct their models and their assumptions, and the non-banks you don't and where are the incentives there."[13]

Sample and Data

To implement our identification strategy, we identify nonbanks by relying on a unique feature of the syndicated lending market. The syndicated loan market is a dominant way for corporate borrowers (issuers) to tap banks and other institutional capital providers for loans. Large, syndicated loans are typically structured in several tranches, also called facilities. Most loans are structured and syndicated to accommodate two primary syndicated lender constituencies: banks (domestic and foreign) and institutional investors (primarily structured finance vehicles, mutual funds, and insurance companies).

There are two types of term loans – Term Loan As (henceforth, TLAs) are amortizing loans, and Term Loan Bs (henceforth, TLBs) are non-amortizing loans with a bullet payment. TLAs and TLBs differ in important ways beyond their amortization schedule. Prior literature has identified that institutional funding tends to concentrate on term loans, with institutional money backing TLBs (Ivashina and Sun 2011, Nini 2008). It may also happen that TLBs are originated by banks but are sold to nonbanks in the secondary market after loan originations. On the other hand, TLAs are typically held by banks (Ivashina and Sun 2011).

We obtain data on new originations of syndicated loans from Thomson Reuters Dealscan. For most of our analyses, we focus on syndicated term loans originated in the United States to non-financial companies between 2010Q1 to 2020Q1.[14] We collect all term loan facilities from this dataset and classify them as a bank if the loan type is TLA and nonbank if the loan type is TLB. For lender-level analysis, we classify lenders as a bank or

[13] https://www.govinfo.gov/content/pkg/CHRG-116hhrg42352/html/CHRG-116hhrg42352.htm
[14] Since the COVID pandemic has had a substantial adverse impact on lending and overall economy in general, we end our sample period in March 2020.

not based on their historical originations (2010Q1 to 2013Q4). If a lender originates only TLAs in the past, we classify them as banks and if a lender originates both TLAs and TLBs in the past, we classify them as nonbanks. For our analysis, we focus on the two and a half year period before (i.e., January 2014 to June 2016), two and a half year period during (i.e., July 2016 to December 2018), and one and a half period after (i.e., January 2019 to March 2020) the uncertainty period.

Table 1 Panel A shows that TLBs (nonbank) are significantly larger than TLA (bank) facilities ($540 million vs. $197 million), more expensive (391 bps vs. 307 bps), have longer maturity (69.8 months vs. 60.1 months) and require more collateral (98% collateralized vs. 33% collateralized). Table 1 Panel B presents similar statistics at the lender-month level. Interestingly, bank and nonbank facilities tend to fund projects with similar purposes. As shown in Table 2, about half of the bank and nonbank credit is supplied for corporate purposes and working capital investments, while only 3% of banks and 12% of nonbank loans fund engineering activities such as LBOs. Thus, bank and nonbank lending are both important for real economic activities. We also examine the growth in the supply of loans measured as the log difference for a given period as compared to the previous 6-month period. We plot the loan growth during the pre-uncertainty, the uncertainty, and the post uncertainty periods respectively. As shown in Figure 1, there is a remarkable drop in the amount of loans issued during the uncertainty period as compared to the pre-uncertainty (post-uncertainty) period for loans originated by banks compared to those originated by nonbanks.

For borrower-level (or firm-level) analysis, we classify firms as bank-dependent or not based on their historical loan originations (2010Q1 to 2013Q4). If historical loan originations for a firm were only TLAs then we classify it as “bank-dependent borrower”. On the other hand, if historical loan originations for a firm were both TLAs and TLBs then

we classify it as "other borrower". Table 1 Panel C shows that bank-dependent borrowers are not fundamentally different from other borrowers.

To analyze the effect of the uncertainty period on bank lending activity and firm investments, we use two empirical specifications. Our first difference-in-differences empirical specification is as follows:

$$Outcome_{it} = \beta_0 + \beta_1 BANK_{it} + \beta_2 UNCERTAIN_t + \beta_3 BANK_{it} \times UNCERTAIN_t + Controls_{it} + \varepsilon_{it} \quad (1)$$

Where the dependent variable $Outcome_{it}$ is either (a) lending terms – loan amount, spread, collateral, and maturity for a facility or bank-level analysis, or (b) investment outcomes – capital expenditures, R&D expenses, and total investments for borrower-level analysis. $BANK_{it}$ is an indicator variable that separates banks (TLAs) and nonbanks (TLBs). $Uncertain_t$ is an indicator variable that takes a value of one for the uncertainty period (July 2016 to December 2018), and zero for the pre- and post-uncertainty period (January 2014 to June 2016 and January 2019 to March 2020). Figure 2 Panel A helps describe this empirical specification.

Similar to Sethuraman (2019), we use an alternate difference-in-difference specification by dividing our sample period into two parts. Our first sample (henceforth, FASB sample) includes the facility, lender, and firm-level observations between January 2014 and December 2018. We classify the period between January 2014 and June 2016 (i.e., the period before FASB's ASU 2016-13 announcement) as the PRE period. The period between July 2016 and December 2018 (i.e., the period after FASB's ASU 2016-13 announcement) is classified as a *POST* period that corresponds to CECL implementation uncertainty for banks. Our second sample (henceforth, Fed/OCC sample) captures the period surrounding CECL implementation-related clarification by prudential regulators and comprises facility, lender, and firm-level observations between January 2018 and December

2019. For the Fed/OCC sample, the *PRE* period includes observations between January 2018 to December 2018. The *POST* period includes observations between January 2019 and December 2019. To provide evidence on the effect of CECL implementation uncertainty, we estimate the following difference-in-differences empirical specification for each sample:

$$Outcome_{it} = \beta_0 + \beta_1 BANK_{it} + \beta_2 POST_t + \beta_3 BANK_{it} \times POST_t + Controls_{it} + \varepsilon_{it} \quad (2)$$

Figure 2 Panel B depicts this empirical specification graphically. In all our analyses, we also include various fixed effects (FEs) to control for bank, firm, and time-specific factors.

IV. Main Results

Facility-level Analysis

We first examine the effect of CECL implementation uncertainty on the facility-level lending amount (Hypothesis 1A) using the entire sample, and results are reported in Table 3 Panel A. The coefficient on interaction term *BANK* × *UNCERTAIN* in Column (1), -0.178, is negative and significant at the 1% level. The result shows that the uncertainty period leads to a 17.8 percentage points difference in loan amount between the bank and nonbank facilities when comparing lending amount to the same borrower (Borrower FE) at the same time (Year-Month FE) within the same deal (Deal-Purpose FE).

The results from estimation of equation (2) for the *FASB sample (Uncertainty Sample)* are reported in Column (1) of Table 3 Panel B. The coefficient on the interaction term *BANK* × *POST*, -0.192, is negative and significant at the 1% level. This suggests that the loan amount issued between *PRE* (low uncertainty) and *POST* (high uncertainty) periods for bank-originated facilities is 19.2 percentage points lower compared to that issued by nonbank-originated facilities. We also estimate equation (2) for the *Fed/OCC sample (Resolution Sample)* and the results in Column (1) in Table 3 Panel A shows that the coefficient on *BANK* × *POST*, 0.197, is positive and significant at the 1% level. This

suggests that the clarification by Fed/OCC helped resolve uncertainty for banks, leading to an increase in loan amount issued by bank-originated facilities compared to that issued by nonbank-originated facilities.

Collectively, these results provide evidence that coordination failure related to CECL implementation between regulators adversely affected bank lending activity during the uncertainty period.

Table 3 Column (2) presents similar results for loan spreads (Hypothesis H1B). Specifically, Panel A shows that the spreads for bank-originated facilities increase by an additional 32 basis points (bps) during the uncertainty period relative to spreads for nonbank-originated facilities. This result suggests that supply-side concerns due to CECL implementation uncertainty are driving our results. We repeat this analysis using separate samples. Results for the *FASB sample* are reported in Column (2) in Panel B, whereas results for the *Fed/OCC sample* are reported in Panel C. For both the *FASB* and *Fed/OCC samples,* the coefficient on the interaction term, $BANK \times POST$, is significant. It is positive (26.67 bps) for the *FASB sample* and negative (-92 bps) for the *Fed/OCC sample,* suggesting that the CECL related uncertainty resulted in an increase in spreads during the uncertainty period and subsequent clarification by Fed/OCC resulted in a decrease in spreads for bank-originated facilities compared to nonbank-originated facilities.

Finally, we test Hypothesis H1C by estimating equation (1) for two facility-level variables – collateral and maturity. We also create an additional collateral variable, real-estate collateral, to see if banks increase their reliance on hard collateral during the uncertainty period. The results are reported in Table 3 Panel A in Columns (3) – (5). Specifically, we find that while overall collateral and maturity remain unaffected during the uncertainty period, bank-originated facilities observe an increase in real-estate collateral as evidenced by the coefficient on $BANK \times POST$, 0.002, in Column (4). We confirm these

results for alternate research design. Column (4) in Panel B shows that the coefficient on *BANK* × *POST* is positive and significant. Overall these results suggest that bank-originated facilities increase their reliance on hard collateral during the uncertainty period compared to nonbank-originated facilities.

Lender-level Analysis

Our facility-level analysis, while granular, doesn't allow us to control for lender-specific characteristics. In this section, we examine whether our results persist even when we control for lender attributes. To perform lender-level analysis, we estimate equation (1) for the entire sample and equation (2) for the *FASB sample* and *Fed/OCC sample* for four outcome variables – loan amount *(AMOUNT)*, spread *(SPREAD)*, collateral *(COLLATERAL)*, and maturity *(MATURITY)*. Using Dealscan data, we consolidate these variables by averaging them at the lender-month-year level.

Table 4 Panel A shows results for all our outcome variables for the entire sample. Consistent with our facility-level results, we find that the coefficient on *BANK* × *POST* is negative for *AMOUNT* (-0.081) and positive for spread (16.98) even after controlling for lender-level characteristics (Lender FE), suggesting that during the uncertainty period banks decrease loan amount and increase pricing compared to nonbanks. Our results related to collateral (overall collateral and real-estate collateral) further suggest that banks require more collateral to minimize the effect of higher unanticipated loan loss reserves compared to nonbanks. Figure 3 shows the regression coefficients for banks and nonbanks (i.e., *UNCERTAIN X BANK* interacted with year dummies) from a robust regression estimation of equation (1) for *AMOUNT* in Panel A and *SPREAD* in Panel B.

Table 4 Panel B and Panel C shows these results for the *FASB sample* and *Fed/OCC sample*, respectively. The results are quite consistent with the facility-level analysis. We find that banks significantly decrease their loan amount, increase their spread, and require

more collateral when they face CECL implementation-related uncertainty. On the other hand, the analysis of the *Fed/OCC sample* shows that subsequent clarification by prudential regulators results in a significant decrease in the spread and real-estate collateral requirement in comparison to nonbanks. Similar to facility-level analysis, we do not find any significant changes in loan maturity.

Overall, our lender-level analysis further confirms our hypotheses that coordination failure between prudential regulators and accounting regulators results in conservative bank lending activity.

V. Real Effects: Firm Investments

Main Results

To quantify the real effects of the bank uncertainty, we perform a firm-level analysis. As mentioned earlier, we follow a difference-in-difference research design and compare investment activity for bank-dependent borrowers (treatment group) to other borrowers (control group). Similar to the facility- and lender-level analysis, we provide results for the entire sample using equation (1) and separate samples using equation (2).

Following prior literature, we define investment in three ways (Almeida et al. 2017, Shroff 2017). Firstly, firm-level capital expenditures *(CAPEX)* are defined as the change in firms' property, plant, and equipment plus depreciation and scaled by average total assets. Secondly, research and development expenses *(R&D)* are defined as the firm's R&D expenses scaled by average total assets. Finally, we use the sum of *CAPEX* and *R&D* as our aggregate measure of investment (*INVEST*). We control for various factors identified in prior research as determinants of firm investment. The specific control variables we use are *MTB* (the ratio of the market value of equity divided by book value of equity), *SIZE* (log of total assets), *LEVERAGE* (long-term debt plus debt in current liabilities divided by total assets), *ROA* (net income over total assets), and *ROAVOL* (standard deviation of ROA). We

control for time-varying firm health through firm-quarter fixed effects. We also include year-month fixed effects to capture the influence of aggregate time-series trends. We double cluster all standard errors by firm-fiscal quarter and year-month.

The coefficient of interest in equation (1) is the coefficient on the interaction term *UNCERTAIN X BANK* and in equation (2) is *POST X BANK.* This coefficient captures the difference in the change in investment behavior between the treatment firms (i.e., bank-dependent borrowers) and the control firms (i.e., other borrowers). To the extent that bank-dependent borrowers are more likely to decrease investment or capital expenditures by the unfavorable lending outcomes (as shown in Table 3 and Table 4), we expect the coefficient on *UNCERTAIN* for the entire sample and *POST* for the *FASB sample* to be negative. We further test if the effect on investment persists as the uncertainty reduces or does the investment recovers by estimating equation (2) for the *Fed/OCC sample*. Since investments are typically sticky and may not necessarily show an immediate reversal after resolution of uncertainty, we expect either no change or a marginally positive change in the coefficient on *POST X BANK.*

The results are presented in Table 5. The coefficient on *UNCERTAIN X BANK* is statistically significant and negative in the first two specifications. In Column (1), the coefficient indicates that there was a statistically significant decrease in *CAPEX* (-0.001) by 0.1% for bank-dependent borrowers relative to other borrowers during the uncertainty period. In Column (2) we find that there is a negative but insignificant effect on *R&D*. Finally, we document the effect on total investment *(INVEST)* and find a negative and significant effect on *UNCERTAIN X BANK* in Column (3). Figure 4 shows that bank-dependent firms' investments were quite similar to investments by other borrowers before the CECL announcement.

Columns (4)-(6) and Columns (7)-(9) show the results for the *FASB sample* and

Fed/OCC sample, respectively. Results based on the *FASB sample* suggest that the decrease in *CAPEX*, *R&D,* and *INVEST* is concentrated in the uncertainty period. We do not find any subsequent increase/changes in *CAPEX, R&D,* and *INVEST* for the *Fed/OCC sample*, suggesting that firm investments require a long time to recover and any bank-related uncertainty can have a long-term adverse impact on the real economy.

Overall, the results suggest that there is a negative and significant effect on investment for bank-dependent firms during the uncertainty period. We also document that the lower investment level continues to persist in the post uncertainty period.

Next, we perform some cross-sectional analyses to confirm our main results. First, we classify borrowers based on their access to alternate lending channels. We identify access to lending in two ways. First, we identify borrowers who have accessed the syndicated term loan market more frequently than the others. These borrowers are more likely to be affected by the decline in bank lending than those borrowing less frequently. We define *FREQ_BORROWER* as an indicator that takes the value one for borrowers who have accessed the term loan market more than two times in the past (2010Q1 to 2013Q4), zero otherwise. The results are documented in Table 6 Panel A. The coefficient of *UNCERTAIN X BANK X FREQ_BORROWER* is negative and significant for Columns (1), (2), and (3). These results suggest that bank-dependent borrowers who frequently access the lending market in prior years are significantly more likely to reduce their capital expenditures, R&D, and total investments, respectively. We also find that the coefficient on *POST X BANK X FREQ_BORROWER* in Column (6) for the *FASB sample* is negative and significant for total investments. Finally, we find some evidence that frequent borrowers are more likely to recover their R&D investment in the post uncertainty period. Specifically, the coefficient on *POST X BANK X FREQ_BORROWER* for *Fed/OCC sample* is positive and significant for R&D investments.

Our second measure of access to lending is based on the availability of credit ratings for a borrower. Prior literature shows that borrowers with credit ratings have access to the public debt market (Chava and Purnanandam 2011) and they are less likely to be impacted by bank lending curtailment. To test this, we separate our treatment borrowers into those that are not rated by S&P ratings (*NOT_RATED*=1) in the last 5 years and those that are rated by S&P (*NOT_RATED*=0). The results are documented in Table 6 Panel B. We find that non-rated bank dependent borrowers are more likely to reduce their *CAPEX (*β_1=-0.001, p-value < 0.10), *R&D ((*β_1=-0.000, p-value < 0.01) and *TOTAL (*β_1=-0.001, p-value < 0.05) investments compared to rated borrowers during the uncertainty period. In Columns (4)-(6), we also find that the coefficient on *POST X BANK X NOT_RATED* for the *FASB sample* is negative and significant for total investments *(*β_1=-0.001, p-value < 0.10). Finally, we find some evidence that non-rated borrowers are more likely to recover their total investment in the post uncertainty period. Specifically, the coefficient on *POST X BANK X NOT_RATED* is positive and significant for R&D investments *(*β_1=0.001, p-value < 0.10) for the *Fed/OCC sample*.

Finally, we hypothesize that financially constrained borrowers are more likely to be affected by the (un)availability of bank lending. Prior literature shows that firm size is a particularly useful predictor of a firm's financial constraints (Hadlock and Pierce 2010). Hence, we separate borrowers based on the average size in the prior five years into below (*SMALL*=1) and above-median category (*SMALL*=0). The results documented in Table 5 Panel C provide evidence that investment by smaller borrowers is more adversely affected due to CECL-related uncertainty. In particular, we find that the coefficient on *POST X BANK X SMALL* for the *FASB sample* is negative and significant for *CAPEX (*β_1=-0.001, p-value < 0.10), *R&D ((*β_1=-0.000, p-value < 0.05) and *TOTAL (*β_1=-0.002, p-value < 0.05) investments for bank-dependent borrowers.

Matched Sample Analysis

We use the entropy balanced matching technique to match bank-dependent borrowers with other borrowers (Hainmueller 2012; McMullin and Schonberger 2020; Shroff, Verdi, and Yost, 2017; Bonsall and Miller 2017). This matching approach provides another way to reduce noise in the estimation that would otherwise be present because an average bank-dependent borrower may not be easily comparable to average other borrowers. The entropy balancing technique preserves the full sample and ensures covariate balance between treatment and control observations by re-weighting observations such that the post-weighting mean and variance for treatment and control observations are virtually identical along with determinants of investment. This approach ensures that our treatment and control samples are similar in their fundamental characteristics thus allowing us to more comfortably interpret changes in investment in response to the uncertainty surrounding CECL as opposed to inherent and unobservable differences in fundamentals across the treatment and control firms.

The entropy matching variables are a group of variables that prior research has found to be associated with the investment. The specific entropy matching variables we use are *ROA* (EBITDA divided by sales), *ROAVOL* (EBITDA divided by sales) *SIZE* (log of total assets), *LEVERAGE* (long-term debt plus debt in current liabilities divided by total assets), *MTB* (Market to Book Value of Assets), and *FREQ* (frequency of borrowing in prior years).

Table 7 Panel A provides the mean and variance of each variable across our treated and control subsamples both before and after the entropy matching technique is employed. Pre-matching, there are modest differences across the two groups of observations. For example, the treated group appears to be smaller (mean *SIZE* of 7.808 for the treated group compared with 8.125 for the control group) and has lower leverage (mean *LEVERAGE* of 0.322 for the treated group compared with 0.458 for the control group). However, post-

matching there are no differences in either the mean or variance of any of the 6 variables across the two groups of observations.

The results based on the entropy balanced sample are documented in Table 7 Panel B. In column (1), the coefficient indicates that there was a statistically significant decrease in *CAPEX (*β_1=-0.001, p-value < 0.05) by 0.1% for bank-dependent firms relative to other firms during the uncertainty period. In Column (2) we find that there is a negative but insignificant effect on *R&D*. Finally, we document the effect on total investment and find a negative and significant effect on *UNCERTAIN X BANK* in Column (3).

We repeat our analysis for separate samples and consistent with our main results, we find that the decrease is concentrated in the uncertainty period *(FASB sample)* compared to the resolution period. Specifically, the coefficient on *POST X BANK (*β_1=-0.001, p-value < 0.05) for *CAPEX* is significant and negative in Column (4) but it is not significant in Column (7). The coefficient on *R&D* is significant and negative for both the FASB sample and Fed/OCC sample, suggesting that the effects of coordination failure can be long-lasting for the real economy. Results in Columns (6) and (9) for total investments *(TOTAL)* are also consistent with *CAPEX* results. Overall, we find that our post-matching results remain very similar in terms of economic magnitudes and statistical significance.

VI. Empirical Validation of CECL Implementation Uncertainty

Market Reaction

To validate whether the introduction of ASU 2016-13 on June 16, 2016 (hereafter, *Event 1*) and the subsequent clarification by prudential regulation on December 21, 2018 (hereafter, *Event 2*) altered the uncertainty related to CECL implementation, we analyze stock market reaction for banks for each event. We obtain stock returns from CRSP. To study the overall market reaction, we examine three-day windows around the events – Event 1 and Event 2. These windows cover the period from one day before to one day after the

news reaches the market. Moreover, to disentangle market reaction to news about the CECL implementation from confounding news and other macro effects, we augment our sample with nonbanks. Since the effect of CECL related uncertainty is more prominent for banks, we expect market reactions for banks to be higher (in magnitude) in the predicted directions compared to that for nonbanks. Specifically, we expect significant negative returns for Event 1 and significantly positive returns for Event 2. We estimate size-adjusted abnormal return for a bank (nonbank) *i* and event date *t* as:

$$AR_{it} = RET_{it} - DECRET$$

where AR_{it}, RET_{it}, and $DECRET_{it}$) are the abnormal returns, actual returns, and decile returns respectively. Size-adjusted abnormal returns are calculated with cut-off points for the size portfolios based on the market capitalization of NYSE/AMEX/NASDAQ-listed firms. (Source: CRSP ERDPORT1). We cumulate abnormal returns over three-day windows [-1,+1] for both events.

Table 8 indicates a significantly negative coefficient (at 5% level) for banks (coefficient -0.851), but not for nonbanks. Importantly, the coefficient for banks is significantly different from that of nonbanks at the 5% level (difference: 0.752), validating our assumption that FASB's announcement of the CECL standard created uncertainty primarily for banks. For Event 2, we find a significantly positive coefficient for banks as well as for nonbanks. The magnitude of the coefficient, however, is significantly higher for banks compared to that for nonbanks, suggesting that clarification from prudential regulators helped resolve uncertainty (to a large extent) related to CECL implementation. Overall, the results in Table 8 provide support for the validity of CECL related uncertainty shocks examined in the paper.

Textual Analysis

To further validate our results, we apply textual analysis on lenders' 10-Ks between

July 2016 and March 2020. Banks differed in their estimations of CECL implementation uncertainty as well as their attitudes toward it. To measure these differences, we obtain 10-Ks for all public banks and nonbanks in our sample. Since a large part of our sample consists of private banks and nonbanks, this analysis relies on a subset of our sample. We then extract all paragraphs mentioning either "CECL" or "ASU 2016-13" in the 10-Ks (hereafter, extracted text). Rather than examining the overall content of the 10-K, our analysis relies on the textual discussion around the standard to ensure that boiler-plate content and irrelevant content are not driving our results.

Using the extracted text, we begin our analyses by examining any differences in the text between the uncertainty period (July 2016 to December 2018) and the resolution period (January 2019 to March 2020). We create several textual measures: 1) *I(DISC)* is an indicator variable equal to one if there was extracted text around CECL or ASU 2016-13, zero if no text was extracted (i.e., the bank did not provide any disclosures about the standard); 2) *LENGTH* is the total number of words in the extracted text; 3) *I(CECL)* is an indicator variable equals to one if the extracted text specifically mentioned CECL and not just ASU 2016-13, zero if the text-only mentioned ASU 2016-13; [15] 4) *TONE* is a measure based on the difference between "positive" and "negative" words from the sentiment dictionaries by Loughran and McDonald (2011); 5) *I(DOLLAR)* is an indicator variable equals to one if the extracted text discusses dollar figures, zero otherwise. In the resolution period, we expect banks to provide more numerical disclosures (dollar values) compared to the uncertainty period. We estimate the following regression:

$$TextualMeasure_{it} = \beta_0 + \beta_1 UNCERTAIN_t + \gamma_{it}\, x_{it} + \varepsilon_{it} \quad (3)$$

Where $TextualMeasure_{it}$ is one of the variables mentioned above – *I(DISC),*

[15] This measure helps us ascertain if the text only provides boiler-plate paragraph about ASU 2016-13. Banks are less likely to use the term CECL if the disclosure is just a standard boiler-plate paragraph about any standard.

LENGTH, I(CECL), TONE, and *I(DOLLAR)* for a bank (nonbank) *i* at time *t.* x_{it} includes lender-specific fixed effects. Table 9 Panel A provides the results for our textual measures after controlling for lender characteristics. We find that lenders were significantly less likely to provide CECL related disclosures (coeff: -0.099) during the uncertainty period compared to the resolution period. The results further show that, in case of a disclosure, the discussion was relatively shorter, was less likely to talk about the impact of CECL (measured by the indicator variable I(CECL)), had a negative tone, and was less likely to contain dollar values. Overall, these results provide validation that coordination failure related to CECL implementation resulted in uncertainty for lenders.

To provide more concrete evidence on the fact that banks faced higher uncertainty compared to nonbanks, we measure uncertainty by analyzing the extracted text of public banks and nonbanks. We search the text for "uncertain" words from the sentiment dictionaries by Loughran and McDonald (2011). Our measure of lender's uncertainty is the share of uncertainty words over the total number of words in the extracted text. Banks (and nonbanks) that did not provide disclosures are given uncertainty equal to zero. We estimate the following lender-level model:

$$UNC_{it} = \beta_0 + \beta_1 BANK_{it} + \beta_2 UNCERTAIN_t + \beta_3 BANK_{it} \times UNCERTAIN_t + \gamma_{it}\, x_{it} + \varepsilon_{it} \quad (4)$$

Where UNC_{it} is the share of uncertainty words over the total number of words in bank (nonbank) i's extracted text at time t. x_{it} include bank (nonbank) specific and time-specific fixed effects. Table 9 Panel B shows that banks faced more uncertainty as evidenced by the significant and positive coefficient on *UNCERTAIN X BANK* compared to nonbanks. This result further validates our choice of using nonbanks as a valid control sample for our analysis. Since the 10-Ks (and therefore the extracted text) is only available for public and large entities, we would like to caution readers about potential bias in our estimates.

VII. Conclusion

The FASB announced the CECL standard in June 2016, which in absence of any clarification from prudential regulators, resulted in uncertainty for the US banks. As a result of banks' concerns. Fed/OCC provided clarifications related to CECL implementation in December 2018. We define the period between July 2016 and December 2018 as the uncertainty period resulting from coordination failure between accounting regulators and prudential regulators and investigate the effects of the uncertainty period on banks' lending decisions and subsequently on firm investments for bank-dependent firms.

Using banks as treatment sample and nonbanks as control sample, our results strongly support the hypothesis that during the uncertainty period, banks reduced lending and provided adverse lending terms compared to nonbanks. We further show that bank-dependent firms face adverse consequences in terms of decline in capital expenditures and research and development expenses compared to those firms that do not depend solely on banks for their borrowing needs. Among bank–dependent borrowers, the drop in investments is higher for firms that borrowed frequently, were small in size, and did not have a public debt rating (i.e., access to public debt markets).

Our analysis based on the market reaction to FASB's announcement and subsequent clarification by Fed/OCC further provides validation for our hypothesis. Finally, we conduct a textual analysis on bank 10-K's and confirm that banks indeed faced uncertainty during July 2016 and December 2018 as evidenced by textual measures of CECL related discussions.

Our results have important implications for literature in banking, accounting, and corporate finance. We highlight the role of coordination between accounting regulators and prudential regulators and show that the absence of such coordination can lead to adverse economic consequences.

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APPENDIX A: Variable Description and Data Sources

Variable	Description	Data Source
UNCERTAIN	Indicator variable that takes the value of one if the period is between Jul 2016 and Dec 2018, zero otherwise	Constructed
POST (FASB SAMPLE)	Indicator variable that takes the value of one if the period is between Jul 2016 and Dec 2018, zero if the period is between Jan 2014 and Jun 2016	Constructed
POST (FED/OCC SAMPLE)	Indicator variable that takes the value of one if the period is between Jan 2019 and Dec 2019, zero if the period is between Jan 2018 and Dec2018	Constructed
Facility Level Variables		
BANK	Indicator variable that takes the value of one if the facility is a Term A loan, zero if the facility is a Term B loan	Deal Scan
SPREAD	All in drawn loan spread in basis points	Deal Scan
COLLATERAL	Indicator variable that takes the value of one if the loan is secured by collateral, zero otherwise	Deal Scan
COLLATERAL (RE)	Indicator variable that takes the value of one if the loan is secured by real estate collateral, zero otherwise	Deal Scan
AMOUNT	Log(Loan amount in million USD)	Deal Scan
MATURITY	Log(Number of months to loan maturity)	Deal Scan
Lender Level Variables		
BANK	Indicator variable that takes the value of one if lender's historical originations (Jan 2010 to Dec 2013) are exclusively Term A loans, zero if otherwise	Deal Scan
SPREAD	A weighted average of all in-drawn loan spread in basis points for a loan originated by lender *i* in month *t*	Deal Scan
COLLATERAL	Indicator variable that takes the value of one if a loan is secured by collateral, zero otherwise	Deal Scan
COLLATERAL (RE)	Indicator variable that takes the value of one if a loan is secured by real estate collateral, zero otherwise	Deal Scan
AMOUNT	Log of the average loan amount in million USD originated by lender *i* in month *t*	Deal Scan
MATURITY	Log of average loan maturity for a loan originated by lender *i* in month *t*	Deal Scan
Borrower Level Variables		
CAPEX	Capital expenditures in quarter t minus Capital expenditures in quarter t-1 scaled by Capital expenditures in quarter t-1	Constructed
TOTAL	Sum of capital expenditures and r&d in quarter t minus sum of capital expenditures and r&d in quarter t-1 scaled by total assets	Constructed
R&D	R&D expense for quarter t	Constructed
SIZE	Log of total assets	Compustat
MTB	Market to book value ratio	Compustat/CRSP
LEVERAGE	Sum of long-term debt and debt in current liabilities) scaled by total assets	Compustat
ROA	Net income scaled by total assets	Compustat
ROAVOL	Standard deviation of ROA	Compustat

Variable	Description	Data Source
FREQ	Frequency of borrowing in the past (2010Q1 to 2013Q4)	Deal Scan
FREQ_BORROWER	Indicator that takes the value one for borrowers who have accessed the term loan market more than two times in the past (2010Q1 to 2013Q4), zero otherwise.	Deal Scan
NOT_RATED	Indicator that takes the value one for borrowers not rated by S&P in the last 5 years, zero otherwise	Capital IQ
SMALL	Indicator that takes the value one for borrowers if their average size in the last 5 years was below the median, zero otherwise	Compustat
Textual Variables		
I(DISC)	Indicator that takes the value one for lenders if lender *i* at time *t* included discussion on CECL or ASU 2016-13 in their 10-K	SEC EDGAR
LENGTH	Number of words in the extracted text around CECL or ASU 2016-13 from 10-K	SEC EDGAR
I(CECL)	Indicator that takes the value one for lenders if the extracted text contained "CECL"	SEC EDGAR
TONE	(Number of positive words – number of negative words) / total number of words in the extracted text	SEC EDGAR
I(DOLLAR)	Indicator that takes the value one for lenders if the extracted text contained dollar amounts	SEC EDGAR
UNC1	Log(1+Number of uncertain words in the extracted text based on Loughran-McDonald dictionary	SEC EDGAR
UNC2	Number of uncertain words in the extracted text based on Loughran-McDonald dictionary scaled by total words in the extracted text	SEC EDGAR

Appendix B: Example of CECL Implementation[16]

Consider a hypothetical banking organization that has a CECL effective date of January 1, 2020, and a 20 percent tax rate. On the closing balance sheet date immediately prior to adopting CECL (i.e., December 31, 2019), the banking organization has $10 million in retained earnings and $1 million of ALLL (Allowances for Loan and Lease Losses).

On the opening balance sheet date immediately after adopting CECL (i.e., January 1, 2020), the electing banking organization has $1.2 million of AACL (Adjusted Allowances for Credit Losses). The banking organization would recognize the adoption of CECL by recording an increase to AACL (credit) of $200,000, with an offsetting increase in temporary difference DTAs of $42,000 (debit), and a reduction in beginning retained earnings of $158,000 (debit). For each of the quarterly reporting periods in year 1 of the transition period (i.e., 2020), the electing banking organization would increase both retained earnings and average total consolidated assets by $118,500 ($158,000 × 75 percent), decrease temporary difference DTAs by $31,500 ($42,000 × 75 percent), and decrease AACL by $150,000 ($200,000 × 75 percent) for purposes of calculating its regulatory capital ratios. The remainder of the transitional amounts will be transitioned into regulatory capital according to the schedule provided below.

Impact on Financial Statements	Transitional Amount	Transitional amounts applicable during each year of the transition period		
	Column A	Column B Year 1 at 75%	Column C Year 2 at 50%	Column D Year 3 at 25%
Increase retained earnings and average total consolidated assets by the CECL transitional amount	$158,000	$118,500	$79,000	$39,500
Decrease temporary difference DTAs by the DTA transitional amount	$42,000	$31,500	$21,000	$10,500
Decrease AACL by the ACL transitional amount	$200,000	$150,000	$100,000	$50,000

[16] Regulatory Capital Rule: Implementation and Transition of the Current Expected Credit Losses Methodology for Allowances and Related Adjustments to the Regulatory Capital Rule and Conforming Amendments to Other Regulations, Federal Register Vol. 84, No. 31 (February 14, 2019)

Appendix C: Differences in Textual Characteristics (Example)

This Appendix shows our textual analyses approach. We extract paragraphs containing CECL or ASU 2016-13 from 10-Ks for all public banks and nonbanks in our sample. The following example shows the sample text from Wells Fargo's 10-K extracted in 2017 and 2018. It also highlights the textual differences in Wells Fargo's 10-K before the uncertainty period (2017 10-K) and after the uncertainty period (2018 10-K). For example, the length of the text in 2017 10-K discussing CECL is smaller and uses uncertain language. Whereas, the 2018 10-K is longer and provides more clarity on CECL implementation.

2017 10-K CECL excerpt

ASU 2016-13 – Financial Instruments – Credit Losses (Topic 326): *Measurement of Credit Losses on Financial Instruments*	The Update changes the accounting for credit losses on loans and debt securities. For loans and held-to-maturity debt securities, the Update requires a current expected credit loss (CECL) approach to determine the allowance for credit losses. CECL requires loss estimates for the remaining estimated life of the financial asset using historical experience, current conditions, and reasonable and supportable forecasts. Also, the Update eliminates the existing guidance for PCI loans, but requires an allowance for purchased financial assets with more than insignificant deterioration since origination. In addition, the Update modifies the other-than-temporary impairment model for available-for-sale debt securities to require an allowance for credit impairment instead of a direct write-down, which allows for reversal of credit impairments in future periods based on improvements in credit.	The guidance is effective in first quarter 2020 with a cumulative-effect adjustment to retained earnings as of the beginning of the year of adoption. While early adoption is permitted beginning in first quarter 2019, we do not expect to elect that option. We are evaluating the impact of the Update on our consolidated financial statements. We expect the Update will result in an increase in the allowance for credit losses given the change to estimated losses over the contractual life adjusted for expected prepayments with an anticipated material impact from longer duration portfolios, as well as the addition of an allowance for debt securities. The amount of the increase will be impacted by the portfolio composition and credit quality at the adoption date as well as economic conditions and forecasts at that time.

2018 10-K CECL Excerpt

Standard	Description	Effective date and financial statement impact
ASU 2016-13 – Financial Instruments – Credit Losses (Topic 326): *Measurement of Credit Losses on Financial Instruments*	The Update changes the accounting for credit losses measurement on loans and debt securities. For loans and held-to-maturity debt securities, the Update requires a current expected credit loss (CECL) measurement to estimate the allowance for credit losses (ACL) for the remaining estimated life of the financial asset (including off-balance sheet credit exposures) using historical experience, current conditions, and reasonable and supportable forecasts. The Update eliminates the existing guidance for PCI loans, but requires an allowance for purchased financial assets with more than insignificant deterioration since origination. In addition, the Update modifies the other-than-temporary impairment model for available-for-sale debt securities to require an allowance for credit impairment instead of a direct write-down, which allows for reversal of credit impairments in future periods based on improvements in credit.	We expect to adopt the guidance in first quarter 2020. Our implementation process includes loss forecasting model development, evaluation of technical accounting topics, updates to our allowance documentation, reporting processes and related internal controls, and overall operational readiness for our adoption of the Update, which will continue throughout 2019, including parallel runs for CECL alongside our current allowance process. We are in the process of developing, validating, and implementing models used to estimate credit losses under CECL. We have substantially completed a significant majority of our loss forecasting models, and we expect to complete the validation process for our loan models during 2019. Our current planned approach for estimating expected life-time credit losses for loans and debt securities includes the following key components: • An initial forecast period of one year for all portfolio segments and classes of financing receivables and off-balance-sheet credit exposures. This period reflects management's expectation of losses based on forward-looking economic scenarios over that time. • A historical loss forecast period covering the remaining contractual life, adjusted for prepayments, by portfolio segment and class of financing receivables based on the change in key historic economic variables during representative historical expansionary and recessionary periods. • A reversion period of up to 2 years connecting the initial loss forecast to the historical loss forecast based on economic conditions at the measurement date. • We will utilize discounted cash flow (DCF) methods to measure credit impairment for loans modified in a TDR, unless they are collateral dependent and measured at the fair value of collateral. The DCF methods would obtain estimated life-time credit losses using the conceptual components described above. • For available-for-sale debt securities and certain beneficial interests classified as held-to-maturity, we plan to utilize the DCF methods to measure the ACL, which will incorporate expected credit losses using the conceptual components described above. We expect an overall increase in the ACL for loans, with an expected increase for longer duration consumer portfolios and an expected decrease for commercial loans given short contractual maturities with conditional renewal options. The expected impact on our ACL does not include the impact of the FASB's recently proposed change to consider recoveries of previously charged off loans or subsequent increases in fair value of collateral for collateral dependent loans in the ACL measurement. If finalized, the proposed changes would reduce the expected change in our ACL. We continue to evaluate the results of our modeled loss estimates and will continue to make refinements to our approach, including evaluating an amount for imprecision or uncertainty, based on management's judgment of the risk inherent in the processes and assumptions used in estimating the ACL. We will recognize an ACL for held-to-maturity and available-for-sale debt securities. The ACL on available-for-sale debt securities will be subject to a limitation based on the fair value of the security. Based on the credit quality of our existing debt securities portfolio, we do not expect the ACL for held-to-maturity and available-for-sale debt securities to be significant. The amount of the change in our ACL will be impacted by our portfolio composition and credit quality at the adoption date as well as economic conditions and forecasts at that time. At adoption, we expect to have a cumulative-effect adjustment to retained earnings for our change in the ACL, which will impact our capital. Federal banking regulatory agencies have agreed to limit the initial capital impact of the Update by allowing a phased adoption over three years, on a straight-line basis. An increase in our ACL will result in a reduction to our regulatory capital amounts and ratios; however, at this point in implementation, we are not able to provide a more precise estimate of the impact.

Figure 1: Loan Growth

The figure below shows loan growth based on loan originations by banks and nonbanks before, during, and after the uncertainty period.

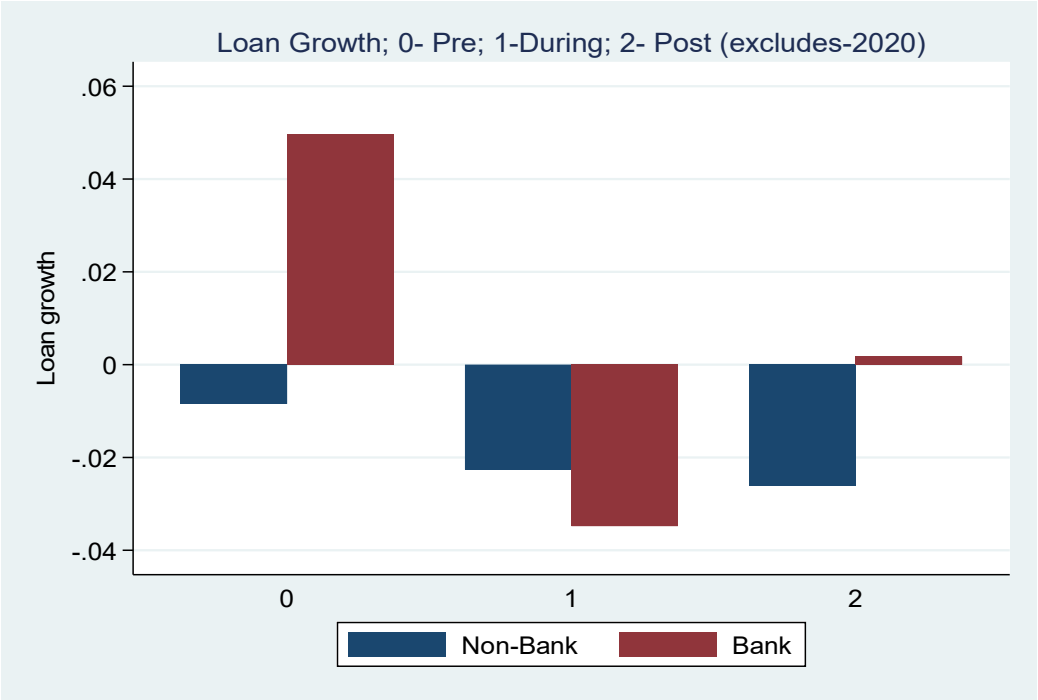
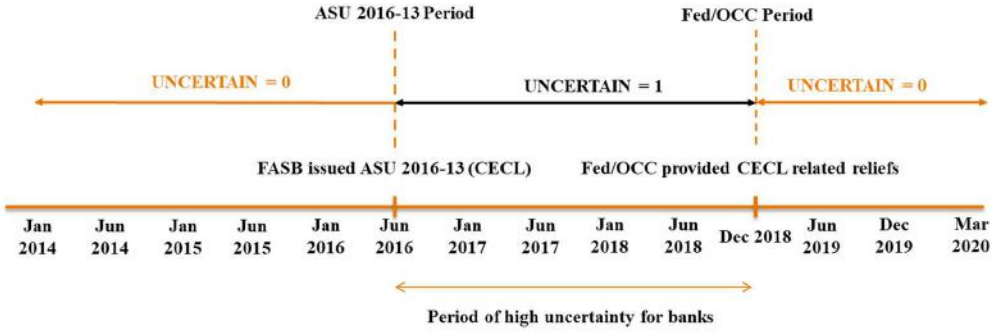


Figure 2: Research Design

Panel A shows a research design based on the entire sample. ASU 2016-13 Period denotes the time when FASB announced ASU 2016-13 (CECL) standard. Fed/OCC Period denotes the time when Fed/OCC provided clarifications and reliefs related to CECL implementation. Panel B shows a research design based on separate samples. *FASB sample* denotes the sample period between January 2014 and December 2018 (before and after FASB's announcement). *Fed/OCC sample* denotes the sample period between January 2018 and December 2019 (before and after Fed/OCC announcement).

Panel A: Research Design 1 – Combined Sample



Panel B: Research Design 2 – Separate Samples

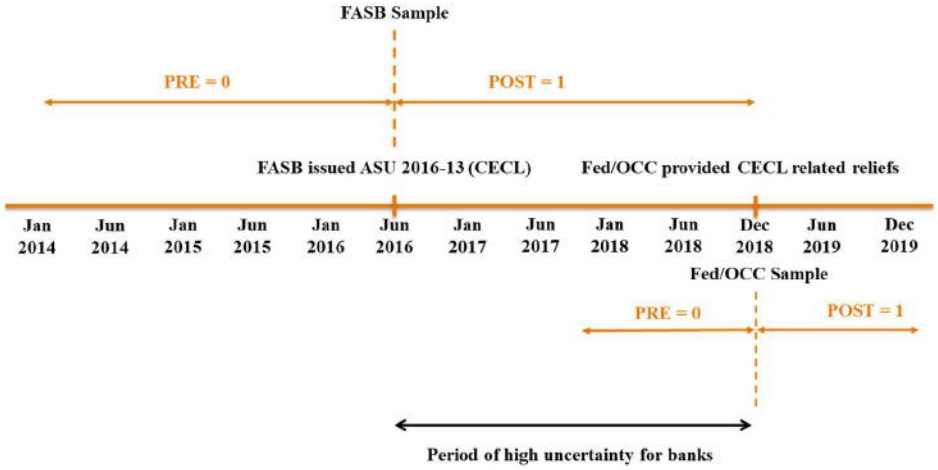
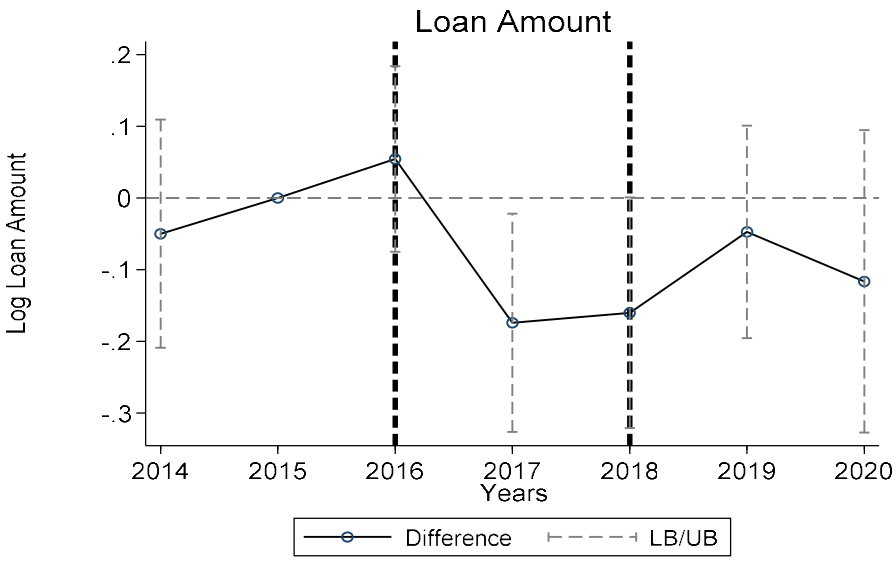


Figure 3: Effect of Uncertainty on Lender-level Outcomes

This figure shows the regression coefficients for banks and nonbanks (i.e., *UNCERTAIN X BANK* interacted with year dummies) from a robust regression estimation of equation (1) for *AMOUNT* in Panel A and *SPREAD* in Panel B. Each line bar represents 2 standard errors on each side of the coefficient.

Panel A: Loan Amount



Panel B: Loan Spread

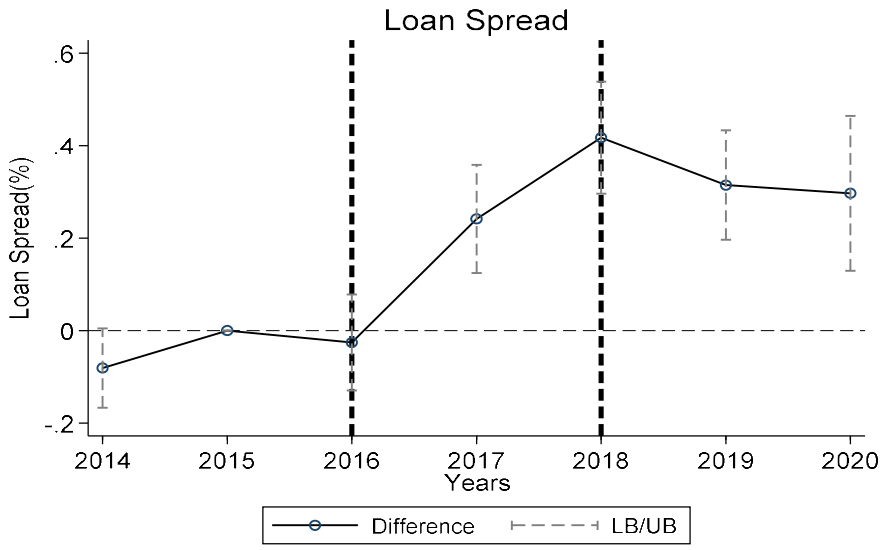


Figure 4: Real Effects of Uncertainty on Borrower-level Outcomes

This figure shows the regression coefficients for bank-dependent and other borrowers interacted with year dummies from a robust regression estimation of equation (1) for *CAPEX*. Each line bar represents 2 standard errors on each side of the coefficient.

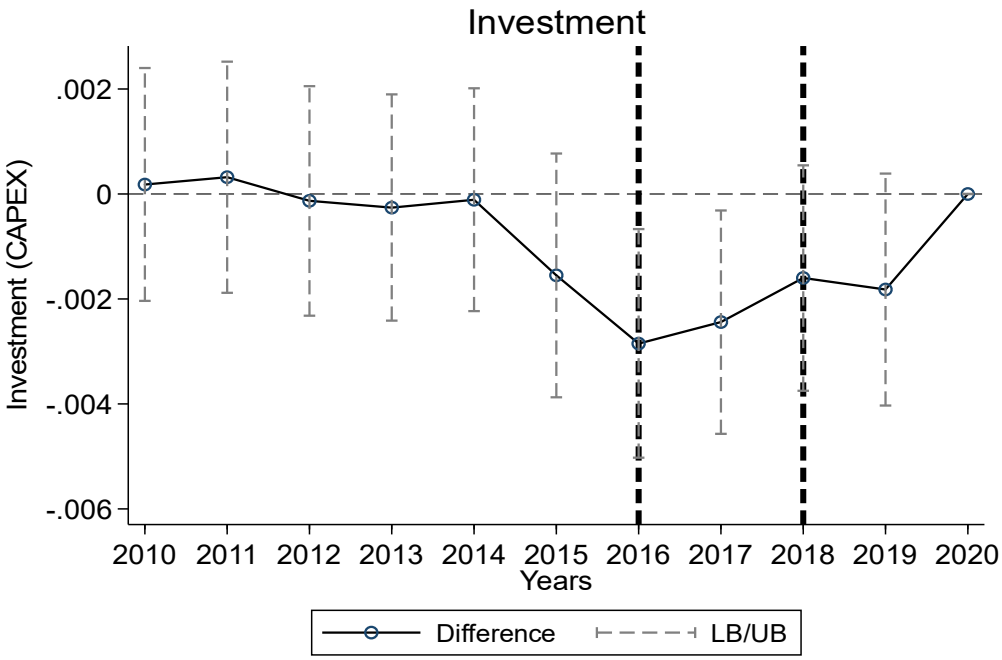


Table 1: Descriptive Statistics

This table provides descriptive statistics for bank (treatment) and nonbank (control) observations separately at the facility level in Panel A, lender-level in Panel B, and borrower-level in Panel C. The sample period goes from 2014Q1 to 2020Q1 Both FASB and Fed/OCC sample observations are included. All continuous variables are winsorized at 1% and 99%. All variables are described in Appendix A.

Panel A: Facility-level Analysis

FASB Sample	**Bank (Treatment Sample)**			**Non-Bank (Control Sample)**		
	N	**Mean**	**SD**	**N**	**Mean**	**SD**
AMOUNT ($MN)	6,840	197.00	386.00	4,890	541.00	629.00
SPREAD	6,840	307.45	245.378	4,890	391.427	141.701
COLLATERAL	6,840	0.329	0.47	4,890	0.986	0.119
COLLATERAL (RE)	6,840	0.001	0.036	4,890	0.001	0.038
MATURITY (MONTHS)	6,840	60.127	24.002	4,890	69.815	15.531
Fed/OCC Sample	**Bank (Treatment Sample)**			**Non-Bank (Control Sample)**		
	N	**Mean**	**SD**	**N**	**Mean**	**SD**
AMOUNT ($MN)	2,513	229.00	447.00	2,016	505.00	625.00
SPREAD	2,513	269.68	244.89	2,016	385.37	147.82
COLLATERAL	2,513	0.337	0.473	2,016	0.984	0.127
COLLATERAL (RE)	2,513	0.001	0.028	2016	0.000	0.000
MATURITY (MONTHS)	2,513	58.73	22.72	2,016	69.96	14.93

Panel B: Lender-level Analysis

FASB Sample	**Bank (Treatment Sample)**			**Non-Bank (Control Sample)**		
	N	**Mean**	**SD**	**N**	**Mean**	**SD**
AMOUNT ($MN)	18,127	18.60	35.90	12,411	41.90	50.30
SPREAD	18,127	108.634	151.813	12,482	228.947	171.438
COLLATERAL	18,127	0.266	0.442	12,482	0.651	0.477
COLLATERAL (RE)	18,127	0.071	0.256	12,482	0.064	0.245
MATURITY (MONTHS)	17,810	77.007	56.097	12,184	68.86	35.939
Fed/OCC Sample	**Bank (Treatment Sample)**			**Non-Bank (Control Sample)**		
	N	**Mean**	**SD**	**N**	**Mean**	**SD**
AMOUNT ($MN)	6,782	20.00	36.80	4,293	43.70	49.70
SPREAD	6,782	123.22	155.15	4,293	219.30	160.92
COLLATERAL	6,782	0.318	0.466	4,293	0.665	0.472
COLLATERAL (RE)	6,782	0.073	0.261	4,293	0.07	0.26
MATURITY (MONTHS)	6,633	74.06	52.45	4,252	65.78	32.18

Panel C: Borrower-level Analysis

FASB Sample	Bank (Treatment Sample)			Non-Bank (Control Sample)		
	N	Mean	SD	N	Mean	SD
CAPEX	8,652	0.012	0.013	5,823	0.010	0.011
RD	8,652	0.002	0.008	5,823	0.002	0.006
TOTAL_INVEST	8,652	0.014	0.015	5,823	0.012	0.012
LOG(ASSETS)	8,652	8.180	1.528	5,823	8.210	1.509
MTB	8,652	2.853	4.937	5,823	3.012	7.276
LEVERAGE	8,652	0.346	0.194	5,823	0.479	0.235
ROA	8,652	0.006	0.028	5,823	0.004	0.027
ROAVOL	8,652	0.014	0.022	5,823	0.017	0.025

Fed/OCC Sample	Bank (Treatment Sample)			Non-Bank (Control Sample)		
	N	Mean	SD	N	Mean	SD
CAPEX	3,074	0.010	0.011	2,034	0.009	0.009
RD	3,074	0.002	0.007	2,034	0.002	0.007
TOTAL_INVEST	3,074	0.012	0.013	2,034	0.011	0.011
LOG(ASSETS)	3,074	8.430	1.532	2,034	8.421	1.532
MTB	3,074	2.542	4.201	2,034	2.000	7.036
LEVERAGE	3,074	0.372	0.199	2,034	0.487	0.220
ROA	3,074	0.007	0.027	2,034	0.004	0.028
ROAVOL	3,074	0.02	0.02	2,034	0.02	0.02

Table 2: Loan Characteristics

This table reports loan purposes for both banks and nonbanks at the facility level. It shows the classification of loan types for our sample period from 2014Q1 to 2020Q1. All variables are described in Appendix A.

Loan Purpose	Total	Bank (Treatment Sample)	Non-Bank (Control Sample)
Acquis. line	8.26%	7.41%	11.73%
Aircraft finance	0.68%	0.84%	0.03%
CP backup	0.01%	0.01%	0.00%
Capital expend.	7.45%	9.21%	0.30%
Corp. purposes	35.51%	33.18%	45.00%
Debt Repay.	9.67%	11.22%	3.34%
Debtor-in-poss.	0.18%	0.18%	0.19%
Dividend Recap	1.97%	1.09%	5.58%
Dividend or Distribution to Shareholders	0.23%	0.17%	0.50%
ESOP	0.01%	0.00%	0.02%
Equipment Purchase	0.37%	0.46%	0.00%
Exit financing	0.12%	0.07%	0.32%
Guarantee	0.01%	0.01%	0.00%
IPO Related Financing	0.27%	0.28%	0.23%
Infrastructure	0.62%	0.77%	0.00%
LBO	5.29%	3.57%	12.30%
Lease finance	0.03%	0.03%	0.00%
MBO	0.17%	0.11%	0.41%
Merger	0.51%	0.31%	1.33%
Other	0.03%	0.04%	0.00%
Pre-Export	0.21%	0.25%	0.03%
Project finance	10.18%	12.38%	1.24%
Purchase of Hardware	0.01%	0.01%	0.00%
Real estate	1.93%	2.37%	0.15%
Recap.	0.27%	0.20%	0.54%
Restructuring	0.16%	0.17%	0.10%
SBO	2.54%	1.22%	7.93%
Securities Purchase	0.12%	0.13%	0.08%
Ship finance	1.38%	1.70%	0.07%
Spinoff	0.19%	0.13%	0.44%
Stock buyback	0.03%	0.03%	0.05%
Takeover	3.06%	1.88%	7.90%
Trade finance	0.14%	0.17%	0.00%
Undisclosed	0.00%	0.00%	0.00%
Working Capital	8.40%	10.41%	0.18%

Table 3: Facility-level Analysis

This table reports the results of our regression estimation using equation (1) at the loan (facility) level for the entire sample in Panel A and separate samples in Panel B and C. The observations are Borrower-Loan-type level. The dependent variable is loan terms borrower *i* received of type Term Loan A or Term Loan B at time *t*. We include borrower, deal purpose, and year-month fixed effects in all specifications. Standard errors are double clustered at the borrower and year-month level. All variables are described in Appendix A. Significance levels: *(p<0.10), **(p<0.05), ***(p<0.01).

Panel A: Uncertainty Period (2014Q1 to 2020Q1)

	(1) *AMOUNT*	*(2)* *SPREAD*	*(3)* *COLLATERAL*	*(4)* *COLLATERAL (RE)*	*(5)* *MATURITY*
UNCERTAIN X BANK	***-0.178******	***32.162******	***0.014***	***0.002****	***0.019***
	(-5.01)	***(4.64)***	***(1.24)***	***(1.95)***	***(1.25)***
BANK	-0.526***	71.656***	-0.236***	-0.000	-0.049***
	(-16.37)	(9.01)	(-18.67)	(-0.14)	(-3.73)
CONSTANT	19.059***	288.650***	0.736***	0.001	4.127***
	(1,229.58)	(67.87)	(107.82)	(1.11)	(684.65)
Observations	14,101	14,101	14,101	14,101	14,101
R-squared	0.8471	0.8117	0.8905	0.7580	0.7930
Borrower FE	YES	YES	YES	YES	YES
Deal Purpose FE	YES	YES	YES	YES	YES
Year-Month FE	YES	YES	YES	YES	YES

Panel B: FASB Sample (2014 Q1 to 2018 Q4)

VARIABLES	*(1)* *AMOUNT*	*(2)* *SPREAD*	*(3)* *COLLATERAL*	*(4)* *COLLATERAL (RE)*	*(5)* *MATURITY*
POST X BANK	***-0.192******	***26.667******	***0.022***	***0.004****	***0.005***
	(-4.71)	***(3.17)***	***(1.62)***	***(1.95)***	***(0.38)***
BANK	-0.502***	90.329***	-0.229***	-0.001	-0.034**
	(-13.78)	(10.05)	(-16.30)	(-0.56)	(-2.54)
CONSTANT	19.063***	281.875***	0.729***	0.001	4.128***
	(1,150.90)	(61.68)	(100.79)	(1.10)	(690.06)
Observations	11,730	11,730	11,730	11,730	11,730
R-squared	0.8510	0.8169	0.8986	0.7546	0.8031
Borrower FE	YES	YES	YES	YES	YES
Deal Purpose FE	YES	YES	YES	YES	YES
Year-Month FE	YES	YES	YES	YES	YES

Panel C: Fed/OCC Sample (2018Q1 to 2019Q4)

VARIABLES	*(1)* *AMOUNT*	*(2)* *SPREAD*	*(3)* *COLLATERAL*	*(4)* *COLLATERAL (RE)*	*(5)* *MATURITY*
POST X BANK	***0.197******	***-92.153******	***0.000***	***0.000***	***-0.006***
	(2.69)	***(-5.73)***	***(0.00)***	***(0.00)***	***(-0.24)***
BANK	-0.870***	149.619***	-0.110***	0.000	-0.000
	(-15.58)	(10.02)	(-6.62)	(.)	(-0.01)
CONSTANT	19.163***	262.248***	0.686***	0.000	4.101***
	(741.83)	(32.61)	(78.07)	(.)	(455.74)
Observations	4,529	4,529	4,529	4,529	4,529
R-squared	0.9104	0.8875	0.9573	1.0000	0.8983
Borrower FE	YES	YES	YES	YES	YES
Deal Purpose FE	YES	YES	YES	YES	YES
Year-Month FE	YES	YES	YES	YES	YES

Table 4: Lender-level Analysis

This table reports the results of our regression estimation using equation (1) at the lender level for the entire sample in Panel A and separate samples in Panel B and C. The observations are at the Lender-Loan-type-Month level. The dependent variable is average loan terms lender *i* issued of type Term Loan A or Term Loan B in month *t*. We include lender and year-month fixed effects in all specifications. Standard errors are double clustered at the lender and year-month level. All variables are described in Appendix A. Significance levels: *(p<0.10), **(p<0.05), ***(p<0.01).

Panel A: Uncertainty Period (2014Q1 to 2020Q1)

	(1) *AMOUNT*	*(2)* *SPREAD*	*(3)* *COLLATERAL*	*(4)* *COLLATERAL (RE)*	*(5)* *MATURITY*
UNCERTAIN X BANK	***-0.081****	***16.980*****	***0.012***	***0.012****	***0.009***
	(-2.29)	***(4.80)***	***(1.00)***	***(2.51)***	***(0.59)***
CONSTANT	15.506***	153.719***	0.424***	0.064***	4.058***
	(1,805.17)	(178.10)	(144.49)	(55.70)	(1,107.82)
Observations	36,896	36,896	36,896	36,896	36,896
R-squared	0.7510	0.5717	0.4379	0.3915	0.3532
Lender FE	YES	YES	YES	YES	YES
Year-Month FE	YES	YES	YES	YES	YES

Panel B: FASB Sample (2014 Q1 to 2018 Q4)

	(1) *AMOUNT*	*(2)* *SPREAD*	*(3)* *COLLATERAL*	*(4)* *COLLATERAL (RE)*	*(5)* *MATURITY*
POST X BANK	***-0.096****	***26.243*****	***0.036****	***0.014****	***-0.004***
	(-1.77)	***(5.80)***	***(2.16)***	***(1.76)***	***(-0.14)***
CONSTANT	15.479***	149.982***	0.412***	0.064***	4.064***
	(1,029.80)	(112.84)	(88.81)	(27.97)	(533.05)
Observations	30,609	30,609	30,609	30,609	30,609
R-squared	0.7494	0.5915	0.4466	0.3980	0.3834
Lender FE	YES	YES	YES	YES	YES
Year-Month FE	YES	YES	YES	YES	YES

Panel C: Fed/OCC Sample (2018Q1 to 2019Q4)

	(1) *AMOUNT*	*(2)* *SPREAD*	*(3)* *COLLATERAL*	*(4)* *COLLATERAL (RE)*	*(5)* *MATURITY*
POST X BANK	***0.114***	***-28.691****	***-0.010***	***-0.017*****	***0.076***
	(0.76)	***(-1.95)***	***(-0.12)***	***(-3.61)***	***(1.14)***
CONSTANT	15.583***	174.472***	0.457***	0.080***	4.016***
	(212.08)	(24.30)	(11.38)	(34.89)	(123.35)
Observations	11,075	11,075	11,075	11,075	11,075
R-squared	0.8081	0.6372	0.4791	0.4736	0.3923
Lender FE	YES	YES	YES	YES	YES
Year-Month FE	YES	YES	YES	YES	YES

Table 5: Borrower-level Analysis

This table reports the results of an analysis of firm outcomes around the uncertainty period. The analysis is conducted at the firm-quarter level including observations from 2014Q1 to 2020Q2 in Column (1)-(3), 2014Q1 to 2018Q4 in Column (4)-(6), and 2018Q1 to 2019Q4 in Column (7)-(8). We include borrower-quarter and year-month fixed effects in all specifications. Standard errors are clustered at the firm level. All variable definitions are available in Appendix A. Significance levels: *(p<0.10), **(p<0.05), ***(p<0.01).

	Entire Sample			**FASB Sample**			**Fed/OCC Sample**		
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*	*(9)*
VARIABLES	*CAPEX*	*RD*	*TOTAL*	*CAPEX*	*RD*	*TOTAL*	*CAPEX*	*RD*	*TOTAL*
UNCERTAIN X BANK	***-0.001****	***-0.000***	***-0.001****						
	(-2.26)	***(-0.44)***	***(-2.31)***						
POST X BANK				***-0.001****	***-0.000*****	***-0.001****	***-0.000***	***-0.000***	***-0.000***
				(-2.01)	***(-2.78)***	***(-2.58)***	***(-1.00)***	***(-1.44)***	***(-1.47)***
LOG(ASSETS)	-0.002***	-0.001***	-0.002***	-0.001***	-0.001***	-0.002***	-0.002***	-0.001***	-0.004***
	(-4.32)	(-4.40)	(-5.22)	(-2.75)	(-3.99)	(-3.79)	(-5.51)	(-4.51)	(-7.30)
MTB	0.000*	0.000	0.000**	0.000*	0.000*	0.000**	-0.000	-0.000	-0.000*
	(1.71)	(1.22)	(2.07)	(1.96)	(1.84)	(2.48)	(-1.65)	(-0.53)	(-1.95)
LEVERAGE	-0.005***	-0.000	-0.005***	-0.005***	-0.000	-0.005***	-0.003	0.001	-0.002
	(-4.38)	(-0.21)	(-4.22)	(-3.84)	(-1.58)	(-4.11)	(-1.32)	(1.01)	(-1.06)
ROA	0.020***	-0.007***	0.013**	0.022***	-0.007***	0.014**	0.008	-0.006*	0.001
	(4.15)	(-2.92)	(2.13)	(4.25)	(-3.17)	(2.24)	(1.46)	(-1.92)	(0.25)
ROAVOL	-0.026***	-0.004**	-0.031***	-0.023***	-0.005**	-0.028***	-0.019**	-0.003	-0.022**
	(-5.56)	(-2.16)	(-6.14)	(-4.77)	(-2.38)	(-5.20)	(-2.11)	(-1.14)	(-2.53)
CONSTANT	0.027***	0.008***	0.034***	0.022***	0.007***	0.029***	0.032***	0.011***	0.043***
	(9.54)	(6.32)	(10.41)	(7.52)	(5.72)	(8.59)	(8.52)	(5.74)	(10.65)
Observations	14,809	14,809	14,809	14,475	14,475	14,475	5,108	5,108	5,108
R-squared	0.7487	0.9468	0.7916	0.7793	0.9619	0.8194	0.8847	0.9633	0.9044
Firm-Qtr FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year-Month FE	YES	YES	YES	YES	YES	YES	YES	YES	YES

Table 6: Borrower-level Analysis – Cross-Sectional Tests

This table reports the results of an analysis of real firm outcomes around the uncertainty period based on the borrower's frequency of borrowing, size, and availability of the borrower's public debt rating. The analysis is conducted at the firm-quarter level including observations from 2014Q1 to 2020Q2 in Column (1)-(3), 2014Q1 to 2018Q4 in Column (4)-(6), and 2018Q1 to 2019Q4 in Column (7)-(8). We include borrower-quarter and year-month fixed effects in all specifications. Standard errors are clustered at the firm level. All variable definitions are available in Appendix A. Significance levels: *(p<0.10), **(p<0.05), ***(p<0.01).

Panel A: Frequency of Borrowing

	Entire Sample			FASB Sample			Fed/OCC Sample		
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*	*(9)*
VARIABLES	*CAPEX*	*RD*	*TOTAL*	*CAPEX*	*RD*	*TOTAL*	*CAPEX*	*RD*	*TOTAL*
UNCERTAIN X BANK X FREQ_BORROWER	***-0.001****	***-0.000****	***-0.002*****						
	(-2.45)	***(-2.44)***	***(-2.96)***						
POST X BANK X FREQ_BORROWER				***-0.001***	***-0.000***	***-0.001****	***0.000***	***0.001****	***0.001***
				(-1.46)	***(-0.45)***	***(-2.21)***	***(0.59)***	***(2.66)***	***(1.48)***
UNCERTAIN X BANK	-0.000	0.000	-0.000						
	(-0.96)	(0.75)	(-0.63)						
UNCERTAIN X FREQ_BORROWER	0.001*	0.000*	0.001**						
	(1.79)	(1.75)	(2.11)						
POST X BANK				-0.000	-0.000**	-0.001	-0.000	-0.000**	-0.001**
				(-0.51)	(-2.22)	(-1.45)	(-1.31)	(-2.12)	(-2.13)
POST X FREQ_BORROWER				0.000	-0.000	0.000	-0.000	-0.001**	-0.001*
				(0.79)	(-0.03)	(1.28)	(-0.96)	(-2.52)	(-1.99)
CONSTANT	0.027***	0.007***	0.034***	0.022***	0.007***	0.029***	0.032***	0.011***	0.043***
	(10.84)	(7.04)	(12.13)	(5.70)	(5.74)	(8.61)	(8.50)	(5.72)	(10.63)
Observations	16,921	16,921	16,921	14,475	14,475	14,475	5,108	5,108	5,108
R-squared	0.7260	0.9455	0.7759	0.7795	0.9619	0.8195	0.8847	0.9634	0.9045
Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES
Firm-Qtr FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year-Month FE	YES	YES	YES	YES	YES	YES	YES	YES	YES

Panel B: Availability of Public Rating

	Entire Sample			FASB Sample			Fed/OCC Sample		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
VARIABLES	*CAPEX*	*RD*	*TOTAL*	*CAPEX*	*RD*	*TOTAL*	*CAPEX*	*RD*	*TOTAL*
UNCERTAIN X BANK X NOT_RATED	***-0.001****	***-0.000*****	***-0.001****						
	(-1.95)	***(-2.71)***	***(-2.53)***						
POST X BANK X NOT_RATED				***-0.001***	***-0.000***	***-0.001****	***0.001***	***0.000***	***0.001****
				(-1.65)	***(-1.06)***	***(-1.79)***	***(1.61)***	***(0.81)***	***(1.80)***
UNCERTAIN X BANK	-0.000	0.000	0.000						
	(-0.33)	(1.55)	(0.28)						
UNCERTAIN X NOT_RATED	0.000	0.000***	0.001*						
	(1.09)	(3.03)	(1.78)						
POST X BANK				-0.000	-0.000	-0.000	-0.001	-0.000*	-0.001**
				(-0.30)	(-1.02)	(-0.54)	(-1.54)	(-1.92)	(-2.20)
POST X NOT_RATED				0.001	0.000*	0.001	0.000	-0.000	0.000
				(1.38)	(1.97)	(1.66)	(0.85)	(-0.52)	(0.60)
Constant	0.027***	0.007***	0.034***	0.021***	0.007***	0.028***	0.031***	0.011***	0.043***
	(10.77)	(7.03)	(12.06)	(7.25)	(5.74)	(8.38)	(8.14)	(5.84)	(10.49)
Observations	16,921	16,921	16,921	14,475	14,475	14,475	5,108	5,108	5,108
R-squared	0.7259	0.9455	0.7759	0.7794	0.9619	0.8194	0.8851	0.9633	0.9048
Firm-Qtr FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year-Month FE	YES	YES	YES	YES	YES	YES	YES	YES	YES

Panel C: Borrower Size

	Entire Sample			FASB Sample			Fed/OCC Sample		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
VARIABLES	CAPEX	RD	TOTAL	CAPEX	RD	TOTAL	CAPEX	RD	TOTAL
UNCERTAIN X BANK X NOT_RATED	***-0.001***	***-0.000***	***-0.001***						
	(-0.85)	***(-0.78)***	***(-0.96)***						
POST X BANK X NOT_RATED				***-0.001****	***-0.001****	***-0.002****	***0.000***	***-0.000***	***0.000***
				(-1.92)	***(-2.52)***	***(-2.43)***	***(0.49)***	***(-0.38)***	***(0.16)***
UNCERTAIN X BANK	-0.001	0.000	-0.000						
	(-1.35)	(0.94)	(-1.19)						
UNCERTAIN X NOT_RATED	0.000	0.000	0.001						
	(1.00)	(1.01)	(1.33)						
POST X BANK				-0.001	-0.000	-0.001	-0.000	-0.000	-0.001
				(-1.09)	(-0.93)	(-1.17)	(-1.17)	(-1.43)	(-1.48)
POST X NOT_RATED				0.000	0.000**	0.001	-0.001***	0.000	-0.001
				(0.85)	(2.28)	(1.59)	(-3.86)	(0.41)	(-1.70)
Constant	0.027***	0.007***	0.034***	0.022***	0.008***	0.030***	0.031***	0.012***	0.043***
	(10.88)	(7.06)	(12.18)	(7.28)	(5.83)	(8.50)	(8.27)	(5.61)	(10.09)
Observations	16,921	16,921	16,921	13,176	13,176	13,176	4,636	4,636	4,636
R-squared	0.7258	0.9455	0.7758	0.7690	0.9617	0.8099	0.8780	0.9631	0.8983
Firm-Qtr FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year-Month FE	YES	YES	YES	YES	YES	YES	YES	YES	YES

Table 7: Borrower-level Analysis – Robustness Test

This table reports the comparisons of mean and variance for various firm characteristics (i.e., firm-level determinants of being a bank-dependent borrower or other borrowers) between the bank and nonbank samples, pre- and post- entropy balanced matching in Panel A. Panel B shows results for borrower-level analysis using the entropy balanced sample. The analysis is conducted at the firm-quarter level including observations from 2014Q1 to 2020Q2 in Column (1)-(3), 2014Q1 to 2018Q4 in Column (4)-(6), and 2018Q1 to 2019Q4 in Column (7)-(8). We include borrower-quarter and year-month fixed effects in all specifications. Standard errors are clustered at the firm level. All variable definitions are available in Appendix A. Significance levels: *(p<0.10), **(p<0.05), ***(p<0.01).

Panel A: Covariate Balance

Before Weighting	**Treat**		**Control**	
	Mean	**Variance**	**Mean**	**Variance**
SIZE	7.808	2.929	8.125	2.435
MTB	2.952	16.418	3.576	33.896
LEVERAGE	0.322	0.036	0.458	0.053
ROA	0.004	0.001	0.003	0.000
ROAVOL	0.015	0.000	0.017	0.001
FREQ	2.489	1.313	2.953	1.338
After Weighting	**Treat**		**Control**	
	Mean	**Variance**	**Mean**	**Variance**
SIZE	7.808	2.929	7.808	2.929
MTB	2.952	16.418	2.952	16.420
LEVERAGE	0.322	0.036	0.322	0.036
ROA	0.004	0.001	0.004	0.001
ROAVOL	0.015	0.000	0.015	0.000
FREQ	2.489	1.313	2.489	1.313

Panel B: Borrower-level Analysis

	Entire Sample			FASB Sample			Fed/OCC Sample		
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*	*(9)*
VARIABLES	*CAPEX*	*RD*	*TOTAL*	*CAPEX*	*RD*	*TOTAL*	*CAPEX*	*RD*	*TOTAL*
UNCERTAIN X BANK	***-0.001****	***0.000***	***-0.001***						
	(-2.16)	***(0.75)***	***(-1.62)***						
POST X BANK				***-0.001****	***-0.000****	***-0.001****	***-0.000***	***-0.000****	***-0.001***
				(-2.79)	***(-2.20)***	***(-3.29)***	***(-0.90)***	***(-1.84)***	***(-1.60)***
SIZE	-0.002***	-0.001***	-0.003***	-0.001**	-0.001***	-0.002***	-0.003***	-0.003***	-0.006***
	(-5.37)	(-4.60)	(-6.09)	(-2.63)	(-3.65)	(-3.59)	(-6.35)	(-3.27)	(-5.41)
MTB	0.000**	0.000*	0.000***	0.000**	0.000*	0.000***	-0.000*	0.000	-0.000
	(2.48)	(1.77)	(2.70)	(2.48)	(1.83)	(2.90)	(-1.94)	(0.26)	(-0.91)
LEVERAGE	-0.005***	0.000	-0.004***	-0.005***	-0.000	-0.006***	-0.002	0.002	-0.000
	(-4.42)	(0.84)	(-3.36)	(-4.17)	(-1.62)	(-4.44)	(-0.88)	(1.34)	(-0.09)
ROA	0.023***	-0.004*	0.018***	0.025***	-0.007***	0.018**	0.012**	-0.001	0.011
	(4.80)	(-1.83)	(3.20)	(4.33)	(-3.11)	(2.57)	(2.14)	(-0.21)	(1.30)
ROAVOL	-0.028***	-0.002	-0.030***	-0.020***	-0.006**	-0.026***	-0.012	-0.001	-0.012
	(-4.77)	(-1.10)	(-5.02)	(-3.34)	(-2.49)	(-3.99)	(-1.18)	(-0.15)	(-1.23)
CONSTANT	0.027***	0.009***	0.037***	0.021***	0.008***	0.030***	0.037***	0.024***	0.062***
	(10.32)	(6.56)	(10.92)	(7.62)	(5.39)	(8.29)	(9.55)	(3.86)	(7.39)
Observations	16,493	16,493	16,493	12,306	12,306	12,306	4,450	4,450	4,450
R-squared	0.7352	0.9362	0.7835	0.7807	0.9634	0.8202	0.8771	0.9508	0.8967
Firm-Qtr FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year-Month FE	YES	YES	YES	YES	YES	YES	YES	YES	YES

Table 8: Market Reaction around CECL

This table provides the results for two event studies – FASB's announcement regarding CECL standard in June 2016 and Fed/OCC clarification in December 2018. The results show cumulative abnormal returns (CAR) for two events for both banks and nonbanks and their difference. All variable definitions are available in Appendix A. Significance levels: *(p<0.10), **(p<0.05), ***(p<0.01).

Event Study-3 day Cumulative abnormal return [0,2]							
Event Date	**Description**	**Predicted Sign**	**Bank (Treatment Sample)**		**Non-Bank (Control Sample)**		
			N	**CAR**	**N**	**CAR**	**Difference**
June 16, 2016	FASB issued standard ASU 2016-13 and introduced the current expected credit losses (CECL) methodology	-	40	-0.851**	18	-0.058	(0.792)**
December 21, 2018	Office of the Comptroller of the Currency (OCC), the Board of Governors of the Federal Reserve System (Board), and the Federal Deposit Insurance Corporation (FDIC) issued final rules to help banks implement CECL	+	38	2.483***	17	2.013**	-0.470

Table 9: Mechanism: Lender's 10-K Analysis

This table provides the results of regression (3) in Panel A and shows the difference in textual measures between the uncertainty period (July 2016 to December 2018) and the resolution period (January 2019 to December 2019). Panel B shows the differences in textual measures of uncertainty between banks and nonbanks by estimating equation (4). The regression specification includes lender fixed effects. All variable definitions are available in Appendix A. Significance levels: *(p<0.10), **(p<0.05), ***(p<0.01).

Panel A: Disclosure content during and after the uncertainty period

VARIABLES	*(1)* *I(DISC)*	*(2)* *LENGTH*	*(3)* *I(CECL)*	*(4)* *TONE*	*(5)* *I(DOLLAR)*
UNCERTAIN	***-0.099******	***-1.339******	***-0.004******	***-0.150******	***-0.132******
	(-7.75)	***(-16.25)***	***(-13.91)***	***(-6.44)***	***(-11.64)***
Observations	1,850	1,850	1,850	1,850	1,850
R-squared	0.7083	0.738	0.6545	0.6809	0.3943
Lender FE	YES	YES	YES	YES	YES

Panel B: Textual measure based uncertainty

VARIABLES	*(1)* *UNC1*	*(2)* *UNC2*
UNCERTAIN X BANK	***0.484****	***0.006****
	(1.89)	***(1.88)***
Observations	113	136
R-squared	0.833	0.678
Lender FE	YES	YES
Year-Month FE	YES	YES