The Effect of Supervisory Loan Ratings on Syndicated Lending*

Ivan T. Ivanov[†] James Z. Wang[‡]

September 9, 2016

Abstract

Using loan-level data from the Shared National Credit (SNC) exam and exploiting the quasi-random assignment of loans to different bank examiners, we investigate the causal effect of supervisory ratings on loan outcomes. We find that a non-pass rating from the SNC leads to an 84% increase in the probability of a bank internal, non-pass rating and a 25% increase in the probability of a reduced loan commitment in the following year. We also find no evidence that banks strategically substitute into other loans to the same borrower. Consistent with expertise or an information advantage in risk assessment, supervisory ratings are strongly predictive of delinquency and covenant violations. In contrast, we do not find a causal link between SNC ratings and measures of loan and borrower distress.

*We thank Kathleen Johnson, Robert Cote, Michael Gibson, John Shackelford, and Todd Vermilyea for their comments and we are grateful to Caroline Shinkle for excellent research assistance. The views stated herein are those of the authors and are not necessarily the views of the Federal Reserve Board or the Federal Reserve System.

†Federal Reserve Board, 20th Street and Constitution Avenue NW, Washington, DC, 20551; 202-452-2987; ivan.t.ivanov@frb.gov.

‡Federal Reserve Board, 20th Street and Constitution Avenue NW, Washington, DC, 20551; 202-974-7095; james.z.wang@frb.gov.

1 Introduction

Chartered with authority to monitor and evaluate credit risk in the banking sector, federal regulators are likely to impact economic activity. In 2015 alone, regulators assigned ratings to over a \$1.04 trillion worth of loans as part of the Shared National Credit (SNC) program to assess risk in the syndicated loan market.[1] However, despite a large body of research on credit ratings and especially third party external ratings (see Cantor and Packer (1996) and Karam et al. (2014)), there is little work on the causal effects of supervisory ratings. This paper uses quasi-exogenous shocks in supervisory ratings, induced by the assignment of examiners each with their own idiosyncratic differences, to evaluate their impact on banks' incentives and loan outcomes.

Administered by the Board of Governors of the Federal Reserve System (FRS), Federal Deposit Insurance Corporation (FDIC), and the Office of the Comptroller of the Currency (OCC), the SNC program is an annual review of all syndicated deals conducted since 1977 to assess risk in the largest and most complex syndicated credits. Its coverage includes all deals exceeding \$20 million and held by three or more supervised institutions. We empirically study the effect of these supervisory ratings on loan outcomes such as loan attrition, internal rating changes, payment delinquency, and covenant violations. Overall, we find that regulatory downgrades increase the probability that banks downgrade their loans internally, and that receiving an adverse rating translates to real consequences for borrowers such as decreased bank financing. Consistent with expertise or informational advantage in risk assessment, supervisory non-pass ratings are predictive of delinquency and covenant violations, but we do not find evidence indicating a causal link between ratings and distress.

Understanding the effects of supervisory ratings has important implications both for banks' behavior and for the design of supervision programs. Credit ratings are generally thought of as a sufficient summary measure of loan quality and incorporating the available information about credit risk. However, if banks respond to ratings apart from their

[1] http://www.federalreserve.gov/newsevents/press/bcreg/20151105a.htm

information content, then there may be a self-reinforcing feedback mechanism that could exacerbate adverse shocks through the funding channel. For example, loans with ex-ante similar risk profiles may be assigned different rating categories depending on idiosyncratic screening factors which could in turn lead to reductions in credit availability as banks react to the rating and limit commitments. The reduction in financing could also trigger further deterioration. These concerns are especially relevant in the syndicated loan market since lead banks have a central role in monitoring and renegotiating loans on behalf of the entire syndicate.[2] Compared to direct bilateral bank loans, changing the incentives of the lead bank through ratings is likely to have out-sized impacts on credit access through the higher risk sensitivity of syndicate participant loan shares (see, e.g., Gatev and Strahan (2009)).

Establishing the causal effect of loan ratings presents a number of challenging identification problems. Ratings are generally correlated with underlying unobserved macroeconomic, borrower, and bank factors which may simultaneously drive both ratings and outcomes. Finding an association between ratings and distress may well indicate an information channel as bank examiners identify weaknesses that would have lead to loan deterioration regardless of rating. The ideal experiment to account for this endogeneity would be to randomly assign ratings to observably identical loans and then to compare subsequent outcomes. Our research design follows a similar thought process – we establish causal inference by exploiting the bank examiner's quasi-exogenous loan portfolio following the identification strategy used in Maestas, Mullen, and Strand (2013) to study disability insurance. The intuition is that idiosyncratic differences across examiners lead to variation in ratings conditional on borrower and bank characteristics. By focusing on observably identical loans on the knife's edge between two rating categories that ultimately receive different ratings due to the examiner, we can compare follow-up changes in loan outcomes and establish causation.

Our sample is a loan-level panel of over 7,640 syndicated loan ratings spanning 2007 through 2014. We observe over 500 examiners from the FRS, FDIC, and OCC during the

[2]See Gustafson, Ivanov, and Meisenzahl (2015) for an analysis of monitoring by lead banks.

sample who rely on both lead bank-provided information and external sources. The key assumption underlying our strategy is that the identity of the examiner is not correlated with underlying macroeconomic or borrower trends conditional on the observed loan characteristics. Three aspects of the research design support this assumption. First, we focus on the identity of the first examiner who also has responsibility for gathering information. The first examiner assembles a database of supporting documentation that is subsequently used in the review process by the remaining examiners. This mitigates a possible confounding effect where the assignment of the first examiner is based on unobservable, uncontrolled for factors that could have only been collected after an initial screening. To the extent that the first examiner is selected based on observable factors such as location, year, or size of the loan, we can flexibly account for these using fixed effects and other non-parametric techniques.

Second, our sample only includes the 7,640 loans that are sampled for the first time so as to further reduce the chance that prior reviews affect the assignment of the current examiner. Especially difficult to read loans from one year may be assigned to more experienced examiners in the following year, which could be a potential confound if experienced examiners are also more likely to downgrade. Lastly, the instrument, defined as the examiner's rolling 'pass' average to allow for changes in examiner behavior, excludes the loan in question so that the only correlation the instrument has with the underlying loan is through the bank examiner's history of prior votes. This further reduces the chance that the instrument is correlated with loan-specific unobserved trends.

Another advantage of our empirical setting is that supervisory ratings are confidential and provided only to the supervised banks of each examined loan – affected borrowers, non-supervised lenders (such as banks, insurance companies, and mutual and hedge funds), or external third parties do not observe supervisory ratings. In contrast, publicly disclosed ratings by third parties such as Moody's may affect the borrower's incentives directly. For example, borrowers may reduce investment after a rating downgrade by Moody's regardless of changes in funding which would make it difficult to isolate the causal link between loan ratings and outcomes.

Additionally, participation in the SNC is mandatory which mitigates endogenous selection such as ratings shopping (see Skreta and Veldkamp (2009), Bolton, Freixas, and Shapiro (2012)) or catering to borrowers (Griffin, Nickerson, and Tang (2013)). Borrowers that seek out ratings are also likely to have decreased bond yields, lower cost of capital, and greater access to financing (see Sufi (2009) and Kisgen and Strahan (2010)). Our data also allows us to examine a much wider spectrum of borrowers beyond those large enough to obtain bond financing or be certified by third party credit rating agencies. Lastly, unlike sovereign or bank downgrades for example, loan-level downgrades occur with higher frequency throughout the business cycle and by definition are less correlated with national macroeconomic trends.

We first investigate the association between ratings and outcomes in an OLS framework. Our results show that supervisory ratings are highly predictive of loan distress indicating that examiners have expertise or an informational advantage even conditional on the internal rating and other loan- and borrower-specific controls. We find that non-pass ratings are correlated with a higher likelihood of future loan delinquency, financial covenant violations, bank internal non-pass ratings, and decreases in loan commitment. This cross-sectional correlation contains two effects: one is that examiners have predictive power in identifying underlying risks, and the other one may be due to a causal effect of supervisory ratings as banks respond to the rating. We are able to separate these two mechanisms with an instrumental variables approach where the instrument represents the first examiner's rating propensity.

The IV estimates point to large and economically-significant causal effects of examiner ratings on syndicated loans. We find that a non-pass supervisory rating increases the probability of a future internal non-pass rating by approximately 84%, and increases the probability of a reduction in loan amount in the following year by approximately 25%. In addition, a non-pass rating across any of a borrower's loans makes it 44% more likely that banks restrict aggregate financing to the borrower in the following year. Our results are consistent across a variety of specifications including alternative definitions of the instrument, alternative measures of the outcomes and ratings, as well as estimating at the lead bank-borrower pair.

Importantly, these causal effects are substantially larger in magnitude when we consider borrowers on the cusp of lower-credit quality rating categories, consistent with lower supervisory rating categories imposing larger costs on banks. Unlike the OLS estimates showing that downgrades are highly correlated with delinquency, we also find no evidence of a causal effect of supervisory ratings on delinquency or covenant violations in the following year. This is not surprising given that the mechanism for confidential ratings to affect the borrower, which is through the lead bank, may not be empirically evident in the near term.

Our work contributes to the research on credit ratings. This literature focuses on the relation between public credit ratings and access to financing through corporate bonds and bank loans. Some find that higher credit and debt ratings are correlated with increased deposits and wholesale funding for financial intermediaries (Karam et al. (2014)), lower sovereign credit spreads (Cantor and Packer (1996)), and higher leverage ratios (Faulkender and Petersen (2006)). Almeida et al. (2014) exploit the exogenous variation in the sovereign debt ceiling to find that lower third party credit ratings lead to higher bond yields and lower investment. We complement this strand of work with rich loan-level controls as well as a natural experiment to examine changes in loan outcomes and credit access.

We also contribute to the literature examining the trade-off between publicly and privately disclosed supervisory ratings particularly in a supervisory context. While theory work has studied the effects of private supervisory disclosures (Berlin (2015))[3], empirical work on supervisory disclosures has almost exclusively focused on public disclosures due to data availability (see Bischof and Daske (2013), Morgan, Peristiani, and Savino (2014), Flannery, Hirtle, and Kovner (2015), Ellahie (2013), and Glasserman and Tangirala (2015)). One open question is whether private supervisory ratings are effective at reducing banks'

[3]The author proposes a model in which privately disclosed ratings lead to efficiency gains via greater amounts of truth-telling and lower monitoring costs. See also Goldstein and Sapra (2013) noting that public disclosures may have additional costs that are difficult to quantify such as distorting incentives.

risk exposures without external market pressure. We shed light on this debate – our direct evidence suggest that private disclosures alone are able to change incentives and reduce loan exposures. To the best of our knowledge, our study is the first to empirically examine causal inference of supervisory loan ratings on bank loans and borrowers.

Our work complements the literature examining the effect of supervision on banking institutions in the United States. Our approach bears resemblance to that of Agarwal et al. (2014) who find that federal regulators differ from state regulators in leniency. This inconsistent regulation impacts state level bank failures, and the authors suggest that variation in agency resources or greater concern for local economic conditions may explain some of the differences. Our paper is also related to Hirtle, Kovner, and Plosser (2016) who use regulatory districts to study the impact of supervision on the district's largest bank holding company to show that supervision reduce bank risk taking but does not adversely affect performance. Last, Kiser, Prager, and Scott (2015) study the effect of aggregate supervisory bank (CAMEL) rating downgrades on bank lending of small US banks during the financial crisis and do not find a causal effect. In contrast with these studies, we examine the causal effect of regulatory ratings on loan and borrower performance.

The remaining sections are structured as follows. Section 2 introduces the SNC program and provides an overview of the data and the ratings methodology. Section 3 presents the empirical strategy that describes the instrument and discusses the assumptions for identification. Section 4 discusses the results and Section 5 concludes.

2 Institutional Background

Our sample comes from the Shared National Credit database, administered by the FRS, FDIC, and the OCC including all deals exceeding \$20 million and held by three or more supervised institutions.[4] These include both domestic and foreign institutions, as well as

[4] The OCC supervises national banks, the FRS supervises state member banks, and the FDIC is primarily responsible for state nonmember banks.

commercial banks, investment banks, insurance companies and others such as CLOs, mutual and hedge funds. As of the most recent SNC exam in 2015, total SNC commitments totaled $3.9 trillion, a 15.3 percent increase from 2014.[5] We refer to this data collection as the full SNC portfolio.

In May of each year, the three supervising agencies select a sample of loans from the full SNC portfolio to "assess risk in the largest and most complex credits shared by multiple financial institutions."[6] The sampled loans are likely to be larger and riskier credits than the full SNC portfolio.[7] Overall, the exam sample has constituted a large percentage of the total lending volume in the full SNC portfolio, ranging between 26.5% in 2015 and 40.90% in 2009 in the period from 2007 through 2015.[8]

Data submitted to the agencies are as of December of the prior year or as of March of the exam year.[9] Each sampled loan is assigned to one to three examiners, typically one examiner per Federal agency. The first examiner reads in the available information and assembles a database of supporting information that can be used by the other reviewers. Supporting documentation typically could come from information provided by the lead bank pertaining to loan details such as collateral, financial covenants, and delinquency status.[10] The examiners may also rely on external sources for additional loan- and borrower-specific information. Overall, the review process is extensive and time-consuming.[11]

Examiners are assigned to loans based on agency affiliation, bank location, and some examiners specialize in particular industries such as oil and gas. Typically, there is always one examiner in each team from the primary Federal regulator of a given bank and at least one

[5] http://www.federalreserve.gov/newsevents/press/bcreg/20151105a.htm

[6] Please see https://www.fdicig.gov/reports07/07-012-508.shtml and the Shared National Credit Joint Press Release dated November 7th, 2014:
http://www.federalreserve.gov/newsevents/press/bcreg/20141107a.htm

[7] Please see https://www.federalreserve.gov/newsevents/press/bcreg/20151105a.htm and http://www.occ.treas.gov/news-issuances/bulletins/1998/bulletin-1998-21.html.

[8] See https://www.federalreserve.gov/bankinforeg/snc.htm.

[9] http://www.federalreserve.gov/newsevents/press/bcreg/20141107a.htm

[10] See http://www.occ.treas.gov/news-issuances/bulletins/1998/bulletin-1998-21.html and http://www.federalreserve.gov/newsevents/press/bcreg/20141107a.htm

[11] For instance, in 2007 the 122 FDIC examiners alone spent 15,411 hours on reviewing SNC credits, please see https://www.fdicig.gov/reports07/07-012-508.shtml

examiner from the remaining two agencies. On occasion the regulatory community targets particular industries for closer review (e.g. leveraged finance or oil and gas) and assembles a team of specialists to read these loans.[12]

After reviewing a loan, each of the examiners votes on a rating. The rating scale has five grades: "pass" (best), "special mention", "substandard", "doubtful", and "loss" (worst).[13] "Non-pass" loans are often referred to as "criticized", while loans rated "substandard", "doubtful", or "loss" are known as "classified". "Special mention" loans have some minor weaknesses that could result in further credit deterioration in the future. Loans rated "substandard", "doubtful", or "loss" have some major weaknesses that could (is likely to) result in a loss, while "loss"-rated loans are considered uncollectible.[14] The final rating is typically decided by majority vote.[15] The median number of voters is approximately two examiners – in cases where the first two examiners agree, the majority voting rule dictates no need for a third reviewer.

Our study utilizes data on loan commitment, maturity, credit type, utilization, and the lead bank's internal loan ratings. These internal ratings are mapped by the supervised banks to the same standardized rating scale used by examiners. For both the internal and SNC rating, we define a credit as non-pass or downgraded if it is rated special mention or below. As a robustness check, we also consider an alternative grouping where special mention is placed together with the pass category. We also see the syndicate participant shares including the lead bank share, foreign bank and non-bank share, as well as borrower's industry and geography. From the review, we observe each examiner's individual vote, the aggregate rating, as well as supporting documentation. While the SNC data has been collected since the late 1977, we only have voting data and supporting documentation starting in 2007. The supporting documents contain covenant and collateral information that we OCR scan and

[12]We thank Todd Vermilyea for clarifying the examiner assignment process.

[13]Please see more detail on the rating scale here http://www.occ.gov/publications/publications-by-type/comptrollers-handbook/rcr.pdf.

[14]http://www.federalreserve.gov/newsevents/press/bcreg/bcreg20141107a1.pdf

[15]See http://www.occ.treas.gov/news-issuances/bulletins/1998/bulletin-1998-21.html.

numerically codify. We recover the type of covenants used such as restrictions on accounting ratios, the levels at which the financial covenants are set, and whenever available the current level of the accounting variables underlying the covenants. We further observe whether borrowers are currently compliant with the covenants, whether the credit has been amended to avoid noncompliance with covenants, and whether violations have been waived.

After the reviews are complete, they are communicated to the participating banks. Banks have the right to appeal the SNC exam rating, and sometimes the appeals are coordinated and submitted by the lead bank on behalf of all supervised syndicate members.[16] Our analysis uses the pre-appeal rating instead of the post-appeal rating given that less than 0.25% of the examined loans are appealed and the appeal is successful in only a fifth of those cases.

2.1 Descriptive Statistics

We show descriptive statistics for the 7,640 loans examined for the first time (and have available information on the voting process) and compare to the 49,808 loans that are not sampled for SNC examination. Panel A of Table 1 presents a comparison between the mean and medians between these two groups. The summary statistics show that loans in the first-time reviewed sample are on average slightly larger, have higher utilization ratios, and are less likely to be internally rated pass by the lead bank. They are more likely to be public firms, more likely to be held by non-bank institutional investors, and have lower lead bank shares. These patterns are consistent with the goals of the SNC program to sample larger and more complex syndicated loans.[17]

In Panel B of Table 1 we present summary statistics for six separate loan outcomes. *Loan Exit* is defined as a credit facility disappearing from the SNC review in the following year and could be due to the loan maturing, being charged off, or otherwise unloaded from the lender's portfolio. All of the outcome measures are constructed as conditional on a given

[16]See http://www.occ.treas.gov/news-issuances/bulletins/1998/bulletin-1998-21.html for further details on this process.

[17]Please see the Shared National Credit Joint Press Release dated November 7th, 2014: http://www.federalreserve.gov/newsevents/press/bcreg/20141107a.htm

loan remaining in the sample in the following year. *Delinquency* is defined as the loan being past due on interest and/or principal payments by greater than 30 days in the following year while not being delinquent in the current year. Loan delinquency status is only available after 2010 so this outcome is only available for the 2011-2014 period.

Downgrade is an indicator that is turned on if the lead bank's internal rating is non-pass in the following year and zero otherwise; non-pass includes the supervisory categories of special mention, substandard, doubtful, and loss. *Covenant Violation* denotes whether the borrower violated any of the financial covenants established in the loan agreement in the following year. The covenant types and accounting ratios from which they are derived are included as additional controls. *Lower Commitment* and *Shorter Maturity* are indicators for whether the commitment is decreased or shortened in the following year compared to the current year. Shortened is defined as a change to a more recent maturity date. *Covenant Violation* is also the only outcome variable that requires the credit to be reviewed again in the following year. If the credit is not selected to be sampled again, then the violation flags are set to missing. The other outcome variables are supplied by the lead bank for the entire SNC portfolio and are available even if the credit is not sampled for review.

We find supporting evidence that reviewed credit facilities are riskier – they are more likely to become delinquent, have an internal rating downgrade, violate financial covenants, and have commitment reductions in the following year. Not all of the outcomes are necessarily adverse, for instance, loans may also exit because borrowers may be better positioned to seek more attractive financing elsewhere. Similarly, *Shorter Maturity* may not necessarily be associated with an adverse outcome as banks could instead give distressed borrowers additional time to repay given that borrowers may be facing a liquidity shortfall.

3 Identification Strategy

We first investigate whether examiner ratings are associated with and predictive of loan outcomes such as exit, distress, changes in internal ratings, and modifications accounting for loan-level controls and internal loan ratings. We estimate the following OLS specification:

$$Y_{it+1} = \alpha_0 + \alpha_1 SNC_{it} + \alpha_2 Lead\ Bank\ Rating_{it} + \boldsymbol{\gamma X_{it}} + \varepsilon_{it+1}, \tag{1}$$

where Y_{it+1} denotes the outcome of interest for loan i in year $t+1$, SNC_{it} is the SNC rating for loan i in year t, $Lead\ Bank\ Rating_{it}$ is the lead bank's internal rating for loan i in year t, and $\boldsymbol{X_{it}}$ is a vector of loan- and borrower-level control variables including review location, year, 3-digit NAICS industry, as well as lead bank fixed effects as of year t. We also flexibility control for loan size using cubic splines for the loan commitment. Both SNC_{it} and $Lead\ Bank\ Rating_{it}$ are binary variables that equal to one if the credit facility is rated pass and zero otherwise. In the robustness section we present alternative parametrizations of the rating variables.

Examiner ratings should add no additional predictive power for loan performance conditional on the lead bank's internal rating to the extent that 1) banks have more information about credit quality than examiners, 2) internal credit ratings represent an unbiased assessment of borrower credit quality, and 3) examiner ratings do not causally alter loan outcomes. Under these conditions the coefficient estimate α_1 will be indistinguishable from zero conditional on the internal rating and other loan characteristics.

A non-zero relationship could mean that SNC ratings contain predictive information not found in the lead banks' ratings indicating an informational advantage or expertise of bank examiners. Even though lead banks are the primary relationship holders on the syndicate and are likely to possess private information about loan performance than external parties,[18] examiner ratings could add valuable information incremental to bank internal ratings because

[18] Please see Boot (2000) for a review on relationship banking.

of agency conflicts within banks (between loan officers and upper management) or regulatory arbitrage.[19] Consistent with this notion, recent empirical evidence shows that bank's internal ratings might not fully incorporate information from borrower financial statements or loan underwriting terms (see, e.g., Gutierrez-Mangas et al. (2015)),[20] or that the bias in internal default estimates may be positively correlated with regulatory capital (see, Plosser and Santos (2014)).

Examiner expertise or informational advantage could also mean that the examiner's information set is larger than that of individual lead banks – the examiner could be leveraging loan information from other banks and borrowers to assess the risk of a given loan. However, there is unlikely to be an advantage due to the calendar. Banks are instructed and incentivized to provide the most recent loan rating at the moment of review.

Another mechanism underlying a significant correlation between loan performance and examiner ratings could come from a direct causal link whereby banks are less likely to accommodate borrowers that have been rated non-pass by regulators. For instance, following a downgrade, banks could restrict financing or be less likely to renegotiate loans. Downgraded loans are assigned higher loss rates and charge-offs when determining regulatory capital so banks may face higher funding costs. Banks could also try to avoid additional regulatory scrutiny since downgraded loans may be more likely to be reviewed for improvement in the following year even if they fall outside reporting thresholds. Restricted financing and reduced loan commitments could in turn lead to further deterioration in loan quality.

The main difference between these mechanisms is that if the information advantage and expertise is the primary driver, then the loan will deteriorate regardless of its rating. In contrast, with a causal effect, the bank will respond to the supervisory downgrade itself and

[19]Carey and Hrycay (2001) argue that banks have incentives to manipulate their internal ratings provided to regulators

[20]Similarly, Nakamura and Roszbach (2013) use internal ratings of two leading banks in Sweden to understand monitoring ability. The authors find that even though banks' internal ratings contain valuable information not available to outside markets, banks' internal ratings do not incorporate some relevant public information on borrower credit quality that is available from a credit bureau. The study attributes these findings to over-confidence. Treacy and Carey (2000) argue that internal ratings can be improved with more accurate statistical models, and may contain biases due to institutional practices and culture.

may not have taken its actions in the absence of a downgrade. We disentangle these two mechanisms by augmenting the OLS specifications with an instrumental variables approach exploiting the quasi-random assignment of the first SNC examiner.

3.1 Idiosyncratic Variation in Ratings

The rich examiner-level information in the SNC database allows us to investigate the causal effect of SNC ratings. Each facility is given a final rating SNC_{it} that is the result of a majority vote of the three individual examiner votes SNC_{it}^{1st}, SNC_{it}^{2nd}, and SNC_{it}^{3rd} where the third voter may not be needed if there is already agreement. We instrument for the final SNC rating, SNC_{it}, with the first examiner's rating propensity $Propensity_{ijt}$ where j indexes examiners. $Propensity_{ijt}$ is the rolling average of the examiner's individual votes up to and including year t but excluding loan i. Our identification strategy does not require any structural bias in supervisory ratings since we allow examiners to change their behavior over time. Performance reviews generally excludes examiners who demonstrate low productivity or unreliable ratings over time. Our IV specification could be summarized as follows using two-stage least squares (2SLS):

$$SNC_{it} = \gamma_0 + \gamma_1 Propensity_{ijt} + \gamma_2 Lead\ Bank\ Rating_{it} + \boldsymbol{\theta X_{it}} + \varepsilon_{it}, \tag{2a}$$

$$Y_{it+1} = \beta_0 + \beta_1 \widehat{SNC_{it}} + \beta_2 Lead\ Bank\ Rating_{it} + \boldsymbol{\delta X_{it}} + \epsilon_{it+1}, \tag{2b}$$

Recall that the first examiner inputs data on each assigned loan into a database, relying on information provided by the lead bank as well as external sources; she then prepares a summary containing key details about the loan. Prior to the first examiner reading the loan, the assignment is unlikely to be based on uncodifed factors since they would not have been collected. To the extent that the first examiner is selected based on observable characteristics such as agency, location, industry, or year, we can flexibly control for using fixed effects and non-parametric techniques. This may not be the case for the second or third examiner who may be assigned to a given loan because the first examiner determines that the loan is especially complex or financially distressed. For example, one threat to our identification strategy is if examiners with a tendency to give non-pass ratings are assigned to higher risk loans conditional on observable characteristics. One anecdote described to us mentioned how examiners were matched to loans by each picking up the first loan file from a stack of files sitting in the middle of a room – it was considered forbidden to select any loan beyond the one at the top of the stack.

We also include only the first instance of a given loan to avoid confounding effects with previously collected information from past SNC exams. For instance, if a loan is sampled both in 2007 and 2008, we exclude the observation pertaining to the 2008 SNC exam as the assignment of the loan to examiners in 2008 could be based on unobservable loan quality given the prior assessment. It could also be the case that private information could be carried over from the 2008 review. Additionally, $Propensity_{ijt}$ for loan i excludes loan i in its calculation so that the only correlation the instrument has with the final rating is through the first examiner's other votes. This further reduces the chance that the instrument is correlated with unobserved loan-specific trends.

The thought experiment is not that otherwise low risk loans are exogenously downgraded but that loans close to the border between two ratings are upgraded or downgraded based on idiosyncratic factors. Although all examiners at the federal agencies go through similar training, it is however plausible that for a loan right on the knife's edge between two rating categories, differences in examination styles, training, or other factors may tip the rating in different directions. Given the large amount of information available to dissect and the high level of expertise involved, there is likely to be some room for reasonable examiners to come to different conclusions even when presented with the same information. This in part explains the rationale for using a voting system, designed to minimize the variance of these idiosyncratic factors. Econometrically, under fairly general conditions, the IV estimate recovers the local average treatment effect on the set of compliers, those loans where the first examiner's vote is decisive. In a majority voting system, the first examiner is decisive only if there is disagreement between the second and third voters – precisely those loans that are difficult to read and on the border between ratings.

Our identification assumption rests on the orthogonality of the idiosyncratic differences of bank examiners to underlying unobservable loan-specific trends conditional on controls. While we cannot test this assumption explicitly, Table 2 shows a regression of various loan characteristics on $Propensity_{ijt}$ of the first voter along with year and bank controls, as well as the internal rating. The controls are motivated by the fact that bank examiners show up on site at a bank to examine loan documents, indicating that their average vote may be correlated with temporal and geographic effects. We control for both using fixed effects. In addition, we expect and empirically confirm the *Lead Bank Rating* to be highly correlated with the first voter's average rating given that the SNC program over samples from high risk loans.

The table shows that most of the other key loan characteristics such as commitment size, maturity, public status, loan purpose, or syndicate participant shares are all uncorrelated with the instrument at the 5% level. We find the same for most borrower industries as well. We show in the results section further evidence that the instrument is not correlated with observable loan and borrower factors.

As a robustness check we vary the definition of the instrument where $Propensity_{ijt}$ is the average (and not rolling) of the examiner's individual votes only in year t and once again excluding loan i. Here we do not include the examiner's prior years worth of votes. Although this alternative definition of the instrument has the potential to be noisier, it might better account for the possibility that the examiners' tendencies to rate loans may change over time due to training and other factors. We present results with this metric in Section 4.5.

4 Results

4.1 OLS Specifications

We first discuss results from estimating Equation 1 focusing on the following outcomes in the loan's following year: exit, delinquency, covenant violations, non-pass internal rating, decreased loan commitment, and a shorter maturity. Table 3 shows that SNC ratings are significantly correlated with loan outcomes in the following year even after conditioning on internal ratings, borrower controls, and loan-specific attributes. Loans rated pass are about 1% less likely to go 30 days without a payment, 5% less likely to have a covenant violation or require an amendment, 65% more likely to have its internal rating changed to non-pass, and 12% less likely to have a lowered loan commitment in the following year. While the loan's internal concurrent year rating is often changed after a review, there is no mechanical relationship or supervisory requirement that the rating in the following year be changed as well. We also find that higher supervisory ratings are associated with higher rates of loan exit – an effect that could be due to renegotiation into more attractive terms. To the extent that banks are more likely to charge off loans with large deteriorations in credit quality before the next year's review, the OLS associations can be considered lower bounds on the effects since many of the worse-off loans will have disappeared from the sample.

Estimates of *SNC Rating* are predictive even after conditioning on the internal rating, pointing to additional expertise or an informational advantage of bank examiners over bank insiders. These internal ratings are produced concurrently and often only a couple days before a review. Banks and their internal risk examiners are also incentivized to produce accurate internal ratings with penalties levied against poor risk management practices. However, another reason for the predictive power of *SNC Rating* conditional on the internal rating could be that there is a causal mechanism at play. The cross-sectional relation between *SNC Ratings* and loan performance pools the information channel in which supervisory ratings may be correlated with underlying deterioration in loan quality with the causal effect in which banks react to the rating itself. For example, following a supervisory downgrade that is purely a nominal rating change, banks may internally downgrade the affected loans despite them being observably similar to other non-downgraded loans. Disentangling these effects is difficult without a source of exogenous variation in supervisory ratings.

In Table 3 we also present the coefficient estimates of some selected control variables. Among the key control variables we include in our tests are *Leveraged* – an indicator for whether the loan is leveraged, *Public* – an indicator for whether the borrower is a publicly traded company, *Utilization Ratio* – the ratio of utilized to total loan commitment amount, as well as *Lead Share* which is the share of the lead bank in the loan syndicate. These estimates generally conform with expectations. For example, leveraged loans are less likely to be delinquent than non-leveraged loans potentially due to the longer maturity and the bullet repayment structure of these loans. Leveraged loans are also less likely to experience covenant violations likely because of simplified covenant structure that makes these loans attractive to institutional investors. Similarly, loans of public firms are more likely to exit and experience covenant violations potentially due to public firms having greater capacity to renegotiate loans and secure funding from external sources. Loans with high utilization ratios are more likely to exit, be delinquent, have an internal non-pass ratings, experience covenant violations, and have reductions in loan commitment. The share of the lead bank on the syndicate is also negatively associated with covenant violations and commitment reductions likely due to the substitutability of covenants and bank monitoring (see, e.g., Gustafson, Ivanov, and Meisenzahl (2015)). Lead banks may also take high lead shares to certify otherwise opaque borrowers to other syndicate participants (see Sufi (2007)).

4.2 First Stage

We next investigate the first stage IV regressions and also present further evidence on the assumptions for identification. Econometrically, consistent identification does not require absolute random assignment of credits to bank examiners. The exclusion restriction requires conditional random assignment – SNC examiners cannot be assigned according to unobservable characteristics of the loan, the lead bank, or the borrower that are correlated with credit risk. If our precautions of relying on the first SNC voter, in the loan's first instance of being sampled, or excluding the loan when calculating the instrument is still not sufficient, then we can account for the remaining variation directly. For instance, if reviewers specialize in loans in a specific bank or industry, we can condition our results using a large set of fixed effects. If there are concerns that more senior bank examiners may be called upon to review larger credits, then we can flexibly condition on non-parametric splines describing loan commitment.

Table 4 presents the coefficient estimates of the first stage of our instrument for an increasing cascade of controls. Going across the columns, we find that the instrument is highly correlated with the *SNC Rating* even conditional on year, location, and bank fixed effects as well as controls for the internal rating, maturity, loan type (revolving or term loan), public status, cubic splines for loan commitment size, foreign share, lead share, and utilization. Examiners with previously higher 'pass' rating propensities are more likely to vote 'pass' on a given loan all else equal, leading to a higher chance of a final 'pass' rating. While these results are instructive to show a strong first stage, we can also use them to provide additional empirical support for the random assignment process. Specifically, we show that the instrument does not seem to be correlated with a number of key observable variables so it is even less likely that they are correlated with unobservable factors that we do not condition.

Maestas, Mullen, and Strand (2013) suggests a test for correlated observables when examining the random assignment of disability insurance examiners. The rationale for this test is that only variables correlated with the instrument will change its coefficient when included in the regression as an additional covariate. Moving from column (1) to column (2) of Table 4, we find suggestive evidence that the instrument, and by extension the assignment process, is correlated with the internal rating and number of voters fixed effects. This means that the assignment sampling may take into account the internal rating; we control for this possibility by including the internal rating as a control. The correlation with the number of voters is also interesting. As the number of voters increases from 2 to 3, this mechanically means that the first two voters disagreed. Therefore it is not surprising that the correlation between the first voter's propensity and the final rating changes when accounting for these hard-to-read loans. Moving across from column (2) through (5) we show that the estimate on propensity is stable showing little correlation between the instrument and the included observable loan attributes. Despite this, we include geography, year, industry, and bank fixed effects to allow for the possibility that examiners may specialize.

4.3 IV Results

Next we examine the effect of supervisory ratings using an instrumental variables approach. In Table 5 we show that a non-pass rating leads to a 84% percentage point increase in the chance of an internal non-pass rating in the following year. For a loan on the thin border between pass and non-pass ratings, moving from pass to non-pass has a large and substantial effect on the chance of an internal downgrade. This is economically large even though the SNC exam does not require that the lead bank harmonize with its own rating in the following year. From the bank's perspective, a non-pass rating from the SNC is likely to lead to increased provisioning against loan losses, reductions in net income, and greater supervisory scrutiny in future SNC reviews.

We do not find a causal relationship on loan exit. While downgraded loans may be more likely to be renegotiated or charged-off, supervisors could request to continually monitor problematic loans from previous exams making them less likely to leave the sample. It could also be the case that access to external financing allows high creditworthy borrowers to renegotiate and convert to more attractive loan terms. While the OLS results show a robust relationship between supervisory ratings and distress such as delinquency and covenant violations, we do not find a causal link. Because the treatment is a nominal change – the non-pass treatment is idiosyncratic – it is not surprising that outcomes such as delinquency or covenant violations are unaffected, at least in the short term. Specifically, due to the confidential SNC disclosure, banks would have to renegotiate the terms of the loan and then such renegotiation would have to contribute to deterioration in loan quality prior to the next SNC review. We cannot rule out that there may be a link at extended periods of time, however, data limitations including sample attrition make recovering precise estimates at longer time horizons difficult.

Non-pass supervisory ratings also lead to a 25% increase in the probability of lowered loan commitment in the following year, indicating that banks take immediate steps to reduce their exposure following non-pass ratings. The estimates of supervisory ratings in the maturity reduction specification are small and statistically insignificant, likely because banks could respond to supervisory downgrades by either shortening maturity to reduce exposures or increasing maturity to wait out financial distress.

The OLS results can be viewed in light of the IV results since the cross-sectional OLS pools any examiner expertise effects with the causal effect. Given the insignificant estimates of loan delinquency and covenant violations in the IV specifications, the OLS results can be cast as highlighting the expertise and informational advantage of SNC examiners in discovering early signs of credit risk not present in the internal rating. Examiners are effective at forecasting distress; the loans that are downgraded by examiners are precisely those that are more likely to become past due or break financial covenants in the following year. Some sources of this expertise could be training or leveraging external information from other banks that work with the same borrower. Overall, we find that supervisory ratings contain a substantial amount of information relevant for predicting distress even conditional on loan characteristics and the internal rating.

For commitment reductions and internal downgrades, the causal effects are substantially larger in magnitude than the OLS estimates. One possibility is that even though supervisory ratings contain information useful for forecasting internal downgrades or commitment decreases, the causal effect is the major driving force behind the OLS coefficients. Another mechanism that could reconcile the estimates is loan attrition. Loans that drive the local average treatment effect of the IV estimates are on the edge between pass and non-pass ratings. In contrast, the OLS effects are also driven by substantially riskier loans in the classified categories (substandard, doubtful, and loss) that are far from the pass non-pass border. To the extent that these loans are more likely to exit due to charge-offs and distressed renegotiations, this type of selective attrition would bias the OLS estimates downward.

Last, we show that the coefficients of key control variables such as the *Leveraged Loan* and *Public* indicators as well as the *Utilization Ratio* and the *Lead Share* are very similar in terms of magnitude and statistical significance to those in the OLS. Overall, we find that non-pass ratings lead to a large increase in the probability of an internal rating downgrade and a reduction in loan commitments. This poses real effects on credit availability and the ability to obtain bank financing due to persistent borrower-lender relationships (see Boot (2000)). One possibility is that banks are strategically substituting away from the downgraded loans but may attempt to game the examiners by shifting towards other credit lines with the same borrower so that aggregate loan commitments are unchanged. We investigate this question by investigating at the borrower-bank level.

4.4 Do SNC Downgrades Lead to a Reduction in Bank Financing?

While we have investigated the effect of SNC ratings on outcomes related to the rated loan only, one concern could be that banks strategically shift loan commitments to other loans with the same borrower. This could be a concern if regulators are satisfied that the bank is reducing exposures on a loan even though overall credit for the borrower-bank pair may be unchanged. For example, the overall commitment could remain the same if the bank reduces the commitment size of the downgraded loans and then extends additional financing in the form of other loans to the same borrower from a subsidiary or parent. One method to account for this is to aggregate the data up to the holding company of the lead bank, which captures substitution across different syndicated loans within the same bank-holding company and its subsidiaries.

The results in Table 6 paint a similar picture to that of the loan-level analysis in Table 5. The IV estimates show that a non-pass rating for any of the borrower-bank loans leads to a 84% percentage point increase in the chance of an internal non-pass rating and a 44% percentage point increase in the probability of a reduction in the sum of commitments. Both estimates are statistically indistinguishable from the loan-level IV results, and point to economically large probabilities of reducing credit availability to borrowers following a rating downgrade. In other words, we do not find evidence that banks strategically shift loan commitments away from downgraded credit facilities to preserve the overall commitment. Banks are instead reducing exposures at the relationship level. One caveat is that we may not capture the full substitution across all loan types as we do not observe direct bi-lateral loans.

4.5 Alternative Specifications

We perform a number of alternative robustness checks on our estimates. The first is that we modify the definition of our instrument – instead of a rolling-average of the first voter's rating, the instrument is simply the average rating in a given year excluding the loan in question. This instrument allows for bank examiners to change their propensity more quickly from year to year, potentially allowing for yearly cycles, training, and temporal institutional factors to play a larger role. Table 7 shows that the IV estimate is largely consistent with the prior results showing large effects on the probability of future internal non-pass ratings and commitment size reductions. Estimates on exit, delinquency, covenant violations, and maturity shortening are similarly statistically and economically insignificant. At the borrower-bank level, there is little evidence that banks are strategically shifting towards other non-reviewed loans with the same borrower.

While we investigate the effect of supervisory ratings on the probability of experiencing loan commitment and maturity reductions, we also present results on the magnitude of change. Table 8 defines changes in loan commitment and maturity in logs rather than an indicator for whether the commitment has decreased in the following year. Columns (1) and (2) present the results for loan commitment and columns (3) and (4) are for maturity. Loans rated pass by supervisors are 28% larger in terms of loan commitment than loans rated non-pass in the following year. This is an economically large reduction given that the average examined loan is approximately $317 million. We again do not find any effect on loan maturity in the following year, which could be due to banks being as likely to recall delinquent loans as to extend them.

Another specification change revolves a different parametrization of the supervisory rating. By grouping the special mention category with non-pass, it could be that the effect on delinquency and covenant violations are understated because special mention loans tend to also be high quality and not exhibit losses. According to classification guidelines, pass and special mention loans are given a risk weight of 0%, while substandard is 20%, doubtful is 50%, and loss is 100%.[21] An alternative grouping is to classify special mention with pass, and group substandard, doubtful, and loss into the non-pass category; this grouping is also known as the classified and unclassified designation in the supervisory guidelines. We now consider the effects on whether the lead bank rates a given loan as $Classified$ in the future year. The instrument, $Propensity_{ijt}$, is defined as before – the rolling average of the examiner's individual votes up to and including year t but excluding loan i.

Table reftab:IVclassified presents the IV results with the augmented specifications. Once again, we find that the SNC rating has a large causal effect on future internal ratings and changes in loan commitments. It is important to note that the estimates are substantially larger than what we showed in Tables 5, 6, and 7. For example, the coefficient estimate of the SNC rating in future loan commitment reduction specification is larger when the identification comes from loans on the border of non-classified and classified rating categories. This is consistent with lower credit quality supervisory ratings imposing higher costs on banks and

[21]See https://www.federalreserve.gov/boarddocs/srletters/1990/sr9021.htm

banks being more likely to reduce loan exposures when loans fall into classified categories versus non-pass categories.

5 Concluding Remarks

We find that supervisory ratings have large effects on syndicated loans even when conditioning on underlying loan quality. A supervisory rating change from pass to non-pass leads to approximately 85% increase in the probability of an internal non-pass rating and a 25% increase in the chance of a decreased loan commitment in the following year. In terms of magnitudes, loan commitments decrease by approximately 28% following a non-pass rating, and we do not find evidence that banks are strategically substituting into other loans to the same borrower to mitigate this reduction. Unlike the OLS estimates showing large associations between supervisory ratings and measures of loan distress, we find no evidence of a causal effect on measures of distress such as delinquency or covenant violations. This implies that supervisory ratings contain information that is useful for forecasting credit quality even conditional on extensive loan characteristics and internal ratings. Our results are robust to alternative definitions of the instrument, ratings variables, as well as aggregation to the borrower-bank level.

While our study illustrates that nominal rating changes could have large impacts, we are agnostic on whether these effects are welfare-increasing or decreasing. For example, if internal ratings are biased or banks have insufficient incentives to manage their loan portfolio due to agency conflicts within banks or regulatory capital arbitrage (see, e.g., Treacy and Carey (2000), Carey and Hrycay (2001), Gutierrez-Mangas et al. (2015), Nakamura and Roszbach (2013)), then the causal effects could be pushing banks closer to the optimal level of loan monitoring. We anticipate further work exploring these ideas as well as examining spillovers onto additional outcomes such as investment and hiring decisions.

References

Agarwal, Sumit, David Lucca, Amit Seru, and Francesco Trebbi. 2014. “Inconsistent Regulators: Evidence from Banking.” *Quarterly Journal of Economics*, Forthcoming.

Almeida, Heitor, Igor Cunha, Miguel A. Ferreira, and Felipe Restreppo. 2014. “The Real Effects of Credit Ratings: The Sovereign Ceiling Channel.” Working Paper.

Berlin, Mitchell. 2015. “Disclosure of Stress Test Results.” FRB of Philadelphia Working Paper.

Bischof, Jannis and Holger Daske. 2013. “Mandatory Disclosure, Voluntary Disclosure, and Stock Market Liquidity: Evidence from the EU Bank Stress Tests.” *Journal of Accounting Research* 51 (5):997–1029.

Bolton, Patrick, Xavier Freixas, and Joel Shapiro. 2012. “The Credit Ratings Game.” *Journal of Finance* 67 (1):85–111.

Boot, Arnoud W.A. 2000. “Relationship Banking: What Do We Know?” *Journal of Financial Intermediation* 9:7–25.

Cantor, Richard and Frank Packer. 1996. “Determinants and Impact of Sovereign Credit Ratings.” *FRBNY Economic Policy Review* :37–54.

Carey, Mark and Mark Hrycay. 2001. “Parameterizing credit risk models with rating data.” *Journal of Banking and Finance* 24:197–270.

Ellahie, Atif. 2013. “Capital Market Consequences of EU Bank Stress Tests.” University of Utah Working Paper.

Faulkender, Michael and Mitchell Petersen. 2006. “Does the Source of Capital Affect Capital Structure?” *The Review of Financial Studies* 19 (1):45–79.

Flannery, Mark, Beverly Hirtle, and Anna Kovner. 2015. “Evaluating the Information in the Federal Reserve Stress Tests.” FRB of New York Working Paper.

Gatev, Evan and Philip Strahan. 2009. “Liquidity risk and syndicate structure.” *Journal of Financial Economics* 93 (3):490–504.

Glasserman, Paul and Gowtham Tangirala. 2015. “Are the Federal Reserve’s Stress Test Results Predictable?” Office of Financial Research Working Paper Num: 15-02.

Goldstein, Itay and Haresh Sapra. 2013. “Should Banks’ Stress Test Results be Disclosed? An Analysis of the Costs and Benefits.” *Foundations and Trends in Finance* 8 (1):1–54.

Griffin, John, Jordan Nickerson, and Dragon Tang. 2013. “Rating Shopping or Catering? An Examination of the Response to Competitive Pressure for CDO Credit Ratings.” *The Review of Financial Studies* 26 (9):2270–2310.

Gustafson, Matthew, Ivan Ivanov, and Ralf Meisenzahl. 2015. “Bank Monitoring: Evidence from Syndicated Loans.” Working Paper.

Gutierrez-Mangas, Carlos, Ivan Ivanov, Mark Lueck, Shan Luo, and Joseph Nichols. 2015. “Banks’ Internal Ratings and Borrower Financial Statement Information.” FEDS Working Paper Num:.

Hirtle, Beverly, Anna Kovner, and Matthew Plosser. 2016. “The Impact of Supervision on Bank Performance.” FRB of New York Staff Report No. 768.

Karam, Philippe D., Ourda Merrouche, Moez Souissi, and Rima Turk. 2014. “The Transmission of Liquidity Shocks: Evidence from Credit Rating Downgrades.” CEPR Discussion Paper No. DP10252.

Kiser, Elizabeth K., Robin A. Prager, and Jason R. Scott. 2015. "Supervisory Ratings and Bank Lending to Small Businesses During the Financial Crisis and Great Recession." *Journal of Financial Services Research* :1–24.

Kisgen, Darren J. and Philip E. Strahan. 2010. "Do Regulations Based on Credit Ratings Affect a Firm's Cost of Capital?" *The Review of Financial Studies* 23 (12):4324–4347.

Maestas, Nicole, Kathleen Mullen, and Alexander Strand. 2013. "Does Disability Insurance Receipt Discourage Work? Using Examiner Assignment to Estimate Causal Effects of SSDI Receipt." *The American Economic Review* 103 (5):1797–829.

Morgan, Donald, Stavros Peristiani, and Vanessa Savino. 2014. "The Information Value of the Stress Tests." *Journal of Money, Credit and Banking* 46 (7):1479–1500.

Nakamura, Leonard and Kasper Roszbach. 2013. "Credit Ratings and Bank Monitoring Ability." FRB of Philadelphia Working Paper.

Plosser, Matthew and João A.C. Santos. 2014. "Banks' Incentives and the Quality of Internal Risk Models." FRB of New York Staff Report No. 704.

Skreta, Vasiliki and Laura Veldkamp. 2009. "Ratings shopping and asset complexity: A theory of ratings inflation." *Journal of Monetary Economics* 56 (5):678–695.

Sufi, Amir. 2007. "Information asymmetry and financing arrangements: Evidence from syndicated loans." *Journal of Finance* 62 (2):629–668.

———. 2009. "The Real Effects of Debt Certification: Evidence from the Introduction of Bank Loan Ratings." *The Review of Financial Studies* 22 (4):1659–1691.

Treacy, William and Mark Carey. 2000. "Credit risk rating systems at large US banks." *Journal of Banking and Finance* 24:167–201.

Table 1: Summary Statistics: Comparison. Panel A presents summary statistics for some of the key loan characteristics used in our analysis, while Panel B describes loan outcomes. Columns 1 and 2 provide descriptive statistics for our test sample – the loans that are sampled for the first time (N = 7,640). Columns 3 and 4 describe the loan in the SNC database from the May 2007 collection to the May 2014 collection (N = 49,808) that have not been sampled.

Panel A: Loan Characteristics

	Examined		Not Examined	
	Mean	*Median*	*Mean*	*Median*
Loan Amount	317	125	306	121
Utilization	0.654	0.946	0.525	0.545
Loan Maturity	63	60	64	60
Num Voters	2.223	2.000	–	–
Lead Share	0.195	0.160	0.251	0.222
US Bank Share	0.427	0.400	0.581	0.615
Non – Bank Share	0.299	0.125	0.112	0.000
Public	0.457	0.000	0.385	0.000
Voter Rating	0.683	1.000	–	–
Lead Rating	0.691	1.000	0.956	1.000

Panel B: Loan Outcomes

	Examined			Not Examined		
	Mean	*StDev*	*N*	*Mean*	*StDev*	*N*
Loan Exit	0.353	0.478	7,640	0.365	0.481	49,808
Delinquency	0.005	0.071	2,593	0.004	0.062	16,951
Lead NonPass Rating	0.321	0.467	4,937	0.075	0.263	31,639
Covenant Violation	0.112	0.316	2,530	0.114	0.318	4,534
Lower Commitment	0.433	0.496	4,937	0.294	0.456	31,639
Shorter Maturity	0.065	0.246	4,937	0.063	0.244	31,639

Table 2: Balance Tests. This table presents balance tests regressing loan characteristics on the instrument, $Propensity_{i1t}$ – the average of the first examiner's individual SNC votes up to and including year t but excluding loan i.

	F-Statistic	*p-value*
Log Loan Amount	0.00	0.96
Utilization	2.05	0.15
Loan Maturity	0.00	0.94
Loan Term	2.56	0.11
Public	0.00	0.95
Non-Bank Share	5.86	0.02
Foreign Bank Share	0.31	0.58
Lead Share	0.44	0.51
Num Lenders	1.36	0.24

Table 3: SNC Ratings and Future Loan Performance: OLS This table contains estimated coefficients of loan outcome regressions on SNC ratings, lead bank ratings, and a host of controls. We focus on six types of loan outcomes: $Loan\ Exit_{it+1}$, $Delinquency$, $NonPass$, $Violation$, Loan Amt$\Downarrow$, and Maturity$\Downarrow_{it+1}$. The control variables include: original loan maturity in months, a leveraged loan indicator, borrower public status, Log(loan commitment) cubic spline, the loan utilization ratio, the share of the loan held by U.S. banks and non-bank financial institutions, the share of the lead bank in the loan, as well as the number of lenders on the syndicate. All controls are as of time t. Heteroskedasticity-consistent standard errors are clustered at the firm level and reported in parentheses.

	(1)	(2)	(3)	(4)	(5)	(6)
	$Loan\ Exit_{it+1}$	$Delinquency_{it+1}$	$NonPass_{it+1}$	$Violation_{it+1}$	Amount$\Downarrow_{it+1}$	Maturity$\Downarrow_{it+1}$
$SNC\ Rating_{it}$	0.059***	−0.008**	−0.647***	−0.051***	−0.119***	0.024
	(0.022)	(0.004)	(0.023)	(0.018)	(0.024)	(0.015)
$Lead\ Bank\ Rating_{it}$	−0.088***	−0.014***	−0.073***	−0.064***	0.011	−0.039**
	(0.022)	(0.005)	(0.023)	(0.019)	(0.024)	(0.016)
$Leveraged\ Loan$	−0.018	−0.007**	−0.017	−0.073**	0.002	−0.029
	(0.030)	(0.003)	(0.023)	(0.032)	(0.031)	(0.020)
$Public$	0.025*	0.004	0.001	−0.032**	0.005	0.010
	(0.013)	(0.003)	(0.011)	(0.014)	(0.014)	(0.008)
$Utilization\ Ratio$	0.057***	0.013**	0.055***	0.074***	0.228***	0.020
	(0.020)	(0.006)	(0.017)	(0.024)	(0.023)	(0.014)
$Lead\ Share$	0.044	−0.010	0.018	−0.128**	−0.080*	0.003
	(0.043)	(0.011)	(0.035)	(0.054)	(0.047)	(0.032)
Controls	X	X	X	X	X	X
Lead Bank, Review Location FE	X	X	X	X	X	X
Year, Borrower Ind. FE	X	X	X	X	X	X
Num Voters FE	X	X	X	X	X	X
Loan Type FE	X	X	X	X	X	X
Collateral, Covenant Type FE	X	X	X	X	X	X
Adjusted R-Squared	0.098	0.099	0.589	0.255	0.381	0.058
Observations	7,640	2,593	4,937	2,530	4,937	4,937

Standard errors in parentheses

$^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$

Table 4: SNC Ratings and the First Examiner's Rating This table contains OLS coefficient estimates of the association between SNC ratings and the average rating of the first examiner, $Propensity_{i1t}$ where 1 indexes the first examiner for loan i in year t. $Propensity_{i1t}$ is the average of the first examiner's individual SNC votes up to and including year t but excluding loan i. The control variables include: original loan maturity in months, a leveraged loan indicator, borrower public status, Log(loan commitment) cubic spline, the loan utilization ratio, the share of the loan held by U.S. banks and non-bank financial institutions, the share of the lead bank in the loan, as well as the number of lenders on the syndicate. All controls are as of time t. Heteroskedasticity-consistent standard errors are clustered at the firm level and reported in parentheses. See Appendix A for variable definitions.

	(1)	(2)	(3)	(4)	(5)
	$SNC\ Rating_{it}$				
$Propensity_{i1t}$	0.699***	0.211***	0.204***	0.199***	0.195***
	(0.015)	(0.013)	(0.013)	(0.014)	(0.014)
$Lead\ Bank\ Rating_{it}$		0.734***	0.734***	0.745***	0.734***
		(0.010)	(0.010)	(0.010)	(0.010)
Number of Voters FE		X	X	X	X
Review Location and Year FE			X	X	X
Borrower Industry & Lead Bank FE				X	X
Loan, Collateral, and Covenant Type FE					X
Controls					X
Adjusted R-Squared	0.218	0.694	0.696	0.714	0.717
Observations	7,640	7,640	7,640	7,640	7,640

Standard errors in parentheses

*$p < 0.10$, **$p < 0.05$, ***$p < 0.01$

Table 5: SNC Ratings and Future Loan Performance: IV Regressions This table contains estimated coefficients of loan outcome IV regressions on SNC ratings, lead bank ratings, and a host of controls. We focus on six types of loan outcomes: $Loan\ Exit_{it+1}$, $Delinquency$, $NonPass$, Loan Amt$\Downarrow$, and Maturity$\Downarrow_{it+1}$. We instrument for the final SNC rating with the first examiner's rating propensity $Propensity_{ijt}$ where j indexes examiners, i loans, and t time. $Propensity_{ijt}$ is the average of the first examiner's individual SNC votes up to and including year t but excluding loan i. The control variables include: original loan maturity in months, a leveraged loan indicator, borrower public status, Log(loan commitment) cubic spline, the loan utilization ratio, the share of the loan held by U.S. banks and non-bank financial institutions, the share of the lead bank in the loan, as well as the number of lenders on the syndicate. All controls are as of time t. Heteroskedasticity-consistent standard errors are clustered at the firm level and reported in parentheses.

	(1)	(2)	(3)	(4)	(5)	(6)
	$Loan\ Exit_{it+1}$	$Delinquency_{it+1}$	$NonPass_{it+1}$	$Violation_{it+1}$	Amount$\Downarrow_{it+1}$	Maturity$\Downarrow_{it+1}$
$SNC\ Rating_{it}$	0.021	0.026	−0.843***	0.048	−0.254**	0.014
	(0.103)	(0.024)	(0.083)	(0.079)	(0.105)	(0.065)
$Lead\ Bank\ Rating_{it}$	−0.060	−0.041*	0.081	−0.138**	0.118	−0.031
	(0.080)	(0.022)	(0.068)	(0.061)	(0.084)	(0.052)
$Leveraged\ Loan$	−0.018	−0.006**	−0.020	−0.072**	0.001	−0.029
	(0.030)	(0.003)	(0.022)	(0.030)	(0.030)	(0.020)
$Public$	0.024*	0.005	−0.002	−0.030**	0.003	0.010
	(0.013)	(0.003)	(0.011)	(0.014)	(0.014)	(0.008)
$Utilization\ Ratio$	0.055***	0.015**	0.047***	0.078***	0.222***	0.020
	(0.020)	(0.006)	(0.017)	(0.023)	(0.023)	(0.014)
$Lead\ Share$	0.043	−0.009	0.010	−0.121**	−0.086*	0.003
	(0.043)	(0.010)	(0.034)	(0.053)	(0.047)	(0.032)
Controls	X	X	X	X	X	X
Lead Bank, Review Location FE	X	X	X	X	X	X
Year, Borrower Ind. FE	X	X	X	X	X	X
Num Voters FE	X	X	X	X	X	X
Loan Type FE	X	X	X	X	X	X
Collateral, Covenant Type FE	X	X	X	X	X	X
Observations	7,640	2,593	4,937	2,530	4,937	4,937

Standard errors in parentheses

*$p < 0.10$, **$p < 0.05$, ***$p < 0.01$

Table 6: Borrower Performance and SNC Ratings This table contains estimated coefficients of borrower-level outcome regressions on SNC ratings, lead bank ratings, and a host of controls. We include fixed effects for lead bank, review location, year, borrower industry, number of voters, loan types of a given borrower, collateral and covenant types present in a borrower's loans. The control variables include: the average original loan maturity, a leveraged loan indicator, borrower public status, total borrower loan commitments cubic spline, the average utilization ratio, the average share of the loan held by U.S. banks and non-bank financial institutions, the average share of the lead bank in the loan, as well as the number of lenders on the borrower's syndicates. All controls are as of time t. Heteroskedasticity-consistent standard errors are clustered at the firm level and reported in parentheses.

Panel A: *OLS Regressions*

	(1)	(2)	(3)	(4)	(5)	(6)
	$Loan\ Exit_{it+1}$	$Delinquency_{it+1}$	$NonPass_{it+1}$	$Violation_{it+1}$	Amount$\Downarrow_{it+1}$	Maturity$\Downarrow_{it+1}$
$SNC\ Rating_{it}$	0.017	−0.018**	−0.635***	−0.041*	−0.107***	0.014
	(0.025)	(0.009)	(0.028)	(0.022)	(0.032)	(0.028)
$Lead\ Bank\ Rating_{it}$	−0.073***	0.002	−0.085***	−0.063***	−0.015	−0.032
	(0.025)	(0.008)	(0.028)	(0.023)	(0.032)	(0.028)
Adjusted R-Squared	0.154	0.004	0.580	0.155	0.213	0.053
Observations	4,456	1,864	3,459	1,728	3,459	3,459

Panel B: *IV Regressions*

	(1)	(2)	(3)	(4)	(5)	(6)
	$Loan\ Exit_{it+1}$	$Delinquency_{it+1}$	$NonPass_{it+1}$	$Violation_{it+1}$	Amount$\Downarrow_{it+1}$	Maturity$\Downarrow_{it+1}$
$SNC\ Rating_{it}$	−0.033	0.096	−0.843***	−0.058	−0.437**	−0.006
	(0.158)	(0.059)	(0.151)	(0.141)	(0.199)	(0.174)
$Lead\ Bank\ Rating_{it}$	−0.038	−0.087*	0.078	−0.050	0.242	−0.016
	(0.121)	(0.048)	(0.119)	(0.107)	(0.157)	(0.136)
Observations	4,456	1,864	3,459	1,728	3,459	3,459

Table 7: SNC Ratings and Future Loan Performance: IV Regressions, Robustness. This table contains estimated coefficients of loan outcome IV regressions on SNC ratings, lead bank ratings, and a host of controls. We instrument for the final SNC rating with the first examiner's rating propensity $Propensity_{ijt}$ where j indexes examiners, i loans, and t time. $Propensity_{ijt}$ is the average of all of the first examiner's individual SNC votes during a given exam year but excluding loan i. The control variables include: original loan maturity in months, a leveraged loan indicator, borrower public status, Log(loan commitment) cubic spline, the loan utilization ratio, the share of the loan held by U.S. banks and non-bank financial institutions, the share of the lead bank in the loan, as well as the number of lenders on the syndicate. All controls are as of time t. Heteroskedasticity-consistent standard errors are clustered at the firm level and reported in parentheses.

	(1)	(2)	(3)	(4)	(5)	(6)
	$Loan\ Exit_{it+1}$	$Delinquency_{it+1}$	$NonPass_{it+1}$	$Violation_{it+1}$	Amount$\Downarrow_{it+1}$	Maturity$\Downarrow_{it+1}$
$SNC\ Rating_{it}$	−0.059	−0.047	−0.854***	0.067	−0.198**	0.048
	(0.073)	(0.030)	(0.064)	(0.060)	(0.079)	(0.051)
$Lead\ Bank\ Rating_{it}$	0.002	0.016	0.091*	−0.152***	0.074	−0.058
	(0.057)	(0.024)	(0.054)	(0.048)	(0.064)	(0.041)
$Leveraged\ Loan$	−0.019	−0.008***	−0.020	−0.072**	0.001	−0.029
	(0.030)	(0.003)	(0.022)	(0.030)	(0.030)	(0.020)
$Public$	0.023*	0.002	−0.002	−0.030**	0.004	0.010
	(0.013)	(0.003)	(0.011)	(0.014)	(0.014)	(0.008)
$Utilization\ Ratio$	0.051**	0.012**	0.046***	0.078***	0.224***	0.021
	(0.020)	(0.006)	(0.017)	(0.023)	(0.023)	(0.013)
$Lead\ Share$	0.041	−0.012	0.009	−0.119**	−0.084*	0.004
	(0.043)	(0.010)	(0.034)	(0.053)	(0.046)	(0.032)
Controls	X	X	X	X	X	X
Lead Bank, Review Location FE	X	X	X	X	X	X
Year, Borrower Ind. FE	X	X	X	X	X	X
Num Voters FE	X	X	X	X	X	X
Loan Type FE	X	X	X	X	X	X
Collateral, Covenant Type FE	X	X	X	X	X	X
Observations	7,640	2,593	4,937	2,530	4,937	4,937

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 8: SNC Ratings and Future Changes in Loan Amount and Maturity. This table contains estimated coefficients of IV regressions of loan amount and maturity on SNC ratings, lead bank ratings, and a host of controls. We instrument for the final SNC rating with the first examiner's rating propensity $Propensity_{ijt}$ where j indexes examiners, i loans, and t time. $Propensity_{i1t}$ is the average of all of the first examiner's individual SNC votes up to and including those in a given exam year but excluding loan i. The control variables include: original loan maturity in months, a leveraged loan indicator, borrower public status, Log(loan commitment) cubic spline, the loan utilization ratio, the share of the loan held by U.S. banks and non-bank financial institutions, the share of the lead bank in the loan, as well as the number of lenders on the syndicate. All controls are as of time t. Columns (1) and (2) present the results for loan commitment and (3) and (4) show those for maturity. Heteroskedasticity-consistent standard errors are clustered at the firm level and reported in parentheses.

	(1)	(2)	(3)	(4)
	Log(Loan Amount$_{it+1}$)		Log(Loan Maturity$_{it+1}$)	
	OLS	IV	OLS	IV
SNC Rating$_{it}$	0.070***	0.283***	−0.002	0.086
	(0.019)	(0.092)	(0.010)	(0.058)
Lead Bank Rating$_{it}$	0.011	−0.159**	0.013	−0.056
	(0.018)	(0.072)	(0.011)	(0.047)
Controls	X	X	X	X
Lead Bank ID, Location FE	X	X	X	X
Year, Borrower Ind. FE	X	X	X	X
Num Voters FE	X	X	X	X
Loan Type FE	X	X	X	X
Collateral, Covenant Type FE	X	X	X	X
Observations	4,937	4,937	4,937	4,937

Standard errors in parentheses

*$p < 0.10$, **$p < 0.05$, ***$p < 0.01$

Table 9: IV Regressions: Loan Performance under an Alternative Rating Definition This table contains estimated coefficients of loan outcome IV regressions on SNC ratings, lead bank ratings, and a host of controls. In this test, *SNC Rating* and *Lead Bank Rating* are defined to be equal to 1 if a loan is 100% non-classified and zero otherwise (the non-classified categories are pass and special mention). We focus on six types of loan outcomes: $Loan\ Exit_{it+1}$, $Delinquency$, $Classified$, Loan Amt$\Downarrow$, and Maturity$\Downarrow_{it+1}$. We instrument for the final SNC rating with the first examiner's rating propensity $Propensity_{ijt}$ where j indexes examiners, i loans, and t time. $Propensity_{ijt}$ is the average of the first examiner's individual SNC votes up to and including year t but excluding loan i. The control variables include: original loan maturity in months, a leveraged loan indicator, borrower public status, Log(loan commitment) cubic spline, the loan utilization ratio, the share of the loan held by U.S. banks and non-bank financial institutions, the share of the lead bank in the loan, as well as the number of lenders on the syndicate. All controls are as of time t. Heteroskedasticity-consistent standard errors are clustered at the firm level and reported in parentheses.

	(1)	(2)	(3)	(4)	(5)	(6)
	$Loan\ Exit_{it+1}$	$Delinquency_{it+1}$	$Classified_{it+1}$	$Violation_{it+1}$	Amount$\Downarrow_{it+1}$	Maturity$\Downarrow_{it+1}$
$SNC\ Rating_{it}$	0.113	0.028	−1.729***	0.000	−0.704***	−0.004
	(0.233)	(0.030)	(0.222)	(0.189)	(0.248)	(0.145)
$Lead\ Bank\ Rating_{it}$	−0.197	−0.071**	0.803***	−0.162	0.513**	−0.022
	(0.199)	(0.032)	(0.194)	(0.161)	(0.215)	(0.125)
Leveraged Loan	−0.010	−0.003	−0.025	−0.058*	−0.026	−0.029
	(0.030)	(0.003)	(0.024)	(0.031)	(0.033)	(0.021)
Public	0.024*	0.005*	0.014	−0.031**	0.006	0.009
	(0.013)	(0.003)	(0.012)	(0.014)	(0.014)	(0.008)
Utilization Ratio	0.051**	0.012**	0.004	0.068***	0.201***	0.019
	(0.022)	(0.006)	(0.019)	(0.023)	(0.026)	(0.015)
Lead Share	0.044	−0.008	0.025	−0.102**	−0.082*	0.004
	(0.043)	(0.010)	(0.046)	(0.052)	(0.049)	(0.032)
Controls	X	X	X	X	X	X
Lead Bank, Review Location FE	X	X	X	X	X	X
Year, Borrower Ind. FE	X	X	X	X	X	X
Num Voters FE	X	X	X	X	X	X
Loan Type FE	X	X	X	X	X	X
Collateral, Covenant Type FE	X	X	X	X	X	X
Observations	7,640	2,593	4,937	2,530	4,937	4,937

Standard errors in parentheses

*$p < 0.10$, **$p < 0.05$, ***$p < 0.01$