Real effects of Joint Audits of Banks *

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Abstract

This study examines the impact of joint audits on bank lending and financial reporting quality. While joint audits are mandated in some jurisdictions to enhance audit quality and reduce conflicts of interest, existing literature provides mixed evidence on their effectiveness. Leveraging a regulatory mandate that required large banks to adopt joint audits, we employ a difference-in-differences design to identify causal effects of joint audits. Our within firm-time tests show that joint audits significantly reduce lending to financially distressed firms, suggesting improved monitoring and reduced incentives for risky lending. We also find that joint audits enhance loan loss recognition, leading to more timely default reporting. This study can contribute to the debate on joint audits by providing novel evidence from the banking sector, offering insights for policymakers on the role of auditor independence in financial stability.

Key Words: Joint audit, Banking, Loan evergreening, Loan Default

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1 Introduction

Most countries require the use of a single auditor to audit entities within their jurisdiction. However, few countries mandate the use of joint auditors (more than one audit firm) to audit listed or large companies. France is one of the nations that mandate listed companies to employ joint auditors. Also, the European Commission encourages joint auditors, although the practice is not mandatory (Euroepan-Commission (2011); Euroepan-Commission (2014)). The rationale behind promoting joint audits is the potential improvement in audit quality through increased accuracy of audit evidence and reduction in conflict of interest arising from collusion between managers and auditors.

Joint audits are believed to enhance the independence of auditors and increase the likelihood of detecting financial reporting irregularities (Khalil and Lawarree (1995), Lobo et al. (2017), Ittonen and Trønnes (2015)). By involving multiple audit firms, joint audits provide a system of checks and balances, reducing the risk of collusion between auditors and management. This can lead to higher-quality audits and increased reliability of financial statements.

The use of joint auditors is particularly advocated for large listed companies, financial institutions, and entities of systemic importance. For instance, the European Commission 2010 Green Paper, that discusses the role of auditors in exacerbating financial stability during the global financial crisis of 2008, advocates joint auditing as a potential solution (Euroepan-Commission (2010)). On similar lines, South Africa mandates joint auditing for large banks and insurance companies. More recently, India has enacted a regulation that requires large banks to employ joint auditing to improve financial reporting quality of banks.

Although joint audits have been promoted, the existing literature provides mixed evidence regarding the benefits of joint auditors. Theoretical studies, such as Khalil and Lawarree (1995), suggest that hiring a second auditor can deter collusion between the manager and the incumbent auditor, potentially leading to improved audit quality. Empirical studies also find support for joint audit engagements, highlighting benefits such as the "four eyes principle"

and increased likelihood of detecting defects in financial reporting (Euroepan-Commission (2011), Ittonen and Trønnes (2015)). Furthermore, Lobo et al. (2017) argues that joint engagement may reduce economic bonding between clients and auditors, preserving auditor independence.

However, a significant body of research fails to find evidence of improved audit quality in joint audits (see Deng et al. (2014), Lesage et al. (2017), André et al. (2016), Ratzinger-Sakel et al. (2013)). These studies often associate joint audits with allocation and coordination issues that may negatively impact audit quality. For example, Deng et al. (2014) show, in a theoretical framework, that joint audits can lead to lower audit quality due to the problem of "free riding." Practical examples, such as the abolition of joint audits for Public Interest Entities (PIEs) in Denmark, also highlight potential drawbacks. Overall, the literature lacks a clear consensus on the impact of joint audits on audit quality and financial reporting quality.

The objective of this paper is to study the effects of joint audits and associated changes in audit quality on banks' financial reporting quality and lending activities. Specifically, we examine the real effects of joint audit of banks of their lending activities - loan evergreening and recognition of loan losses.

In this paper, we ask whether joint auditing led improvement in monitoring can have a disciplining effect on bank lending practices. In an ideal scenario, auditors play the role of external monitors of banks and are expected to highlight poor quality lending activities in their audit reports. For example, if the audit quality is low, a bank may be able to extend a new loan to a risky borrower without adequate provisions for the poor quality loan asset (Acharya and Ryan (2016), Acharya et al. (2009)). However, if the audit quality is high, the auditor may flag sub-optimal lending activities in their audit reports, and therefore impose a cost on poor quality lending. Therefore, any improvement in audit quality due to joint auditing, and consequent improvement in monitoring of bank lending activities, can lead to lower likelihood of lending to risky borrowers. On similar lines, wealso explore whether joint audit engagements improve loan loss recognition by banks. This is examined by analyzing

the prompt recognition of loan defaults by borrowers.

Although there are mixed evidences on effect of joint audits on audit quality, there are several research design limitations in the existing studies. Firstly, joint audits are not very common. Across most of the jurisdictions, joint audit engagement is voluntary, and not mandatory. So the effect of joint audits measured in some studies may be biased because firms can endogenously choose to employ joint auditors. There are also specific studies on France, which had mandated use of joint audit for publicly listed firms. However, since the regulation was implemented uniformly for all publicly listed firms in France, it is difficult to identify treatment firms. Thus, most existing studies are at best association studies. Further cross-country studies involving comparison of French firms with other European firms can also suffer from endogeneity arising out of firms location. Thus, it is difficult to estimate the causal effect of joint audit engagement on audit quality. Moreover, most studies focus on the overall audit outcomes of the audited entities but do not examine how joint audits influence firms' real operating activities, such as day-to-day lending behavior and risk management.

Fortunately, joint audit implementation in banks in India provide an ideal setting to study the research questions. The Reserve Bank of India (RBI, henceforth), which is the central bank of India, mandated the appointment of joint auditors for all commercial banks which are larger than INR 150 billion in size from 2022. The objective was to improve auditor independence and to improve financial reporting quality of banks in India.[1] Thus, the RBI regulation serves as an exogenous shock for large commercial banks that adopted joint audits starting financial year 2022.[2] We exploit the above shock using a differences-in-differences (DID) design to estimate the effect of joint audits. Moreover, the availability of granular bank-firm lending data and borrower-level loan delinquency records enables us to examine the real effects of joint audit adoption on banks' lending behavior and risk management.

Our headline result is that joint audits significantly reduce the likelihood of a bank lending

[1]Note that joint audits had already been mandatory for government-owned banks (GOBs) in India since the early 2000s. However, the new regulation extended this requirement to privately-owned banks exceeding the INR 150 billion threshold.

[2]Indian financial year ends on 31st of march of the current year. So FY 2022 denotes the period April 01, 2021 to March 31, 2022

to financially distressed firms. We validate this finding through several robustness tests.

First, a potential concern is that the observed impact on lending may stem from borrowers' characteristics rather than joint audits. To address this, we employ firm $\times$ time fixed effects, which control for all observable and unobservable time-varying firm-level factors affecting borrowing. This within-firm test confirms that a insolvent firm's borrowing declines specifically from the treated bank relative to the control bank during the same period.

Second, the reduction in lending could be driven by bank-specific time-varying factors coinciding with the introduction of joint audits. To rule this out, we use an alternative specification with bank $\times$ time fixed effects, which absorb all time-varying bank characteristics. Our inferences remain unchanged under this approach as well.

Third, we confirm that the decline in lending occurs at both the intensive and extensive margins. Finally, we also employ entropy balancing to match treated and control banks, ensuring comparability. Even after this adjustment, our results remain both economically and statistically significant, indicating that joint audits lead to a reduction in low-quality lending.

Next, we examine whether joint audits also enhance loan loss recognition. Since improved audit quality can reduce loan evergreening, it should lead to greater recognition of defaults for borrowers whose loans are not being rolled over (or evergreened). Our DID tests show that the implementation of joint audits increases the recognition of defaults by distressed firms.

This study contributes to the literature in several ways. First, it directly engages with the ongoing debate on the merits and drawbacks of joint audits (see Ittonen and Trønnes (2015), Euroepan-Commission (2011), Zerni et al. (2012), Lobo et al. (2017), Khalil and Lawarree (1995), Ratzinger-Sakel et al. (2013), Deng et al. (2014), and André et al. (2016)). The literature presents mixed findings. For instance, several studies argue that presence of second auditor during auditing can enhance audit quality. In a notable theoretical study, Khalil and Lawarree (1995) show that the principal (shareholders) can hire a costly sec-

ond auditor to prevent collusion between principal and auditor and thus improve auditor independence. Similarly, Zerni et al. (2012) and Lobo et al. (2017) support similar conclusions. Additionally, Ittonen and Trønnes (2015) and Euroepan-Commission (2010) note that joint audit engagement can provide benefits of the "four eye principle", thus ensuring better quality monitoring of the audited entities.

On the contrary, André et al. (2016), Deng et al. (2014), and Ratzinger-Sakel et al. (2013) highlight potential drawbacks, such as, coordination costs, free-rider problems, and inefficiencies in audit allocation, which may weaken auditors' ability to monitor banks effectively. Our study contributes to this debate by providing direct empirical evidence on how joint audits influence the real activities of audited banks. We show that joint audits lead to improvement in quality of lending and loan loss reporting.

Second, we directly examine the impact of joint audits on banks. Several regulators, including the European Commission (Euroepan-Commission (2010)) and banking authorities in countries such as India and South Africa, have advocated for joint audits in *banks* due to their systemic importance. Despite this, existing research has largely overlooked the effects of joint audits on banks.

Auditing plays a crucial role in banking, as low-quality audits not only affect individual institutions but also pose systemic risks (Acharya and Ryan (2016), Bushman and Williams (2015)). Auditors are responsible for validating non-performing loans (NPLs) and loan loss provisions, which, if misreported, can lead to financial instability (Beatty and Liao (2014)). Our findings show that joint audits enhance the quality of bank lending by reducing risky loans and promoting timely recognition of loan losses. Thus, our findings can provide valuable insights for policy makers and regulators.

Third, unlike prior studies that focus on entity-level audit quality, we examine the real effect of joint audits on banks' core operational activities—specifically, lending behavior. Our study explores whether joint audits lead to enhanced monitoring, more efficient credit allocation, and prompt loss recognition. To the best of our knowledge, this is the first study to assess the impact of joint audit engagements on the real activities of banks.

2 Institutional details

In this section, we iscuss the institutional details of the setting. First, we provide a brief overview of the banking industry and auditing industry in India, followed by the joint audit regulation that was enforced in India.

2.1 Banking environment in India

India has a highly developed banking market that constitutes roughly 40 commercial banks. All the banks operating in India are regulated by the Reserve Bank of India (RBI, henceforth). The commercial banks that are responsible for most of lending activities in India constitute the government owned banks, privately owned banks, foreign owned banks, rural banks, and small finance banks. Apart from commercial banks, India also has presence of co-operative banks and non-banking financial companies, that constitute the shadow banking sector in India.

India is currently the fifth largest economy in the world with a nominal GDP of roughly USD 3.5 trillion in March, 2023. In terms of market capitalization of listed domestic companies, India ranks in the top ten economies with a roughly USD 2.6 trillion market capitalization in 2020. The growth of companies in India is largely aided by the bank lending markets in India. Thus, it is important to study the banking debt market in India and the role of audit in the banking industry.

2.2 Auditing environment in India

Indian auditing market is highly competitive and is characterized by the presence of large number of audit firms. Unlike other major economies, the Big4 has a very small share in India. For example, the Prowess data indicates that Big4 audit firms audit roughly 20% of the firms in India. This is in sharp contrast to other jurisdictions, such as the US (Europe), where Big4 account for roughly 44% (61%) of audit engagements Narayanaswamy

and Raghunandan (2019). In the banking sector, roughly 15% of the banks have Big4 auditors during the sample period, which suggests the widespread presence of non-Big4 auditors in India. Further, like in Japan, the Big4 firms do not operate directly in India but via a network of associated firms registered in India. For example, Deloitte operates in India via A F Ferguson and Co, Deloitte Haskins and Sells LLP, and S B Billimoria and Co in India.

The quality of auditing in India has also often been found lacking (Narayanaswamy et al. (2015)). The audit reports of most clients in India are clean and not as informative as audit reports of public companies in the US (Narayanaswamy and Raghunandan (2019)). Although auditors must provide opinions about internal control weaknesses, the audit reports are not highly informative and merely serve as boilerplates. The lower quality of audits is mainly due to lower litigation risk for auditors in the past (Narayanaswamy and Raghunandan (2019)). Until recently, audit firms in India have primarily been regulated by the Institute of Chartered Accountants of India (ICAI), a self-regulatory body.

However, following large accounting scandals and audit lapses in recent years, the government and regulators introduced several reforms in the auditing Industry. First, the government established the National Financial Reporting Authority (NFRA) in 2018 to independently regulate accounting and audit firms. The NFRA is a regulatory body that is established along the lines of the PCAOB in the US. Unlike the ICAI, the NFRA has more teeth to sanction and penalize erring auditors.

Second, there were major audit lapses indentified during that bankruptcy and failure of two large NBFCs and one privately owned bank in India. Consequently, the regulators introduced joint audit regulation for banks in India.[3] Joint audit was mainly introduced to disrupt any conflict of interests between incumbent auditor and manager of the audited company, and to boost confidence in audit assurance.

[3]Audit deficiencies were observed in the failure of IL&FS, DHFL, and Yes Bank. See https://economictimes.indiatimes.com/industry/banking/finance/rbis-new-audit-norms-to-ensure-no-repeat-of-ilfs-dhfl-yes-bank/articleshow/82992690.cms

2.3 Joint auditing regulation in India

The idea of joint audits in India was initially floated in the Ministry of Corporate Affairs (MCA) consultation paper that invited comments and responses from industry bodies. The MCA argued that joint audits would be beneficial (i) for improving audit quality due to benefits of "four eyes principle" and positive synergies; and (ii) encouraging more competition between audit firms. The government formed a three member committee headed by Ashok Chawla, a former finance secretary and chairman of the Competition Commission of India (CCI), Hari S. Bhartia, an industrialist, and N.S. Vishwanathan, the deputy governor of RBI, to debate and discuss the potential effects of implementation of joint audit quality.[4] The committee recommended against the implementation of joint audit policy, which was also reverberated by other bodies representing Indian industries. For instance, the confederation of Indian Industry (CII), noted that joint audit requirements together with auditor rotation policy may not provide sufficient time for auditors to gain client specific knowledge and, therefore, could result in lower quality of audit.[5] Further, FICCI (Federation of Indian Chambers of Commerce and Industry), a body of industry representative in India, also echoed similar sentiments.

However, the Institute of Chartered Accountants of India (ICAI), the statutory body of accountants and auditors in India, has supported the proposal of joint audits in India due to the purported benefits of increase in competition among auditors and improvement in quality of audit. Based on the comments from various stakeholders, the company law committee prescribed use of joint auditing for large entities and Banks in India.

On April 27, 2021, the RBI issued a circular to amend the guidelines for appointment of auditors of commercial banks. The circular mandates financial institutions with asset size of more than INR 15,000 crores to undertake joint audits with a minimum of two audit firms. Further, to enhance independence of joint audits the guideline requires that the joint

[4] https://www.livemint.com/Politics/li9VDm58EYqEcW9kdN5mON/Govt-expert-committee-rejects-plea-for-mandatory-joint-audit.html

[5] https://cfo.economictimes.indiatimes.com/news/cii-to-rbi-new-auditor-norms-will-cause-mid-term-resignation-of-auditors-defer-implementation-by-2-years/82881176

auditors should not have any common partners and should not belong to the same network of large auditors. Note that the threshold of INR 15,000 meets the inclusion criteria for all commercial banks that operate in India. Further, the government owned banks that have majority government holdings (GOB, henceforth) have been subjected to joint audits since 2000. Thus, the new audit regulation impacts the privately held banks operating in India.

3 Joint Audit and Bank Lending Behavior

In this section, we investigate the impact of joint audit engagement in banks on the real activities of the banks. Specifically, we focus on zombie lending activities and tendency of banks to recognize loan losses promptly after they introduce joint audits. *Zombie lending* or *Loan evergreening* refers to the practice of extending new loans to insolvent borrowers, usually at favorable terms (see Peek and Rosengren (2005) and Kashyap et al. (2022)). The primary purpose of loan evergreening is to delay loan loss reporting on existing loans. It has been shown that loan evergreening practices are difficult to detect and can contribute to global banking crises (Caballero et al. (2008), Hoshi and Kashyap (2015), Acharya et al. (2021)).

Here auditors play the key role of gatekeepers in ensuring that banks report the true value of their assets and loan performance as per the accounting standards. Particularly, auditors are entrusted to provide assurance on the loan loss provisions and non performing assets of the banks. By enhancing audit quality, auditors have a higher likelihood of identifying loan evergreening transactions, which can help curb sub-optimal lending practices by banks. Consequently, exploring the relationship between joint audits and the ability of auditors to detect and address loan evergreening activities is of paramount importance.

3.1 Hypothesis development

Our first research question is , 'Do joint auditors lower the probability of lending to risky borrowers?' On one hand, joint auditing may lead to higher monitoring and scrutiny of lending activities of banks due to "benefits of four-eyes", positive synergies, and advantages of joint decision making. Therefore, under joint auditing the auditors have a higher likelihood of unearthing and reporting risky lending by banks (loan evergreening). Consequently, the banks are less likely to engage in risk shifting behaviors such as loan evergreening. Additionally, joint auditing may also curb conflict of interests arising out of collusion between auditor and bank manager in the single auditor setting. Thus, joint auditors may have higher incentives to flag evergreening activities. As a result, the joint audit setting may discourage bank managers to eagage in real earnings amangement through loan evergreening.

On the other hand, joint audits may lead to reduction in the intensity and efficacy of monitoring by auditors due to higher coordination costs, and free rider problems. Further inefficient allocation of auditing tasks and lack of full view for each auditor under joint audits can lead to grey areas which are inadequately monitored. As a result, banks with incentives to evergreen loans can have a higher likelihood of engaging in loan evergreening when they are audited by joint auditors.

We illustrate the above with an example. Consider a scenario where a single auditor is responsible for the entire audit of the bank. In this case, a prudent auditor is concerned about lending activities of the bank across all domains and locations. However, under the alternate scenario of joint audit regime, the bank may have several auditors overlooking independent parts of the audit. As a result, some audit firms may shirk due to free riding issues. Lack of full visibility may also hinder the audit capabilities of the auditors. Moreover, new and inexperienced audit firms may lack the capability to supervise lending activities and report efficiently. Thus, lower audit quality due to joint audits may increase the likelihood of the bank lending to substandard borrowers. Note that high quality auditing may not directly influence lending of banks. However. auditing can influence sub-optimal lending activities

indirectly. For example, concerns raised by auditors in good quality audit reports can invite scrutiny of depositors, shareholders, and banking regulators, which in turn can discipline the managers to reduce sub-optimal lending activities. Thus, the first hypothesis is as follows.

H1: Joint audit engagement leads to lower tendency of lending to distressed borrowers.

Our second research question is, 'Do joint auditors improve the loan loss recognition by banks'? In other words, we examine whether the presence of multiple auditors makes it difficult for the bank to window dress or under-report risky loans, leading to higher recognition of loan defaults against risky loans. The above question is an extension to the first research question, because higher loan evergreening can lead to delay in recognition of loan defaults.

We measure loan loss reporting at the granular loan level rather than at the aggregate bank balance sheet level. The extant literature in auditing measures loan loss reporting using aggregated measures of loan write-offs at the balance sheet level. However, I contribute to the audit literature in banking by assessing loan loss recorded at the individual bank-firm level relationship. This unique research design, which is explained in more details in Section 5.3, also allows me to absorb firm X time level heterogeneity that absorbs all observable and unobservable borrower level characteristics.

On one hand, a higher audit quality should reflect a higher probability of recognizing defaults on stressed loans. On the other hand, if joint auditing engagement worsen audit rigor due to coordination failures and piecemeal arrangements, than banks may be able to delay recognition of loan delinquency. Thus the second hypothesis is

H2: Joint audit engagement leads to higher tendency to recognize loan default on stressed loans.

3.2 Data

Our study utilizes data from three different sources. First, we collect the auditor information and the quarterly and annual financial statements of the banks from the Prowess database maintained by the Centre for Monitoring Indian Economy (CMIE). The database has been

used in several important studies (Gormley et al. (2012), Rajgopal and Tantri (2023), Bau and Matray (2023), Kashyap et al. (2022)).

Second, we utilize a unique loan-level data set available on the website of the Ministry of Corporate Affairs (MCA) of India to download the loans given to firms or companies by the banks. The MCA data contains the identity of the bank, the borrower, the outstanding loan amount, the new loan (if any), and the loan settlement date. We use this MCA data to create a loan panel data at a firm-bank-time level by aggregating all the borrowings and repayments for each firm-bank pair starting from the year 1991 (Kashyap et al. (2022)). For illustration purposes, consider a firm A and Bank B that enter into a lending relationship. Assume that firm A takes a loan of INR 200 million from Bank B in Q1-2014, repays INR 50 million in Q3-2014, takes a new loan of INR 100 million in Q1 2015, and repays the entire borrowings in Q4-2015. For the above scenario, a time series observation for the firm-bank pair (A-B) will be created from Q1-2014 to Q4-2015. The outstanding loan amounts pertaining to the eight quarters from Q1-2014 to Q4-2015 are 200, 200, 150, 150, 250, 250, 250, and 0 in that order (refer Table XXX in the Appendix for the sample data layout). Note that this firm-bank pair is removed from the dataset from Q1-2015 when the borrowing relationship ends. We create indicator variables to designate whether a new loan has been taken by a borrower from a bank in a year-quarter.

Finally, we extract loan performance data of borrowers from Transunion CIBIL (CIBIL), the largest credit bureau in India. The RBI mandates lenders to report any default of more than INR 10 million (close to USD 120,000) by a borrower to CIBIL with a quarterly frequency. The loan delinquency data from CIBIL accounts for a substantial 65% of the total non-performing loans disclosed by banks in their audited financial reports (Kashyap et al. (2021)). We match the firm-bank pairs from the CIBIL data with the firm-bank pairs from MCA pairs using fuzzy matching techniques and manual verification, to enrich the MCA panel data with loan default information. We provide the sample construction steps and summary statistics in Tables 1, 2, 3 and 4.

3.3 Empirical Strategy

Extant studies in the literature focuses on the overall impact of joint audit on the organizational level audit quality, but shed little light on the direct impact on operating activiteis and risk management. Moreover, since joint audits are voluntary in most settings, it is difficult to gauge the effect of such audits on outcome variables due to self-selection biases.

We address these concerns by leveraging a unique regulatory setting in India and using detailed data on bank lending and borrower-level loan delinquencies. In 2021, the Reserve Bank of India mandated that all large commercial banks with assets exceeding INR 150 billion must appoint two or more auditors. Additionally, government-owned banks (GOBs) were already subject to mandatory joint audits prior to this regulation. So,

We employ a difference-in-differences (DID) approach to estimate the effect of joint auditors on loan-level outcomes. The banks that have size lower than INR 150 billion constitute the control set of banks, whereas the others form the treatment set. Since the regulation was implemented in 2021, We consider the eight quarters after (before) 2021 as the post-period (pre-period).

We propose a DID regression of the form, as shown below.

$$Y_{i,j,t} = \alpha + \beta_1 Treated_j + \beta_2 Post_t + \beta_3 Treated_j * Post_t + \beta_4 X + \delta_{i,t} + \gamma_j + \epsilon_{i,j,t} \qquad (1)$$

Here, the subscripts i, j, and t denote the firm, bank, and the year, respectively. The dependent variable $Y_{i,j,t}$ represents loan level outcomes such as a 'zombie loan' or 'loan default.' We define a *zombie loan* as a loan which is given to an existing borrower that is under financial distress. Specifically, it is an indicator variable that is set to one when the bank gives a new loan to an existing borrower in the year when the borrower has a low interest cover ratio in the previous year, zero otherwise. For robustness, We use alternate measures of financial distress such as high leverage, low profitability, etc.

The second dependent variable *loan default* is an indicator variable that is set to one

if the firm defaults on loan repayments to the bank in the year, zero otherwise. *Treated* refers to banks which employed joint auditors after the regulation was implemented, and *post* represents the year-quarters after the regulation was effective. We consider the four quarter of 2022 (2021) as post-treatment (pre-treatment) period.

Since borrowing and repayment activities can be driven by health and performance of the firm, we control for all observable and un-observable firm level characteristics using firm $\times$ time level fixed effects. Further, we also control for heterogeneity across banks using bank level fixed effects. Finally, lending activities may also depend on the strength of relationship between the bank and the borrower. Therefore, we use a host of firm-bank level control variables which proxy for strength of the banking relationship. Specifically, we include three control variables: length of banking relationship between the firm-bank pair, proportion of loans taken by a firm from the bank, and the number of loans lent by the bank to the firm in the last 5 years. Finally, we cluster the standard errors at the bank level to control for heteroskedasticity.

Our main coefficient of interest is β_3, which represents the effect of joint auditor on loan outcomes in a DID sense. With respect to $loandefault$ as the dependent variable, a positive coefficient of β_3 would suggest that joint auditing leads to higher tendency of recognizing loan defaults by banks, implying a higher monitoring effect of joint auditing. Alternately, when the dependent variable is $zombielending$, a negative coefficient of β_3 indicates that joint auditing reduces the tendency of banks to lend to unworthy borrowers, and vice-versa.

Additionally, we also include other control variables that could influence joint audit engagements and can impact the outcome variables. For example, audit committee is involved in selection of auditors and therefore strength of audit committee can effect eventual quality of joint audit. We address this factor by adding the size of audit committee in the specification equation. Finally, joint audit quality may differ with the composition of big4 versus non-big4 auditors. I, therefore, include a control variable to identify whether the joint audit has a big4 auditor.

4 Main results

4.1 Joint audits and bank lending

In this section, we examine whether joint audits have an effect on the quality of lending activity of banks. As discussed in section 3.1, it is not clear whether joint audits can lead to improved quality of lending and reduce evergreening o loans. We examine the above hypothesis using several empirical specification. In the first specification, stated below, we test whether the use of joint audits lower the likelihood of giving new loans to borrowers in distress.

$$Loan\_evergreen_{i,j,t} = \alpha + \beta_1 Treated_j + \beta_2 Post_t + \beta_3 Treated_j * Post_t + \beta_4 X + \delta_{i,t} + \gamma_j + \epsilon_{i,j,t} \quad (2)$$

The above equation reproduces equation 1. Here the dependent variable is $Loan\_evergreen_{i,j,t}$, which is set to one if the bank j provides a new loan to the existing borrower i in year-quarter t, when the borrower is under financial distress. We denote a firm as under financial distress, when the ICR of the firm is below the median of the ICR across firms in its industry. [6] For robustness, we use different measures of financial distress.

Note that borrowing activities of firms are endogenous to their financial health and future prospects. To address the above issue, we use firm X time fixed effects to absorb any observable or un-observable time-varying firm level factors that can determine the likelihood of the firm getting a long (Khwaja and Mian (2005)). Thus, the effect we capture in the above specification is *not* due to firm characteristics.

Additionally, banks may vary from each other on several characteristics, and therefore, can lead to different lending behavior. Particularly, the treated banks in our sample constitute the privately owned banks, that are larger in size than the control set of banks. We capture the above variation by using bank level fixed effect in the sample.[7]

[6] An ICR of less than one signifies inability of the borrower to repay the owed interest on loans in that year-quarter.

[7] Note that we cannot use Bank X Time level fixed effects to capture time varying variations in bank

Next, we include two sets of carefully selected control variables in columns 2 and 4. First, we include a set of three firm-bank level control variables that can determine the strength of existing relationship between the firm and the banks, and therefore can influence the tendency of loan evergreening activities. Specifically, we include (i) the proportion of loans taken by the firm from the bank; (ii) proportion of loans given by the bank to the firm; and (iii) the logarithm of the tenure of relationship between the firm and the bank as the control variables. The intuition is that these bank-firm level variables capture the strength of banking relationships and can potentially influence the tendency of banks to lend to firms, even when the firms are financially weak.

Second, we include a set of bank - time level variables. Note that although bank fixed effects account for heterogeneity across banks, they does not account for time-varying differences between banks. Therefore we include a set of four bank characteristics: (i) non-performing loans ratio of the bank; (ii) ROA of the bank; (iii) size of the bank; and (iv) logarithm of total deposits received by the bank. These bank-time level control variables are added to the specification because they can potentially impact the likelihood of a bank extending a new loan to a weak borrower.

We present the results in Table 5. The dependent variable is *Loan_evergreen*. In columns 1 and 2, we identify firms facing liquidity as the firms that have an ICR below the median level of ICR in their respective industries. In columns 3 and 4, we denote firms that have below median level of ICR during the pre-period as the distressed firms. The variable of interest is the DID interaction term, which denotes the effect of use of joint auditors on loan evergreening. We include the control variables in the even numbered columns. We also employ firm X time and bank level fixed effects across all columns. The standard errors are clustered at a bank-time level.

In column 1 of the Table 5, We find that the coefficient of the DID term is negative and significant. That is, the probability of a bank extending a zombie loan - loan to a

characteristics in this specification, because our main independent variable (DID interaction) is a bank-time level. Nevertheless, we use alternate specification to control for bank-time level factors in the next section.

low-quality borrower- declines significantly when the bank employs joint audit, than when it employs a single auditor. The coefficient of the interaction is -1.7%. Since the unconditional probability of loan evergreening is 1.6%, the coefficient represents an economically meaningful 100% decline in instances of loan evergreening by banks. Next, we focus on the estimates in the column two that employ a full fledged specification. Consistent with the previous result, we find that the likelihood of evergreening a loan decreases in a DID sense, when the bank undergoes joint audit by more than one auditors.

Finally, in columns 3 and 4, where we use an alternate definition to identify bad firms, and we observe similar results. Overall, the results suggest that the banks that are audited though joint audits are significantly less likely to extend loans to zombie firms, compared to banks that are audited by single auditors.[8]

4.2 Accounting for bank characteristics

One drawback of the previous specification is that we cannot control for all the time varying heterogeneity across banks that can influence their decision to evergreen an existing loan. For instance, xxx and Kashyap et al. (2022), show that banks that have low capital adequacy and low profits have higher incentive to evergreen their loans, rather than recognising defaults on existing loans.

We cannot use bank X time fixed effects - that can account for all the observable and unobservable time varying bank factors - in the previous specification, because the DID interaction term varies at a bank-time level. To overcome this issue, we design an alternate

[8]Since GOBs employed joint audits even before the regulation, we also run an alternative OLS regression of loan evergreening on a joint audit indicator over a longer horizon (2016–2023). In untabulated results, we find that evergreening declines for banks with joint audits even in this extended-period specification.

specification as shown below.

$$\begin{aligned} Loan\_indicator_{i,j,t} =& \beta_0 + \beta_1 Treated_j + \beta_2 Post_t + \beta_3 LowICR_i \\ &+ \beta_4 Post_t * Treated_j * LowICR_i \\ &+ \beta_5 Post_t * Treated_j + \beta_6 Post_t * LowICR_j + \beta_7 Treated_j * LowICR_j \\ &+ \beta_8 X + \delta_{i,t} + \gamma_{j,t} + \epsilon_{i,j,t} \end{aligned} \tag{3}$$

Here, the dependent variable is *Loan_indicator* - dummy variable set to one if the bank j gives a loan to firm i in the year-quarter t. The variables *post* and *treated* carry the same meaning as explained earlier in section XXX. The variable low_ICR denotes firms that have inadequate loan repayment capabilities. Particularly, low_ICR is set to one if the firm's ICR is lower than the median level of ICR in that industry, zero otherwise. The variable of interest is the triple interaction term $Post_t * Treated_j * LowICR_i$. The coefficient of the above interaction term estimates the impact of joint audit of a bank on the likelihood of lending to a low-quality borrower. On the contrary, the original double interaction term $Post_t * Treated_j$ now estimates the effect of joint audit of banks on lending to good-quality borrowers.

Like before, we include firm X time fixed effects to mitigate the effect of any time varying firm level factors that can impact lending. Additionally, now we also use bank X time fixed effects.[9] The bank X time level fixed effects address the endogenous impact of bank characteristics impacting their lending to bad quality borrowers. Finally, we also include the firm-bank level control variables that that control for any special relationship between the firm-bank pair.

We present the results in Table 6. In columns 1 and 2, we include bank level fixed effects, whereas in column 3 we use bank X time level fixed effects. We use firm level fixed effects across all specification. In column 1, we find that the triple interaction term is negative and weakly significant (p-value of 11%). In column 2, that uses the set of control variables,

[9]Note that in the revised specification, the main variable is a triple interaction term that varies at a bank-firm-time level, and therefore does not get absorbed when we use bank-time level fixed effects.

exhibits a negative by significant coefficient for the triple interaction term. The above result suggests, that low quality borrowers of banks are less likely to receive a new loan when the bank is audited jointly by more than one auditors. Finally, in column 3, we present the full fledged specification that also includes bank X time fixed effects. Notice that the bank-time level control variables are absorbed in the column 3 because of the use of bank X time fixed effects. Consistent with prior results, the coefficient remains negative and statistically significant. The magnitude of the coefficient is -5%. Because the unconditional probability of getting a new loan is 7.5%, the coefficient in column 3 represents a economically meaningful two-third decline in the likelihood of getting a new loan when the borrower is of low-quality and the bank is audited jointly by more than one auditors. Thus, the empirical results in this section rule out the influence of bank characteristics and suggests that joint audits lead to lower zombie lending.

4.3 Effect on Intensive margin

The previous section provides evidence on the extensive margin (likelihood of getting a loan). In this section, we test whether joint audits of banks also lead to a decline in the amount of zombie lending (intensive margin). To test the above, we use the same specification as equation XXX. However, instead of *loan_indicator* - an indicator variable -, we use the logarithm of loan given by a bank to a firm in a year-quarter (*log_loan*) as our dependent variable.

We present the results in Table 7. The layout of the table is similar to Table 7. Consistent with prior results, we find that joint audit of banks decreases the amount of loans given to bad quality borrowers. Notice that the coefficients are statistically highly significant. In column 3, the triple interaction term has a coefficient of -65%, which is close to the estimates arrived in table 6. The coefficient suggests that joint audit of banks leads to a significant 65% reduction in amount of loans given to poor-quality borrowers.

4.4 Joint audits and loan defaults by zombie firms

One of the main objective of introducing joint audit of banks by policymakers is to improve the recognition of bad assets of banks. As discussed in section 3.1, improvement in audit quality can lead to lower evergreening of loans, and subsequently higher recognition of loan defaults by borrowers that are not evergreened. Therefore, in this section we examine whether the decline in loan evergreening leads to higher propensity of default by zombie firms. we examine the above question using a specification similar to equation 2.

$$Default\_zombiefirm_{i,j,t} = \alpha + \beta_1 Treated_j + \beta_2 Post_t + \beta_3 Treated_j * Post_t + \beta_4 X + \delta_{i,t} + \gamma_j + \epsilon_{i,j,t} \quad (4)$$

Here, the dependent variable is $Default\_zombiefirm_{i,j,t}$ which is set to one if the firm we has a low ICR in time t and also defaults on loan repayments to the bank j in the same time t. The other variables as explained earlier. The vriable *Post* denotes the years after the joint audit regulation came into efects, i.e. 2022 and 2023, whereas the variable $Treated$ denotes whether the bank shifts to joint audit in the post period.

Like earlier, we use two sets of control variables. The first set includes firm-bank level variables that determine the strength of the banking relationship between the firm and the bank - (i) length of relationship between the firm and the bank; (ii) exposure of the firm to the bank; and (iii) exposure of the bank to the firm. The second set of control variables include bank-year level variables that can influence the bank's tendency to recognize loan losses - (i) size of bank; (ii) total deposits of bank; (ii) ROA of the bank; and (iv) non-performing loans ratio of the bank.

Finally, we include bank level fixed effects to absorb bank level heterogeneity, and firm X time level fixed effects to absorb time varying observable and unobservable firm level heterogeneity. The results are shown in Table 9. In columns 1 and 2, the dependent variable is set to one if the firm has lower than median ICR compared to its industry and defaults on a loan to the bank. In columns 3 and 4, we vary the definition of the dependent variable is set to one if the firm has lower than median ICR during the pre-period and defaults on a loan.

The above definitions of determining distressed firms are consistent with earlier sections. We include the control variables in the even numbered columns.

The variable of interest is the DID term that estimates the effect of joint audits of bank on loan default by poor-quality firms. Throughout the specification we find that the coefficient of the DID term is positive and statistically significant. in other words, joint audit of banks leads to hgiher propensity of default by distressed firms. The coefficient in column 1 is 1.3%. Given that the unconditional rate of loan default is 1.1%, the estimate represents an economically significant 1.2x times higher delinquency by distressed borrowers. Taken together the results indicate that joint audit of banks leads to lower tendency of evergreening of loans, and subsequently, increases the recognition of default by zombie firms.

4.5 Entropy Balancing Technique

An important threat to identification in our research design can arise from issues related to fundamental differences between the treated banks and the control banks. We address these concerns to a large extent by employing bank-firm level control variables that can differ between the two sets of banks, and by incorporating an alternate design that allows me to use bank X time fixed effects. Nevertheless, to address any residual concerns, we employ an entropy balancing technique to match the treated and control banks. Entropy balancing technique helps in matching several observable characterises of the treated and control units, thus mitigating the bias in coefficients arising from such differences.

Note that our treated set of banks include privately owned banks that are larger in size than the control set of banks. These banks can differ significantly in terms of their size, deposit franchise, and efficiencies. We therefore match the treated banks with the control banks using size, deposits, capital adequacy ratio, non-performing loan ratio, loan loss provision, profitability, and common equity tier 1 ratio. The entropy matching creates a set of weights for the treated observation to balance the above metrics with the control observations. We then rerun our main regression specification.

In Table 8, we present the results for the specification equation 2 using the entropy matching weights to test the impact of joint audits on loan evergreening. we find that across all columns, the coefficient of the DID term is negative and significant, indicating that loan evergreening declines due to joint audits of banks. In fact, the economic magnitude and the statistical significance are higher in this compared to the original set of results. Further in Table 10, we rerun the equation 4 to test the effect of joint audit of loan defaults by zombie borrowers. As expected, we find that the results are robust to the use of entropy balancing. Overall, the inferences obtained from the DID after entropy balancing are consistent with our earlier findings.

5 Conclusion

This study provides empirical evidence on the impact of joint audits on bank lending practices and financial reporting quality. While prior literature offers mixed findings on the effectiveness of joint audits, our results suggest that they enhance monitoring, leading to a reduction in lending to zombie firms and improved recognition of loan losses. These findings highlight the role of auditor independence in mitigating excessive risk-taking and ensuring more accurate financial reporting.

Our results remain robust to multiple empirical specifications, including firm-time and bank-time fixed effects, as well as entropy balancing techniques. The evidence supports the argument that joint audits can serve as an effective mechanism for improving audit quality, particularly in the banking sector, where financial stability is a key concern.

This study contributes to the broader discussion on audit regulation and offers valuable insights for policymakers considering joint audits as a tool to enhance oversight and accountability in financial institutions. Future research can further explore the long-term implications of joint audits on systemic risk and financial market efficiency.

Table 1: Sample Construction

The table provides the sample construction details. Panel A (B) of the table shows the construction for Bank-Auditor-Year sample (Firm-Bank-quarter sample)

Panel A: Bank-Auditor-Year Sample	
Sample period (FY)	2020-2023
Numebr of years	4
Number of banks	39
Number of GOBs	17
Number of bank-years	148
Number of treated bank-years	101
Number of auditors	151
Number of auditor-year	353
Number of auditor-year with Big4 auditor	11
Number of banks per auditor	1.2
Number of bank-auditor-year observations	421

Panel B: Firm-Bank-Quarter sample	
Sample period (FY)	2020-2023
Number of quarters	16
Number of banks	39
Number of firms	16,510
Number of firm-bank-quarter observations	4,99,352
Number of observations with new loans	37,451
Number of instances of loan evergreening	8,173
Number of observations with defaults	5,825

Table 2: Auditor Data

The table provides the summary statistic details of auditor usage. The data is at a bank-auditor-year level. The table reports the concentration of auditors in the banking industry. For example, in the year 2020, there are 87 auditors that have only one bank as their clients, two auditors have two clients each, one auditor has three clients, and two auditors have four clients each.

Distribution of clients of Auditors				
No of clients	***1***	***2***	***3***	***4***
year 2020	87	2	1	2
year 2021	79	2	3	1
year 2022	72	12	3	2
year 2023	72	9	4	2
Total	310	25	11	7

Table 3: Sample Statistics: Bank - Year Data

The table provides the summary statistics of banks. The data is arranged at a bank-year level from 2020 to 2023. I define some of the key variables below. The variables *Loans* and *Deposits* denote the amount of total loans and total deposits of the bank, respectively. *Capital adequacy ratio* is the ratio of the bank's total capital to the bank's total risk-weighted assets (RWA) in a year. *Tier I car* is the ratio of tier-1 capital of the bank and the RWA of the bank in the year. *CET1* is the ratio of "common equity tier 1 capital" to the total RWA of the bank in the year. *GNPA* denotes the ratio of non-performing loans to the bank's total loans. *Provision coverage ratio* is the ratio of total loan loss provisions and the GNPA of the bank.

Panel A: Summary Statistics of Bank-Year data

	obs	mean	1%	25%	median	75%	99%	std dev
Loans (bn INR)	148	3137.82	13.22	586.15	1205.45	3699.3	27562.6	5051.57
Deposits (bn INR)	148	4372.97	28.32	770.21	1733.25	5745.61	40515.34	7084.67
Capital adequacy ratio (%)	148	16.53	8.5	14.23	16.15	17.88	33.78	4.01
Tier I capital adequacy ratio (%)	148	13.92	6.5	11.91	13.92	15.86	32.61	4.05
CET1 ratio (%)	144	13.25	6.3	11.01	13.37	15.78	32.61	9.43
GNPA (%)	146	6.85	0.5	2.87	5.03	9.4	25.39	5.3
Provision coverage ratio (%)	145	79.11	50.31	70.67	80.64	87.76	98.28	11.17
ROA (%)	148	0.63	-4.26	0.27	0.65	1.26	2.64	1.18

Table 4: Sample Statistics: Firm - Bank - Year Data

The table provides the summary statistics for lending data of firm-bank pairs. The data is arranged at a firm-bank-year level for the period 2020 to 2023. We define some of the key variables below. *New loan indicator* is a dummy variable that is set to one if the bank lends a loan to the firm in a year-quarter, zero otherwise. *New loan* is the value of the loan in INR million that the bank gives to the borrower in the year-quarter. *outstanding loan* is the total value of the outstanding loans the firm borrowed from the bank as of that year-quarter. *Default* is an indicator variable set to one if the firm defaults on a loan repayment to a bank in a year-quarter, zero otherwise. *ICR* stands for Interest cover ratio and is calculated as the ratio of operating profit to interest expense of the firm. *Low ICR* is an indicator variable that is set to one if the firm has lower than the median value of the ICR across firms in its industry, zero otherwise. *ICR pre* is an indicator variable that is set to one if the firm has lower than industry median ICR during the pre-period (2020 and 2021), and zero if the firm has higher than the median ICR during the pre-period. *Loan evergreening* is an indicator variable set to one if three conditions are met: (i) the firm has a low ICR, (ii) the firm has an existing banking relationship with the bank, and (iii) the firm receives a new loan from the bank in the year quarter.

Summary Statistics of Bank-Firm-Time data

	obs	mean	1%	25%	median	75%	99%	std dev
New loan	4,99,352	43.37	0	0	0	0	800	892.89
New loan indicator	4,99,352	0.08	0	0	0	0	1	0.26
outstanding loan	4,99,352	1625.48	0.52	48	244.19	795	20000	26344.28
Default	4,99,352	0.01	0	0	0	0	1	0.11
ICR	4,39,205	26.1	-59.57	1.08	2.11	5.93	263.73	1757.1
low ICR1	4,39,205	0.45	0	0	0	1	1	0.5
ICR_pre	4,99,346	28.99	-66.17	1.02	1.88	5	216.08	1606.81
evergreening	4,39,205	0.02	0	0	0	0	1	0.14

Table 5: Joint audits and Loan Evergreening

The table shows the association between loan evergreening and banks' joint audits. The sample is at a bank-firm-quarter level and spans from 2019 to 2023. The dependent variable *'Loan Evergreening'* is defined as an indicator variable that is set to one when the firm has a low ICR, and the firm receives a new loan from the bank in the same year-quarter. We employ two ways of measuring low ICR. In columns 1 and 2 (3 and 4), We designate a firm as having low ICR if the ICR of the firm is lower than the median ICR of the industry in that year -quarter (during the pre-period 2020-2021). The variable *post* is one for 2022 and 2023, zero otherwise. The variable *tretaed* is one for banks that switch to joint auditing in the post period. We use two sets of control variables in the even-numbered columns. The first set of control variables are (i) the log of the relationship tenure between the bank and the firm, (ii) the proportion of loans the firm receives from the bank, and (iii) the proportion of loan exposure of the bank to the firm. The second set of control variables are (i) the size of the bank, (ii) the log of deposits of the bank, (iii) the non-performing loan ratio, and (iv) the ROA of the bank. We use bank level fixed effects and firm-time level fixed effects across all columns. The standard errors reported in the parentheses are clustered at the bank-time level and are adjusted for heteroskedasticity. ***, **, and * represent statistical significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)
	Loan Evergreening			
*Post * Treated bank*	-0.016**	-0.017**	-0.015*	-0.016*
	(0.008)	(0.008)	(0.009)	(0.009)
Firms' exposure to bank		0.000***		0.000***
		(0.000)		(0.000)
Bank's exposure to firm		0.001***		0.002***
		(0.000)		(0.000)
Log (relationship)		0.001***		0.002***
		(0.000)		(0.000)
GNPA		-0.000		-0.000
		(0.000)		(0.000)
ROA		0.001***		0.001*
		(0.000)		(0.000)
Log(total loans)		-0.004		0.005*
		(0.003)		(0.003)
Log(deposits)		0.000		0.001
		(0.001)		(0.001)
Firm X Time F.E.	Yes	Yes	Yes	Yes
Bank F.E.	Yes	Yes	Yes	Yes
Observations	342,600	342,265	384,132	383,715
R-squared	0.345	0.349	0.340	0.344

Table 6: Joint Audits and Loan Evergreening - Alternate Specification

The table estimates the likelihood of getting a new loan when the borrower has poor financial conditions, and more than one auditor jointly audits the bank. The sample is at a bank-firm-quarter level and spans from 2019 to 2023. The dependent variable is *'Loan indicator'*, a dummy variable set to one if the firm receives a new loan from a bank in a year-quarter, zero otherwise. The variable *post* is one for 2022 and 2023, zero otherwise. The variable *tretaed* is one for banks that switch to joint auditing in the post period. The variable $LowICR$ is set to one if the firm has an ICR that is below the median level of the ICR of the industry, zero otherwise. We use the same set of control variables as mentioned in Table 5 in columns 2 and 3. We use bank level fixed effects in columns 1 and 2 and bank - year level fixed effects in column 3. We also use firm-time level fixed effects across all columns. The standard errors reported in the parentheses are clustered at the bank-time level and are adjusted for heteroskedasticity. ***, **, and * represent statistical significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)
	Loan Indicator		
*Post * Treated * Low ICR*	-0.042	-0.049*	-0.050*
	(0.026)	(0.026)	(0.026)
*Treated * Low ICR*	0.023***	0.021***	0.023***
	(0.003)	(0.003)	(0.003)
*Post * Treated*	-0.013	-0.008	
	(0.019)	(0.019)	
Firms' exposure to bank		0.000***	0.000***
		(0.000)	(0.000)
Bank's exposure to firm		0.002***	0.003***
		(0.001)	(0.001)
Log(relationship)		-0.021***	-0.021***
		(0.001)	(0.001)
GNPA		0.001***	
		(0.000)	
ROA		0.005***	
		(0.001)	
Log(total loans)		-0.003	
		(0.006)	
Log(deposits)		-0.001	
		(0.003)	
Firm X Time F.E.	Yes	Yes	Yes
Bank F.E.	Yes	Yes	
Bank X Time F.E.			Yes
Observations	342,600	342,265	342,261
R-squared	0.338	0.342	0.347

Table 7: Joint Audits and Loan Evergreening - Intensive Margin

The table estimates the amount of loan received by a borrower that has poor financial conditions, when more than one auditor jointly audits the bank. The sample is at a bank-firm-quarter level and spans from 2019 to 2023. The dependent variable *'Log (Loan)'* is the logarithm of the value of loan received by a firm from a bank in a year-quarter. The variable *post* is one for 2022 and 2023, zero otherwise. The variable *tretaed* is one for banks that switch to joint auditing in the post period. The variable $LowICR$ is set to one if the firm has an ICR that is below the median level of the ICR of the industry, zero otherwise. We use the same set of control variables as mentioned in Table 5 in columns 2 and 3. We use bank level fixed effects in columns 1 and 2 and bank - year level fixed effects in column 3. We also use firm-time level fixed effects across all columns. The standard errors reported in the parentheses are clustered at the bank-time level and are adjusted for heteroskedasticity. ***, **, and * represent statistical significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)
		Log(Loan)	
*Post * Treated * low ICR*	-0.574**	-0.648***	-0.647***
	(0.246)	(0.246)	(0.247)
*Treated * Low ICR*	0.207***	0.183***	0.193***
	(0.030)	(0.030)	(0.030)
*Post * Treated*	0.035	0.096	
	(0.181)	(0.180)	
Firms' exposure to bank		0.006***	0.006***
		(0.000)	(0.000)
Bank's exposure to firm		0.032***	0.034***
		(0.007)	(0.007)
Log(relationship)		-0.201***	-0.200***
		(0.006)	(0.006)
GNPA		0.010***	
		(0.003)	
ROA		0.050***	
		(0.008)	
Log(total loans)		-0.082	
		(0.055)	
Log(deposits)		-0.013	
		(0.025)	
Firm X Time F.E.	Yes	Yes	Yes
Bank F.E.	Yes	Yes	
Bank X Time F.E.			Yes
Observations	342,600	342,265	342,261
R-squared	0.319	0.325	0.329

Table 8: Joint Audits and Loan evergreening - Entropy Balancing

The table shows the association between loan evergreening and banks' joint audits. It provides the estimates of the DID equation 2 on match set of treated and control banks, that are matched using entropy balancing technique. The sample is at a bank-firm-quarter level and spans from 2019 to 2023. The dependent variable *'Loan Evergreening'* is defined as an indicator variable that is set to one when the firm has a low ICR, and the firm receives a new loan from the bank in the same year-quarter. We employ two ways of measuring low ICR. In columns 1 and 2 (3 and 4), We designate a firm as having low ICR if the ICR of the firm is lower than the median ICR of the industry in that year -quarter (during the pre-period 2020-2021). The variable *post* is one for 2022 and 2023, zero otherwise. The variable *tretaed* is one for banks that switch to joint auditing in the post period. We use the same set of control variables as mentioned in Table 5. We use bank level fixed effects and firm-time level fixed effects across all columns. The standard errors reported in the parentheses are clustered at the bank-time level and are adjusted for heteroskedasticity. ***, **, and * represent statistical significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)
	Loan Evergreening			
*Post * Treated bank*	-0.021***	-0.022***	-0.017**	-0.018***
	(0.007)	(0.007)	(0.006)	(0.006)
Firms' exposure to bank		0.000***		0.000***
		(0.000)		(0.000)
Bank's exposure to firm		0.002***		0.003***
		(0.000)		(0.000)
Log (relationship)		0.001***		0.002***
		(0.000)		(0.000)
GNPA		0.000		-0.000
		(0.000)		(0.000)
ROA		0.002***		0.000
		(0.000)		(0.000)
Log(total loans)		-0.005		0.005
		(0.004)		(0.004)
Log(deposits)		0.000		0.001
		(0.002)		(0.002)
Firm X Time F.E.	Yes	Yes	Yes	Yes
Bank F.E.	Yes	Yes	Yes	Yes
Observations	339,222	338,907	379,970	379,574
R-squared	0.584	0.586	0.551	0.553

Table 9: Joint Audits and Loan Defaults by Distressed Borrowers

The table shows the association between loan defaults by zombie firms and banks' joint audits. The sample is at a bank-firm-quarter level and spans from 2019 to 2023. The dependent variable *'Loan default by zombie firms'* is defined as an indicator variable that is set to one when the firm has a low ICR, and the firm defaults on loan-repayments to the bank in the same year-quarter. The variable *post* is one for 2022 and 2023, zero otherwise. The variable *tretaed* is one for banks that switch to joint auditing in the post period. We use the same set of control variables as mentioned in Table 5. We use bank level fixed effects and firm-time level fixed effects across all columns. The standard errors reported in the parentheses are clustered at the bank-time level and are adjusted for heteroskedasticity. ***, **, and * represent statistical significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)
	Loan default by distressed firm			
*Post * Treated bank*	0.013**	0.012**	0.017***	0.016***
	(0.005)	(0.005)	(0.005)	(0.005)
Firms' exposure to bank		0.000***		0.000***
		(0.000)		(0.000)
Bank's exposure to firm		-0.001**		-0.001***
		(0.000)		(0.000)
Log (relationship)		-0.000		-0.000
		(0.000)		(0.000)
GNPA		-0.000		-0.000**
		(0.000)		(0.000)
ROA		0.000		-0.000
		(0.000)		(0.000)
Log(total loans)		0.001		-0.003
		(0.002)		(0.002)
Log(deposits)		0.000		0.002**
		(0.001)		(0.001)
Firm X Time F.E.	Yes	Yes	Yes	Yes
Bank F.E.	Yes	Yes	Yes	Yes
Observations	342,600	342,265	384,132	383,715
R-squared	0.427	0.428	0.436	0.436

Table 10: Joint Audits and Loan Defaults by Distressed Borrower - Entropy balancing

The table shows the association between loan defaults by zombie firms and banks' joint audits for a set of banks that are matches using entropy balancing technique. The sample is at a bank-firm-quarter level and spans from 2019 to 2023. The dependent variable *'Loan default by zombie firms'* is defined as an indicator variable that is set to one when the firm has a low ICR, and the firm defaults on loan-repayments to the bank in the same year-quarter. The variable *post* is one for 2022 and 2023, zero otherwise. The variable *tretaed* is one for banks that switch to joint auditing in the post period. We use the same set of control variables as mentioned in Table 5. We use bank level fixed effects and firm-time level fixed effects across all columns. The standard errors reported in the parentheses are clustered at the bank-time level and are adjusted for heteroskedasticity. ***, **, and * represent statistical significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)
	Loan default by distressed firm			
*Post * Treated bank*	0.010***	0.011***	0.013***	0.013***
	(0.004)	(0.004)	(0.004)	(0.004)
Firms' exposure to bank		0.000***		0.000***
		(0.000)		(0.000)
Bank's exposure to firm		-0.000		-0.001***
		(0.000)		(0.000)
Log (relationship)		-0.000		-0.000
		(0.000)		(0.000)
GNPA		-0.000		-0.000
		(0.000)		(0.000)
ROA		-0.000		-0.000
		(0.000)		(0.000)
Log(total loans)		0.001		-0.003*
		(0.002)		(0.002)
Log(deposits)		-0.001		0.001
		(0.001)		(0.001)
Firm X Time F.E.	Yes	Yes	Yes	Yes
Bank F.E.	Yes	Yes	Yes	Yes
Observations	339,222	338,907	379,970	379,574
R-squared	0.524	0.524	0.512	0.512

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