JOURNAL OF FINANCIAL AND QUANTITATIVE ANALYSIS Vol. 58, No. 5, Aug. 2023, pp. 2131–2161

doi:10.1017/S0022109022000412

Indirect Evergreening Using Related Parties: Evidence From India

Nishant Kashyap
Indian School of Business
nishant_kashyap@isb.edu (corresponding author)

Sriniwas Mahapatro
Indian School of Business
sriniwas_mahapatro@isb.edu

Prasanna Tantri
Indian School of Business
prasanna_tantri@isb.edu

Abstract

We identify a novel way of evergreening loans in India. A low-quality bank lends to a related party of an insolvent borrower, and the loan recipient transfers the funds to the insolvent borrower using internal capital markets. Incremental investments, interest rates charged, and loan delinquency rates collectively indicate evergreening. These loans are unlikely to represent arm's length transactions or rescue of troubled related firms by stronger firms to prevent group-wide spillover effects. Indirect evergreening is less likely to be detected by regulatory audits. It has significant real consequences at the firm and industry levels.

I. Introduction

The literature recognizes that evergreening of loans, which refers to a phenomenon where undercapitalized banks treat economically nonperforming loans as performing through additional lending or restructuring, is a distortionary practice, which has contributed significantly to the eruption and prolonging of major global banking crises (see, e.g., Peek and Rosengren (2005), Caballero, Hoshi, and Kashyap (2008), Hoshi and Kashyap (2010), Giannetti and Simonov (2013), Bonfim, Cerqueiro, Degryse, and Ongena (2020), and Acharya, Borchert, Jager, and Steffen (2021)). Therefore, identifying and understanding various forms of evergreening of loans becomes important to explain and mitigate banking-induced macroeconomic crises.

The extant literature focuses primarily on what we call "direct evergreening" (DE), which involves the renewal or restructuring of loans of insolvent borrowers by thinly capitalized banks (Peek and Rosengren (2005)). The motivation usually is to postpone recognition of loss in the hope that either the i) borrower will turn

We thank an anonymous referee and Mara Faccio (the editor) for their valuable feedback. We also thank Shashwat Alok, Bhagwan Chowdhry, Prachi Deuskar, Nirupama Kulkarni, Gautam Udupa, and other seminar participants at ISB and CAFRAL for their helpful comments. We gratefully acknowledge the support from the Center for Analytical Finance, Indian School of Business for providing the data and the necessary financial assistance for this project. The usual disclaimer applies.

around, ii) the authorities will rescue the bank, or iii) the responsibility can be passed on to the succeeding management.

The possibility of undercapitalized banks evergreening loans indirectly by lending fresh loans to a healthy related entity (subsequent borrower) of a current borrower (initial borrower) who is insolvent with the understanding that the subsequent borrower will pass on the funds to the initial borrower using internal capital markets has not received much attention. We call the above phenomenon "indirect evergreening" (IE). Consider a troubled borrower A and its undercapitalized lender B. DE involves B either lending a fresh loan to A to help it repay the old loan or restructuring the old loan. Under IE, B lends to a related party of A, say A1. A1 transfers the loan amount to A, and finally, A repays B. Thus, B records a repayment of an old loan from A and issue of a new loan to A1. Using the Indian banking setting, we seek to i) identify such IE, ii) understand its motivations, and iii) examine its consequences.

Although the implications of DE are well understood, there is a need to study IE for the following reasons. First, identifying IE is hard for both econometricians and regulators because it involves a web of transactions between a troubled bank, an insolvent borrower, and its related parties. Second, the motivation of banks and borrowers behind DE and IE could be different. Finally, given the complexity and the related execution-related uncertainty, the economic impact of IE could vary from that of DE.

Using the disclosures made by the Ministry of Corporate Affairs (MCA), we create a loan-level data set of all registered secured corporate loans. The data set contains information such as the identity of the borrower and the lender, the loan amount, the loan date, and loan restructuring if any. We obtain the data relating to loan performance from the largest credit bureau in India, TransUnion CIBIL Limited (CIBIL). Information about other financial variables is sourced from the Center For Monitoring Indian Economy (CMIE). Our data spans 15 years from 2006 to 2020.

We start the empirical analysis by identifying two building blocks of IE. The first building block is a low-quality bank of a troubled borrower lending to a related party of such a borrower. We construct a panel organized at the borrower-bank-year level with all bank–firm relationships existing at the beginning of our sample period. We find that when a firm is under distress, one of its "low-quality" bankers is more likely to extend a loan to a related party of the firm. The probability of such a loan is an economically meaningful 7% higher than any other loan by a bank to a related party of its current borrowers.

The second building block is the transfer of funds from the subsequent borrower to the initial borrower in trouble. We organize data at the initial borrower-related party-year level. We ask whether a firm that receives a loan (subsequent borrower) from a low-quality bank of one of its related parties (initial borrower) in trouble is more likely to transfer funds through RPTs to the related party in trouble when compared to other firms. We find that the value of related party flows through loans, investments, and others is an economically meaningful 18% higher in such cases.

We create the measure of IE by combining the two building blocks. We call the measure "Suspected Indirect Evergreening" (SIE). We identify distress as a situation when a firm's income is insufficient to meet interest obligations. Banks having above the median proportion of distressed borrowers are considered low-quality banks. We vary the definitions for robustness. The term related party is defined by law and includes board-level connections, common ownership, parent-subsidiary relationships, and others.

We recognize that the mere existence of the types of loans described above is insufficient to prove evergreening. There should exist evidence showing i) lower (higher) delinquency of the initial loan (subsequent loan); ii) subsidized interest rates; iii) reduced investment by both parties; and iv) associated macroeconomic consequences.

We compare the delinquency rates of SIE loans against other loans. If these loans are used for evergreening, they are likely to have a higher delinquency rate. We find that subsequent loans of an SIE are 1.36 times more likely to default when compared to other loans. We also show that the interest rate charged to borrowers of SIE loans is an economically meaningful 1.48 percentage points lower than the interest rate charged to other similar borrowers. Finally, given that the whole idea of IE is preventing defaults by initial borrowers in trouble, we expect the initial borrowers who are a part of SIE to default less than other initial borrowers in trouble and we find the above result. A combination of the above results supports the IE hypothesis (Caballero et al. (2008)).

Further, as at least a part of the funds is recycled back to the bank through a circuitous route, we expect the SIE loans to lead to lower investments. Comparing all initial borrowers, we find that the level of investments of the initial borrowers involved in SIE is about 25.6% lower. Our results also indicate that the investment-to-loan ratio for subsequent borrowers who are part of SIE is 30% lower than the unconditional mean of investment-to-loan ratio.

We then proceed to address alternative explanations. A concern could be that SIE represents bailout of troubled firms by stronger firms within a group – a phenomenon detected by Gopalan, Nanda, and Seru (2007) ("internal capital markets" channel). The motivation is to prevent within-group spillover effects. Thus, the transaction is driven solely by borrowers' incentives and not the lenders' incentive to postpone loan default. The SIE is likely to differ from the internal capital markets channel because of several reasons.

First, among initial borrowers' lenders, a low-quality bank lends more to the subsequent related borrower than high-quality banks when the initial borrower is in trouble. Further, even those low-quality lenders of initial borrowers who have no prior relationship with the subsequent borrower show a higher tendency to fund SIE loans when the initial borrower is in trouble. Second, we find that the bankers of subsequent borrowers not associated with the initial borrowers do not show a higher inclination to fund the rescue. If SIE is driven by the internal capital markets channel independent of the initial borrower's troubled banks' incentives, it is reasonable to expect the subsequent borrower to borrow more from its bankers and not from unconnected troubled bank of the initial borrower.

Finally, consistent with Gopalan et al. (2007), bank loans of a firm that transfers funds to a related party in trouble without borrowing from a troubled banker of the insolvent related party do not show a higher tendency to default. By contrast, the delinquency rate for SIE loans is significantly higher than non-SIE loans.

A second argument could be that the SIE loans are arm's length transactions consummated because of the inherent strength and collateral of the borrower. We address this concern in two ways. First, based on their delinquency rate and interest yield, the SIE loans do not appear to be advantageous from a risk–reward perspective. Second, arm's length loans are unlikely to depend on the financial situation of the bank and its prior lending relationship with an insolvent-related party of the borrower. However, it is possible that the additional collateral posted by the subsequent borrower may provide a cushion to the bank and may render IE relatively less damaging to the bank than DE. Nonetheless, the SIE transactions qualify as evergreening transactions because i) the purpose is to show an in-spirit defaulting loan as current through additional loans; and ii) SIE eventually leads to higher default rates and poses a risk to the economy.

A third concern could be that on an overall basis, SIE is beneficial to banks if the reduction in default on initial borrower loans more than offsets the increased default on subsequent borrower loans. The benefit, if it exists, is likely to be higher for banks in trouble as they are likely to have a higher proportion of borrowers in trouble. By comparing the loan performance of initial borrowers in trouble (subsequent borrowers) involved in SIE and comparable initial borrowers in trouble (subsequent borrowers) not involved in SIE, we find that the reduction in default by initial borrowers is not more than the increase in default by subsequent borrowers. Thus, SIE seems to push default from an initial borrower in trouble to a subsequent borrower and mask the evergreening intent.

Next, we ask what motivates banks and borrowers to engage in IE instead of DE. First, given the complicated nature of transactions, detecting IE may be hard for regulators. We find that despite a thorough audit, the regulator could not detect IE, but could detect at least a part of DE. Second, unlike DE, IE provides the bank access to additional collateral and a borrower with a cleaner balance sheet. Therefore, bank management could find it easier to satisfy the de jure checks and balances and internal lending rules. Third, we find that an insolvent borrower who is already involved in DE has a higher probability to engage in IE than other insolvent borrowers. Thus, banks seem to use IE after exhausting DE opportunities as repeated DE could increase the probability of detection. Finally, suggestive evidence indicates that IE also helps bank CEOs to push recognition of delinquency beyond their tenure.

In the final part of the study, we explore the macroeconomic consequences of IE. We find that industries with higher exposure to IE invest less than other industries. Within highly exposed industries, the proportion of credit flowing to high-growth firms declines significantly. The results are consistent with the crowding-out effect of evergreening (Caballero et al. (2008)). Finally, we also find the probability of a bank stock price crash increases with the proportion of IE in a bank portfolio. Baron, Verner, and Xiong (2021) show that such crashes lead to a significant contraction of bank credit.

The IE that we detect does not exist solely because of institutional features peculiar to India. Evergreening has been detected in developed and emerging market settings (Peek and Rosengren (2005), Acharya, Eisert, Eufinger, and Hirsch (2019), and Acharya et al. (2021)). The existence of internal capital markets opens up a new, hard-to-detect way of evergreening, which we call IE. Even internal capital markets exist in countries worldwide (Johnson, La Porta, Lopez-de Silanes, and Shleifer (2000), Cheung, Rau, and Stouraitis (2006), Jian and Wong (2010), Jiang, Lee, and Yue (2010), and Jia, Shi, and Wang (2013)). The Indian setting is advantageous from the perspective of data availability. Unlike many countries, India mandates disclosure of RPTs.

Some important caveats are in order. We do not claim that all cases satisfying the SIE conditions are evergreening transactions. Our results suggest that in a sample of loans that satisfy SIE conditions, the proportion of IE cases is likely to be significantly higher than normal loans. We also do not claim that the subsequent borrowers are only conduits for IE and do not benefit from SIE transactions. Although we find that, on average, subsequent borrowers do not invest using SIE loans, cases could exist where subsequent borrowers invest some part of the SIE loans. We discuss other possible benefits to subsequent borrowers in Section VIII.

Our study directly talks to the literature that identifies evergreening and its consequences. Peek and Rosengren (2005) identify evergreening as lending to borrowers with poor operating and financial fundamentals by capital-constrained banks. Caballero et al. (2008) use granting of subsidized credit as a metric whereas Acharya et al. (2019) consider interest coverage ratio (ICR), credit rating, and interest rate subsidy to identify evergreening. Tantri (2020) considers quick renewal of a loan close to the due date by the same loan officer who extended the initial loan as evergreening. Several other studies (Hoshi and Kashyap (2004), Bruche and Llobet (2014), Jaskowski (2015), Chari, Jain, and Kulkarni (2019), and Bonfim et al. (2020)) identify different aspects of evergreening. The extant studies identify DE and highlight its consequences. We identify IE and study its consequences.

We also contribute to the literature that examines RPTs and internal capital markets (Khanna and Palepu (2000), Bae, Kang, and Kim (2002), Bertrand, Mehta, and Mullainathan (2002), Jian and Wong (2010), and Almeida, Kim, and Kim (2015)). Gopalan et al. (2007) show that one of the purposes of related party loans is to save a firm within the business group and mitigate the group-level spillover effects. Jiang et al. (2010) illustrate that RPTs could also be used for tunneling of resources from the firm. We demonstrate that related parties can be used as conduits to pass on loans that are a part of an evergreening transaction.

II. Institutional Background

Government-owned banks dominated the Indian banking landscape until the 1990s (Cole (2009)). The liberalization program undertaken during the early 1990s led to the opening up of the sector to private banks, and within a decade, large and modern private sector banks emerged. Several foreign banks also now operate in India. All commercial banks are regulated by the Reserve Bank of India (RBI).

Slow enforcement of contracts is a major impediment faced by banks in India in their loan recovery efforts. Although India has recently improved significantly in terms of the World Bank Ease of Doing Business ranking, it is still ranked a lowly 163rd in terms of enforcement of contracts. The country did not have a modern bankruptcy law until 2016. Although some laws on creditor rights were enacted, with time, they lost steam, and the nonperforming assets of banks soared (Bhue, Prabhala, and Tantri (2015)).

Although India was not directly impacted by the global financial crisis (GFC) and did not suffer a recession, the central bank announced a forbearance policy that allowed banks to restructure loans without downgrading and providing for such loans. The policy was continued for 7 years despite the economy recovering fully in the interim period. It was withdrawn in 2015, and an Asset Quality Review (AQR) was initiated. The institutional features described above provide conditions under which banks are likely to resort to widespread evergreening of loans (Hoshi and Kashyap (2010)).

III. Data, Sample, and Descriptive Statistics

Our primary source of data is the secured loan register of the MCA, which contains information about all secured loans on which a "charge" has been created. A charge is a right that is created by a borrower on its assets in favor of a lender. In the absence of a charge and its registration, the lender loses the privileges of a secured lender. Therefore, expecting almost all large secured corporate loans to be registered is reasonable. Chopra, Subramanian, and Tantri (2020), find that the MCA data set containing loans to listed firms covers more than 50% of all private commercial credit in the country. Our data set contains loans to listed and unlisted firms.

Each observation in the MCA data set represents a loan and contains information such as the identities of the borrower and the lender, the loan amount, the date of loan origination and restructuring, and the date of closure of the loan. The data set does not include information about loan terms such as the tenure of the loan, interest rates, and the frequency of repayment. We obtain information about loan performance in terms of delinquency from the data maintained by CIBIL, the largest credit bureau in the country. The data set contains a list of loan defaulters undergoing recovery proceedings, lenders of such loans, and the date of default.

We obtain information about the financial variables of firms from the Prowess database maintained by the CMIE. The Prowess database also has information on the transactions of a firm with its related parties. The term related party has been defined under Section 2(76) of the Companies Act of 2013. It includes associations such as holding company-subsidiary relationships, common directorships, common controlling ownership, and others.[1]

A. The Sample

We present the definition of key variables in Table 1 and sample construction details in Table 2. Our main loan-level sample spans 15 years starting from the financial year 2006 (2005–2006) and ending in the financial year 2020 (2019–2020).[2] As noted in Section II, the banking sector was opened for private participation in the 1990s. The first wave of entry of private sector banks ended with the entry of Yes Bank in 2004. Therefore, we start our analysis from the financial year 2005–2006.

[1]Section A of the Supplementary Material provides the list of associations considered as related parties.

[2]A financial year in India is 12 months between April and March.

https://doi.org/10.1017/S0022109022000412 Published online by Cambridge University Press

TABLE 1
Variable Definitions

In Table 1, we define the key variables.

Key Variables	Definition
Initial borrower	A firm having an existing relationship with a bank
Subsequent borrower	A related party of an initial borrower which receives a new loan from the initial borrower's bank during the sample period
Connected loan	A loan given by a bank to a firm (subsequent borrower) whose related party (initial borrower) has an existing loan from the same bank
Borrower in trouble	An indicator variable that takes a value of 1 if the interest coverage ratio (ICR) of a borrower is below 1, and 0 otherwise
Exposure	The proportion of loans outstanding of a category of borrowers within the entire loan book
Low-quality bank	This indicator is 1 for banks with above median average exposure to firms with interest coverage less than 1 in the previous 3 years, and 0 otherwise
Suspected indirect evergreen (SIE)	An indicator set to 1 if the following two conditions are met: i) a low-quality bank of an initial borrower in trouble lends to a related party (subsequent borrower) of the initial borrower, and ii) the subsequent borrower transfer funds to the initial borrower via related party transactions
Direct evergreen indicator	An indicator set to 1 when a bank having an existing lending relationship grants a new loan to an initial borrower having interest cover ratio of less than 1 or when it restructures such a firm's loans

TABLE 2
Sample Construction

In Table 2, we report details about the sample used. The terms have been defined in Table 1.

Firm (Initial Borrower)-Bank-Year Level Observations	
Sample period	2006–2020
Firm-bank-year level observations in MCA data	789,116
New loans lent during the sample period	161,760
Firm-bank-year level observations in MCA data with available financial information of borrowers and banks in the Prowess database (matched data)	327,910
Unique initial borrowers in the matched data set	21,314
Loans lent during the sample period covered by MCA and Prowess	59,220
Unique borrowers of new loans in the matched data set	11,000
Unique banks in the matched data set	55
Firm-bank-year observations where related firms (subsequent borrowers) receive connected loans	27,176
Connected loans in the matched data set	22,597
Unique subsequent borrowers in the matched data set	6,494
SIE loans in the matched data set	1,000
Directly evergreened loans in the matched data set	12,534
Loans which defaulted in the matched data set	1,865
Initial Borrower-Subsequent Borrower-Year Level Observations	
Unique firms (initial borrowers) from MCA data set (out of 21,314 borrowers) for which related party transaction (RPT) information is available	15,154
Firm pair-year observations available in RPT database corresponding to the matched data set	387,015
Firm-Year Level Observations	
Subsequent borrower-year level aggregated observations where there is a new loan and SIE information is available	45,957
Subsequent borrower-year level aggregated observations for which investment data are available	37,173
Initial borrower-year level aggregated observations	143,019
Initial borrower-year level aggregated observations for which investment data are available	97,898

We begin by creating two data sets. The primary loan-level MCA data set contains information about secured loans. We consider all fund flows from a bank to a firm in a financial year as a loan. As evergreening can be achieved by granting a loan just before or after the due date of an existing loan, clubbing all transfers within a year facilitates better identification. The second data set is the list of all available related party pairs. We obtain this information from the Prowess database. We create related party pairs based on the list of subsidiaries/holding companies disclosed in the annual reports and RPTs consummated during our sample period.

We start with all bank-firm pairs having an outstanding loan as of the beginning of 2006. We track all loans and repayments made from 1991 to 1992, the year of major structural reforms in India. We then build a panel at the bank-firm-year level. We record a new loan amount in the year in which a bank lends to an existing borrower. Otherwise, the new loan amount is considered as 0 for existing bank-firm-year pairs. We exclude a bank-firm pair from the year following the year of full repayment of the outstanding loan amount.

New lending relationships are counted from the year in which a bank and a firm not having an outstanding loan between them start a fresh loan. As shown in Table 2, we identify 789,116 bank-firm-year pairs with 161,760 loans during our sample period. The Prowess database covers 21,314 unique borrowers of 327,910 bank-firm-years. This data set, which we call the matched sample, contains 320 unique lenders out of which 55 are commercial banks. Within this matched sample there are 59,220 new loans extended to 11,000 borrowers.

B. Variable Definitions

As described in Table 1, borrowers having an existing lending relationship with a bank are called "initial borrowers." A related party of an initial borrower that obtains a new loan from the same bank is considered a "subsequent borrower." A loan provided to a subsequent borrower is called a "connected loan." In the matched data set, 27,176 firm-bank-year observations have a connected loan. Sometimes a subsequent borrower is related to multiple initial borrowers. Therefore, the number of unique new connected loans is 22,597, with 6,494 unique subsequent borrowers associated with connected loans.

A borrower with an ICR of less than one is considered a "borrower in trouble" or an "insolvent borrower."[3] A bank with average exposure to borrowers in trouble in the previous 3 years above the median level is considered a "low-quality bank" or a "bad bank." For example, if there are four banks B1, B2, B3, and B4 with 10%, 15%, 8%, and 13% average exposure to borrowers in trouble in the previous 3 years, respectively, then banks B2 and B4 are considered as unhealthy banks with the variable "low-quality bank" set to 1. Exposure is the proportion of loans outstanding of a category of borrowers within the entire loan book.

The regulatory forbearance regime allowed banks to restructure loans without providing for them, and hence, overstate capital. To test whether banks indeed overstated capital, we examine the change in all banks' reported capital adequacy ratio before and after the GFC. We report the results in Table A1 of the Supplementary Material. Despite a slowdown in economic activity, we find an increase in the reported capital adequacy ratio after GFC. We then test the change in the proportion of loans to borrowers in trouble and find a significant increase in the post-GFC period. Thus, banks reported increased capital adequacy despite

[3]ICR less than 1 indicates that the profits are insufficient to meet the interest expense of the firm.

worsening borrower quality. Therefore, we do not use reported capital adequacy ratios: banks that evergreen more mechanically report better numbers. The quality of the underlying borrowers is a better measure of true capital levels.

A connected loan is considered an SIE if the initial borrower is in trouble, the bank is of low quality, and the initial and subsequent borrowers have an RPT. We have 1,000 such loans. We consider a loan directly evergreened if the initial borrower in trouble gets it restructured or obtains a new loan from the lender. We have 12,534 such loans. Out of the 59,220 loans, 1,865 loans eventually default. Out of the 21,314 initial borrowers, we have information about RPTs for 15,154 borrowers. At a related party pair-year level, we have 387,015 observations. For tests relating to investments, we organize the data at a borrower-year level. Out of the 45,957 (143,019) subsequent (initial) borrower-year level observations, we have information about investments for 37,173 (97,898) observations. In Table A2 of the Supplementary Material, we provide a detailed data reconciliation.

C. Descriptive Statistics

Table 3 presents descriptive statistics. The average (median) amount of loans extended in the matched data set is Indian Rupee (INR) 1,509 (365) million and 3.1% of the loans eventually default. Nearly 43% (2.1%) of all new loans are connected (SIE) loans. We use two definitions of investments. The average (median) value for the first measure, based on additional investment in fixed assets, is INR 917 (42) million. The average (median) value for the second measure, based on the cash outflow on investment activities, is INR 802 (66) million. We classify RPTs into four categories: inflow of funds from related parties, inflow from loans, inflow on account of investments, and the sum of all RPTs. The definitions are from the initial borrowers' perspective. The average (median) values of the four categories are INR. 292 (0) million, 491 (0) million, 1,164 (0) million, and 2,050 (0) million, respectively.

TABLE 3

Descriptive Statistics

Table 3 reports the descriptive statistics relating to key variables. All variables are expressed in million rupees except the indicator variables.

Variables	*N*	Median	Mean	Std. Dev.	1st Percentile	99th Percentile
Loan Summary (subsequent borrower-bank-year)						
LOAN_AMOUNT	59,220	365	1,509	7,786	1	18,500
DEFAULT	59,220	0	0.031	0.175	0	1
CONNECTED_LOAN	59,220	0	0.430	0.495	0	1
SIE	59,220	0	0.021	0.142	0	1
Investment Summary (subsequent borrower-year level)						
FIXED_ASSET_INVESTMENT	37,173	42	917	18,445	0	13,140
CASH_INVESTMENT	37,173	66	802	5,187	0	14,270
RPT Summary (initial borrower-subsequent borrower-year level)						
RPT_LOANS	387,015	0	292	91,199	0	525
RPT_INVESTMENTS	387,015	0	491	206,852	0	250
RPT_INFLOW	387,015	0	1,164	235,288	0	2,800
RPT_TOTAL	387,015	0	2,050	409,433	0	5,179

IV. SIE: The Entire Cycle

The hypothesized steps in SIE, as depicted in Figure 1, are described below.

- Step 1: A loan exists between a bank and an initial borrower.
- Step 2: The initial borrower faces a shock.
- Step 3: A low-quality bank of the initial borrower in trouble then lends to a borrower who is related (subsequent borrower) to the initial borrower in trouble.
- Step 4: The subsequent borrower transfers the funds to the initial borrower.
- Step 5: The initial borrower uses these funds to repay the bank. Thus, recognition of default is avoided and a new loan is recorded (a typical consequence of evergreening).
- Step 6a: In the unlikely event of the initial borrower recovering, it repays the subsequent borrower.
- Step 6b: The most likely outcome in evergreening cases is a default by the initial borrower on the related party loan.
- Step 7a: The subsequent borrower then repays the bank.
- Step 7b: A consequent default or restructuring of the loan between the subsequent borrower and the bank follows. Although the subsequent borrower pledges additional collateral, the chances of full recovery are low given the institutional frictions.

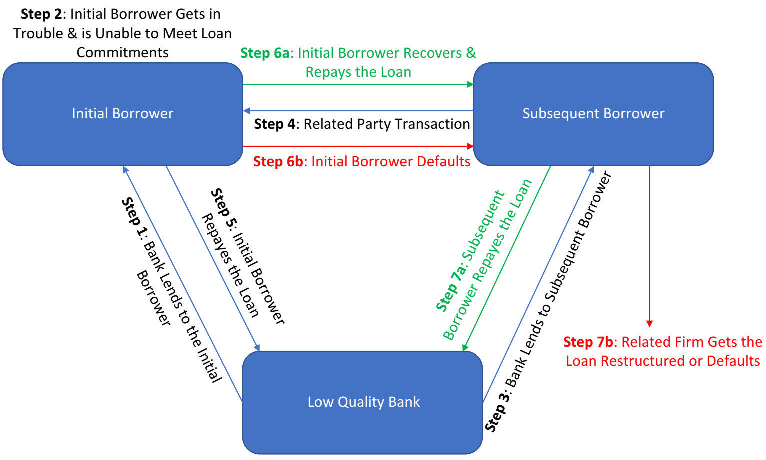
A. Connected Lending by Bad Banks (Steps 1–3)

The core of our measure is a connected loan (a loan extended to a related entity of an existing borrower). As discussed in detail in the extant literature (Hoshi and Kashyap (2010)), truly undercapitalized banks have a higher incentive to evergreen

FIGURE 1

The Process of Indirect Evergreening

Figure 1 depicts the process of indirect evergreening that we study in this article.



loans. Therefore, we test whether low-quality banks are more likely to extend connected loans where the initial borrower is in trouble (steps 1–3).

We estimate the following regression equation:

$$(1)\quad Y_{ijt} = \alpha + \beta_1 \text{BAD\_BORROWER}_{it} \times \text{BAD\_BANK}_{jt} + \beta_2 \text{BAD\_BORROWER}_{it} + \beta_3 \text{BAD\_BANK}_{jt} + \beta_4 X_{it} + \beta_5 X_{jt} + \beta_6 \theta_i + \beta_7 \gamma_j + \beta_8 \omega_t + \varepsilon_{ijt}.$$

The data are organized at the initial borrower-bank-year level. We start with all bank-borrower pairs that have an outstanding lending relationship at the beginning of our sample period and create an annual panel. When a bank lends to a borrower for the first time, we create a new bank-borrower pair. When a borrower repays the full outstanding amount, we close the bank-borrower pair. A new loan to an existing borrower is recorded by updating the loan amount.

The outcome variable Y_{ijt} is an indicator variable that takes the value of 1 if a loan is extended to a subsequent borrower related to an initial borrower i by a bank j (an existing banker to the initial borrower i) during the year t, and 0 otherwise. BAD_BORROWER_{it} is an indicator variable that takes the value of 1 if the initial borrower i is a borrower in trouble during a year t, and 0 otherwise. BAD_BANK_{jt} is an indicator variable that takes the value of 1 if the bank j is a low-quality bank during a year t, and 0 otherwise. θ_i (γ_j) (ω_t) represents the initial borrower (bank) (year)-fixed effects.

X_{it} is a vector consisting of firm-year level variables. The natural logarithm of total assets, debt to total asset ratio, and current ratio are the firm-year level variables considered. These variables capture the effect of size, leverage, and liquidity. Profitability is already captured by the ICR used to measure distress. X_{jt} is a vector comprising bank-year level variables. Return on assets and the ratio of gross nonperforming assets to total assets are the bank-year level variables considered. These variables account for the profitability and asset quality of banks. The standard errors are clustered at an industry level and adjusted for heteroskedasticity.

We present the results in columns 1 and 2 of Table 4. In column 1, the interaction between the initial borrower in trouble and low-quality bank indicator variables shows that, from a difference-in-difference perspective, the low-quality banks are approximately 0.53 percentage points more likely than high-quality banks to extend a connected loan when the initial borrower is in trouble. A difference of 0.53 percentage points represents an economically meaningful 7% increase in the probability of a connected loan. In column 2, where we use the natural logarithm of the loan amount of a connected loan as the dependent variable, we find a similar result.

The initial borrower and bank-fixed effects absorb the average impact at the initial borrower and bank levels, respectively. Year-fixed effects absorb the general time trend. The results strengthen further when we include initial borrower × year and bank × year-fixed effects and absorb time-varying initial borrower and bank-level factors. Thus our results are confirmed even when we compare within a borrower-year and between banks. However, the number of fixed effects comes close to the number of observations. Therefore, we do not present the results with time-varying fixed effects.

TABLE 4

Connected Loan and Related Party Transactions

Table 4 presents the results associated with building blocks of SIE. The first two columns test the propensity of lending connected loans by low-quality lenders of borrowers in trouble. In columns 1 and 2, the data are organized at the initial borrower-bank-year level for the sample period 2006–2020. In column 1 (2), dependent variable is an indicator that takes a value of 1 for connected loans, and 0 otherwise (natural logarithm of loan amount). The explanatory variable is an interaction between BAD_BORROWER which takes a value of 1 if the initial borrower is in trouble, and 0 otherwise, and BAD_BANK which takes a value of 1 for low-quality banks, and 0 otherwise. All terms have been defined in Table 1. We include borrower, bank, and year-fixed effects in both columns 1 and 2. We also include initial borrower and creditor-year controls in both the columns. The last 4 columns show the association of related party transactions (RPT) between pair of related firms and the indicator representing connected loan by a low-quality bank of initial borrower in trouble. The data are organized at the initial borrower-related party-year level for the sample period 2006–2020. The dependent variables in columns 3–6 are the natural logarithm of RPT_LOANS, RPT_INVESTMENTS, RPT_INFLOW, and RPT_TOTAL received by the initial borrower, respectively. The explanatory variable CONNECTED_SIE is 1 when there is a connected loan by a low-quality bank of initial borrower to the related party of the initial borrower, and 0 otherwise. We include initial borrower, subsequent borrower, year, and related party type-fixed effects. We also include initial borrower, subsequent borrower, and bank-year level controls. In all columns, borrower-year level controls include natural logarithm of TOTAL_ASSETS, LEVERAGE, and CURRENT_RATIO, while creditor-year level controls include ROA and gross nonperforming asset (GNPA). The standard errors reported in parentheses are robust and adjusted for clustering at the industry level. ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively.

	Connected Loans		Related Party Transactions			
Dependent Variable	CONNECTED_ LOAN	LOAN_ AMOUNT	RPT_ LOANS	RPT_ INVESTMENTS	RPT_ INFLOW	RPT_ TOTAL
	1	2	3	4	5	6
BAD_BORROWER × BAD_BANK	0.005**	0.049***				
	(0.003)	(0.018)				
BAD_BORROWER	−0.011***	−0.085***				
	(0.003)	(0.020)				
BAD_BANK	−0.013***	−0.083***				
	(0.001)	(0.011)				
CONNECTED_SIE			0.177***	0.063*	0.179***	0.162**
			(0.044)	(0.032)	(0.062)	(0.070)
Initial borrower-year controls	Yes	Yes	Yes	Yes	Yes	Yes
Subsequent borrower-year controls	No	No	Yes	Yes	Yes	Yes
Bank-year controls	Yes	Yes	No	No	No	No
Initial borrower FE	Yes	Yes	Yes	Yes	Yes	Yes
Subsequent borrower FE	No	No	Yes	Yes	Yes	Yes
Bank FE	Yes	Yes	No	No	No	No
Related party type FE	No	No	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
No. of obs.	312,343	312,343	177,231	177,238	177,178	177,166
R^2	0.218	0.237	0.393	0.301	0.632	0.721

B. Related Party Transfers (Step 4)

Suppose the connected loan is indeed an evergreening transaction performed to prevent the initial borrower from defaulting. In that case, as described in Step 4 above, the subsequent borrower is likely to pass on the funds to the initial borrower for repayment of the original loan. To test the above possibility, we examine the RPTs. We ask whether initial borrowers of an SIE transaction are more likely to receive funds through RPTs from their related parties (subsequent borrowers) that receive a loan from the low-quality bankers of the initial borrower.

We estimate the following regression equation:

$$(2) \quad Y_{ikt} = \alpha + \beta_1 \text{CONNECTED\_SIE}_{ikt} + \beta_2\theta_i + \beta_3\gamma_k + \beta_4\omega_t + \beta_5 X_{it} + \beta_6 X_{kt} + \varepsilon_{ikt}.$$

An observation represents an initial borrower (i)–related party (k)–year (t) pair. Y_{ikt} is the natural logarithm of the value of a type of RPT consummated between the initial borrower i and a related party k during the year t. $\text{CONNECTED\_SIE}_{ikt}$ is a dummy variable that takes the value of 1 if the related party k receives a loan from a low-quality bank of the initial borrower i during a year t, and 0 otherwise. θ_i (γ_k) (ω_t) denotes the initial borrower (subsequent borrower) (year)-fixed effects. X_{it} (X_{kt}) represents time-varying initial (subsequent) borrower level variables. As in equation (2), these variables account for size, leverage, and liquidity. The standard errors are clustered at an industry level and adjusted for heteroskedasticity.

We present the results in columns 3–6 of Table 4. In column 3, we consider the natural logarithm of RPT loans received by the initial borrower. We find an increase of 19% in loans to the initial borrower from the related parties that are likely to be involved IE. In column 4 (5), we consider inflows from related parties in the form of investments (total RPT inflows). We find 7% (20%) higher inflows to initial borrowers in cases where the two parties are likely to be involved in IE.

Finally, in column 6 of Table 4, we consider all RPT transactions. We add both inflows and outflows. We recognize that in some cases, such as purchasing equipment at a below-market price, the initial borrowers could use RPT outflows to extract funds from related parties. Here, we find an increase of 18%. The results are in line with the hypothesis formulated in step 4. The subsequent borrowers of evergreened loans that receive funding from the bank seem to transfer resources to the initial borrowers to facilitate the repayment of the initial loans.

Thus, we call a set of transactions SIE when i) a low-quality bank lends to a related party of its borrower in trouble, and ii) the subsequent borrower who receives the above loan transfers the funds to the initial borrower in trouble.

1. Value of Loans and RPTs

Suppose, the chain of transactions that we focus on represents a form of evergreening; then expecting the subsequent borrower to transfer the entire amount received from the bank as a loan to the initial borrower, is reasonable. Accordingly, we test whether the new loan received and related party flows are similar within SIE transactions. We consider all related party inflows to the initial borrower and not just the flows from the subsequent borrower to account for the fact that subsequent borrowers could transfer funds through a chain of related parties.

We report the results in Panels A and B of Table A3 of the Supplementary Material. In Panel A (B), we consider only related party loans (all RPTs) of the initial borrower and compare the amount in such transactions with the loan amount received by the subsequent borrower. We find that the two variables are not statistically distinguishable. We also compare the loan amount and related party loans within other connected but not SIE loans in the same table. Here, we find a significant difference between the two variables. The result supports our hypothesis that the subsequent borrower transfers the loan received to the initial borrower in trouble.

2. Investment by the Subsequent and Initial Borrowers

A corollary of step 4 is that the subsequent borrower of an SIE transaction is likely to invest less than other loan recipients because a large part of the loan received is transferred to a related entity in trouble. We test the above hypothesis by organizing the data at a new loan borrower-year level and regressing the

TABLE 5

Investment by Borrowers

Table 5 presents the results for the difference in investments by the subsequent and initial borrowers who are a part of an indirect evergreening transaction and other borrowers who are not part of SIE. The data are organized at a borrower-year level for the sample period 2006–2020. First (last) 4 columns include a sample of all subsequent borrowers (initial borrower) during our sample period. The dependent variable in columns 1 and 2 (3 and 4) is the ratio of FIXED_ASSET_INVESTMENT (CASH_INVESTMENT) to loans received by the subsequent borrower. The dependent variable in columns 5 and 6 (7 and 8) is the natural logarithm of FIXED_ASSET_INVESTMENT (CASH_INVESTMENT) by the initial borrower. We control for the borrower's natural logarithm of TOTAL_ASSETS, LEVERAGE, and CURRENT_RATIO in even-numbered columns. We include fixed effects at the borrower and year level in all columns. The standard errors reported in parentheses are robust and adjusted for clustering at the industry level. ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively.

	Subsequent Borrower Investment to Loan Ratio				Initial Borrower Investment			
Dependent Variable	FIXED_ASSET_ INVESTMENT/LOAN		CASH_INVESTMENT/ LOAN		FIXED_ASSET_ INVESTMENT		CASH_ INVESTMENT	
	1	2	3	4	5	6	7	8
SIE	−0.543**	−0.665***	−0.802***	−0.693**	−0.296***	−0.307***	−0.523***	−0.537***
	(0.239)	(0.241)	(0.27)	(0.284)	(0.065)	(0.064)	(0.07)	(0.07)
Borrower-year controls	No	Yes	No	Yes	No	Yes	No	Yes
Borrower FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. of obs.	31,460	28,982	28,316	26,278	95,142	91,823	84,277	81,137
R^2	0.343	0.345	0.358	0.358	0.75	0.757	0.777	0.783

investment-to-loan ratio on the SIE measure. The investment-to-loan ratio denotes the utilization of loans for investment purposes by firms. We include firm and year-fixed effects.

We report the results in columns 1–4 of Table 5. The results indicate that the investment-to-loan ratio decreases by 30% from its unconditional mean for subsequent borrowers associated with an SIE, when compared to other borrowers not involved in SIE. The results are in line with the hypothesis that, on average, the borrowers of subsequent loans of an SIE transaction transfer the loans rather than invest themselves.

For completion, we examine the investments made by the initial borrowers and report the results in columns 5–8 of Table 5. We find a decline of 25.6% in investments by initial borrowers of SIE transactions. Despite inflows from related parties, the initial borrowers who are a part of SIE transactions invest less. The related party inflows seem to be used to repay the existing loan in the case of SIE transactions.

C. Loan Performance (Steps 5 to 7)

1. Performance of New Loans

Indirect evergreening is in spirit similar to refinancing a risky project on the verge of collapse. If the subsequent loans represent evergreening, they are highly likely to eventually default. We estimate the propensity to default on the SIE (subsequent) loan using the following Cox hazard model:

$$\text{(3)} \quad \text{HR} = \pi(t)/\pi_0(t) = \exp(\beta_1 \text{SIE} + \beta_2 \text{GOOD\_BANK\_CONNECTED\_LOAN\_INDICATOR} + \beta_3 \Sigma X_i + \gamma_i).$$

TABLE 6

Loan Performance

Table 6 presents the results relating to the performance of loans borrowed by the Subsequent borrowers and Initial borrowers. In Panel A, the data are organized at a subsequent borrower loan level. For each loan, time to survival is recorded, which is measured as time to default for loans that default, and time till the loan is repaid or end of sample period for loans that do not default. Cox Hazard regression model is used to model the survival time analysis of the loans. The dependent variable is the hazard ratio, that is, ratio of hazard rate of loans that are part of SIE to hazard rate of other loans. The independent variable GOOD_BANK_CONNECTED_LOAN is set to 1 for connected loans from a good bank of the initial borrower in trouble, and 0 otherwise. Even-numbered columns control for NEW_BANKING_RELATIONSHIP indicator, which is 1 if the firm is borrowing from the bank for the first time; and SHARE_OF_LOAN_EXPOSURE_TO_FIRM which represents percentage loan exposure of the bank to the borrower. In Panel B, the data are organized at an initial borrower-bank-year level. The dependent variable LOAN_DEFAULT is set to 1 if the initial borrower fails to repay loan to a bank during the current year or the next year, and 0 otherwise. DIRECT_EVERGREEN is an indicator variable set to 1 if the initial borrower is in trouble and its loans are directly evergreened. SIE is as defined in Table 1. Even-numbered columns include borrower-year and bank-year level controls. Borrower, bank, and year-fixed effects are included in all columns. Standard errors reported in parentheses are clustered at the industry level. ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively.

Panel A. Loan Performance of Subsequent Borrowers

	Dependent Variable: Hazard Ratio of Rate of LOAN_DEFAULT			
	1	2	3	4
SIE	2.357*** (0.421)	2.380*** (0.432)	2.355*** (0.421)	2.380*** (0.432)
GOOD_BANK_CONNECTED_LOAN			0.934 (0.253)	0.983 (0.267)
NEW_BANKING_RELATIONSHIP		0.939 (0.195)		0.939 (0.195)
SHARE_OF_LOAN_EXPOSURE_TO_FIRM		0.000*** (0.000)		0.000*** (0.000)
Bank FE	Yes	Yes	Yes	Yes
No. of obs.	33,697	33,540	33,697	33,540

Panel B. Loan Performance of Initial Borrowers

	Dependent Variable: LOAN_DEFAULT			
	1	2	3	4
SIE	−0.005** (0.002)	−0.004* (0.002)	−0.005** (0.002)	−0.004* (0.002)
DIRECT_EVERGREEN			−0.011*** (0.002)	−0.011*** (0.002)
Initial borrower-Year controls	No	Yes	No	Yes
Creditor-Year controls	No	Yes	No	Yes
Initial borrower FE	Yes	Yes	Yes	Yes
Bank FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
No. of obs.	66,712	62,854	66,712	62,854
R^2	0.295	0.301	0.295	0.301

Here HR denotes the hazard ratio, that is, the ratio of default rate of loans of interest $(\pi(t))$ to the baseline default rate of loans $(\pi_0(t))$. The results are reported in Panel A of Table 6. We use bank-fixed effects to control for time-invariant lender characteristics. We cannot use borrower-fixed effects as we have only one observation (loan) per borrower in a large number of cases.

In columns 1 and 2, we regress loan default by the subsequent borrower on the SIE indicator to estimate the hazard ratio for SIE loans, that is, the ratio of the rate of default of the treatment group (SIE loans) and the control group (other loans). In column 1, the coefficient of the IE indicator, which provides the HR estimate for suspected SIE loans, is 2.36 and is highly significant. It indicates that the hazard rate of default of SIE loans is 136% higher than that of non-SIE loans. In column 2, we include additional control variables.

https://doi.org/10.1017/S0022109022000412 Published online by Cambridge University Press

To compare the performance of SIE loans with other connected loans from good bankers, we include an additional independent variable: GOOD_BANK_CONNECTED_ LOAN_INDICATOR, in columns 3 and 4. The variable is set to 1 when the subsequent borrower borrows a connected loan from a good quality bank of the initial borrower in trouble, and 0 otherwise. The coefficient of IE indicator in column 4, where we use the full-fledged specification, shows that the rate of default of the SIE loans is approximately 138% higher than that of other loans. By contrast, the hazard rate coefficient of the GOOD_BANK_CONNECTED_LOAN_INDICATOR is statistically indistinguishable from 1. The result indicates that the default rate is higher only when the subsequent borrower borrows from a low-quality banker and not when it borrows from a high-quality banker of the initial borrower. The result bolsters our SIE measure.

2. Loan Performance of Initial Borrowers

We next examine the impact on loans of initial borrowers that are the likely beneficiaries of SIE. Here, we expect the loan defaults of initial borrowers involved in IE to be lower than other borrowers in distress but not involved in SIE. This is because initial borrowers involved in SIE receive support from the bank indirectly through related entities. We estimate the following regression equation:

$$Y_{ijt} = \alpha + \beta_1 \text{SIE}_{it} + \beta_2 \theta_i + \beta_3 \gamma_j + \beta_4 \omega_t + \beta_5 X_{it} + \beta_6 X_{jt} + \varepsilon_{ijt}. \tag{4}$$

We organize the data at an initial borrower i-bank j-year t level as in Section IV.A. We limit the sample to borrowers in distress. The outcome variable takes the value of 1 if the initial borrower i defaults on a loan from bank j during the years t or $t+1$. SIE_{it} is an indicator variable that takes the value of 1 if the initial borrower i-bank j pair is associated with an SIE during the year t, and 0 otherwise. θ_i (γ_j) ((ω_t) represent initial borrower (bank) (year)-fixed effects. X_{it} (X_{jt}) represents a vector of initial borrower-year (bank-year) level control variables as in equation (2). The standard errors are clustered at an industry level and adjusted for heteroskedasticity. Note that we use a linear probability model rather than a hazard model here as the purpose is to measure the chances of default immediately after evergreening and not any time during the life of the loan.

We report the results in Panel B of Table 6. In column 1, we find that the default probability of initial borrowers who are a part of an SIE is 50 basis points lower than that of other borrowers in distress. In column 2, we find similar results after including the control variables. In columns 3 and 4, we control for DE of loans, and find similar results. Note that the proportion of firm-bank-year pairs with a loan default is 2.8%. Therefore, 50 basis points represent an economically meaningful 18% reduction in default.

D. Interest Rates

In Caballero et al. (2008), interest rate subsidy is a key feature of evergreening. In this context, we ask whether the pricing of subsequent loans reflects the additional risk of default. Expecting higher interest rates for arm's length loans is reasonable when the risk of default is higher. Thus, banks charging lower than expected interest rates on SIE loans further bolsters the evergreening argument.

https://doi.org/10.1017/S0022109022000412 Published online by Cambridge University Press

We do not have information about the interest rate charged on loans. The Prowess database provides information about weighted average interest rates at a firm-year level. Using the outstanding loan amount at the end of the previous year and the amount of new loans borrowed during a year, we calculate the likely cost of funds during the year. Unfortunately, we cannot distinguish between multiple loans borrowed during the same year. We assume that all loan repayments are made at the end of the year. Based on the above assumptions, we calculate the interest cost on loans extended during a year. Given the data limitations, we can only ask whether the interest cost in the year when the SIE loan is extended is higher or lower than other years. We estimate the following regression equation:

$$Y_{it} = \alpha + \beta_1 \text{SIE}_{it} + \beta_2 \theta_i + \beta_3 \gamma_t + \beta_4 X_{it} + \varepsilon_{ikt}. \quad (5)$$

The data are organized at a loan level. The dependent variable Y_{it} represents the interest cost of a firm i in the year t. SIE_{it} is a dummy variable that takes the value of 1 if the borrower i borrows an SIE loan during the year t, and 0 otherwise. θ_i (γ_t) denotes firm (year)-fixed effects. X_{it} represents firm-year level factors as in equation (2).

We present the results in Table 7. Out of the 68,730 firm-years when a new loan is extended, we have interest-related information for 33,991 firm-years. Given the presence of large and implausible outliers, we limit the interest rate range between 0% and 50%. The result is robust to a significant variation in these limits. In columns 1 and 2, we find that the interest rate is 1.48 percentage points lower in firm-years having SIE loans when compared to other firm years. Given the average interest rate of 14.1%, the coefficient is economically meaningful.

Therefore, despite a significantly higher default rate, SIE loans are associated with substantially lower interest rates. The results further support the IE argument and significantly ameliorate the concern that the SIE loans are arm's length loans extended by banks to earn high profits.

TABLE 7

Interest Rate

Table 7 presents the results for the difference in interest rates charged to the borrowers who are a part of a suspected indirect evergreening transaction and others among the borrowers of new loans during our sample period. The data are organized at a borrower-year level for the sample period 2006–2020. The dependent variable is the estimated interest rates paid by a borrower during a year. The explanatory variable is an indicator that takes a value of 1 for indirect evergreened loans, and 0 otherwise. We include borrower and year-fixed effects in all columns. We control for the natural logarithm of TOTAL_ASSETS, LEVERAGE, and CURRENT_RATIO in the even-numbered columns. The sample is limited to borrower-years with positive interest rate within 50% (40%) (60%) in columns 1 and 2 (3 and 4) (5 and 6). The standard errors reported in parentheses are robust and adjusted for clustering at the industry level. ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively.

	Dependent Variable: INTEREST RATE					
	1	2	3	4	5	6
SIE	−1.481***	−1.263***	−1.232***	−1.140***	−1.955***	−1.688***
	(0.476)	(0.484)	(0.391)	(0.404)	(0.565)	(0.576)
Subsequent borrower-year controls	No	Yes	No	Yes	No	Yes
Subsequent borrower FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
No. of obs.	16,933	16,043	16,196	15,343	17,499	16,564
R^2	0.345	0.345	0.344	0.347	0.340	0.341

Thus a combination of transfer of funds through RPTs, reduced investments, loan performance, and subsidized interest rates indicate that the SIE transactions are likely to be evergreening transactions.

E. Robustness

We conduct several robustness tests. First, we variously redefine bad firms as firms i) with below-median net worth; ii) firms having an ICR of less than 0.8; and iii) firms having an ICR of less than 0.9. Accordingly, a bank with above-median exposure to such borrowers is considered a low-quality bank. In results presented in Tables A4 and A5 of the Supplementary Material, we find that the tendency of increased connected loans between low-quality banks and borrowers in trouble, the transfer of funds from the subsequent borrower to the initial borrower in trouble, lower investments by the subsequent borrowers, higher (lower) default by subsequent (initial) borrowers, and lower interest rates on subsequent loans continue to hold. Finally, in Table A6 of the Supplementary Material, we compare the subsequent borrowers of SIE and other connected loans in terms of their prior financial performance. We do not find a significant difference. The initial borrowers expectedly have poor fundamentals, as shown in the same table.

V. Alternative Explanations

A. Rescue Through Internal Capital Markets?

Gopalan et al. (2007) show that i) the purpose of related party loans is to prevent the bankruptcy of a weak firm in the group, and ii) the rescue of a weak group firm prevents the spillover effects on the entire group. The question of how the rescuing related party raises resources to fund the bailout and the incentives of the funders of the bailout are not central to their hypothesis. In the case of IE, bankers' incentives to postpone default play a central role.

Based on the following findings, we contend that SIE is distinct from the rescue using the internal capital markets argument. First, as shown in Section IV.A, the tendency to lend to a related party of an insolvent borrower is higher among low-quality bankers than among high-quality bankers of the insolvent borrower. A firm attempting to bail out its related party in trouble is unlikely to prefer funding the rescue using loans from a low-quality banker of the insolvent related party over other banks.

Second, normally, a firm seeking to rescue its related party in trouble is likely to borrow from its own bankers rather than from the low-quality bankers of the insolvent related party. We test the above hypothesis by estimating a regression equation similar to equation (2). We consider bankers of both the initial borrowers and their related parties. For instance, consider a hypothetical initial borrower A having two related parties A1 and A2. Suppose A1 has a banking relationship with banks B1 and B2, and A2 with B3 and B4. Further, firm A itself banks with banks B1, B3, and B5. In this case, we consider five observations (AB1, AB2, AB3, AB4, and AB5).

We define an indicator variable (RELATED_PARTY_BANKER) that takes the value of 1 for observations involving banks having a relationship with only related parties of the initial borrower but not with the initial borrower, and 0 otherwise. In the above example, the indicator variable takes the value of 1 for pairs AB2 and AB4 as banks B2 and B4 do not have a direct lending relationship with the initial borrower A. We ask whether bankers that deal only with related parties of the initial borrower are likely to lend more to such related parties when the initial borrower is in trouble compared to bankers that have an existing banking relationship with the initial borrower. Specifically, our focus is on the interaction term between RELATED_PARTY_BANKER and initial borrower in trouble. As before, the dependent variable is the CONNECTED_LOAN indicator.

We report the results in column 1 of Table 8. We find that the interaction term has a negative coefficient of 4.2%. In other words, when the initial borrower is in trouble, an existing banker of a related party with no connection to the initial borrower is 51% less likely to lend than a bank with an existing lending relationship with the initial borrower. The result supports our hypothesis that bankers' incentives have a role to play in SIE.

TABLE 8

Connected Lending by Low-Quality Banks (Initial and Subsequent Borrower' Bankers)

Table 8 presents the results for the variation in lending by low- and high-quality banks under different scenarios. The data are organized at an initial borrower-bank-year level in all columns. In column 1, we consider banks having a banking relationship with either the initial borrower or related parties of the initial borrower. In column 2, we consider only those banks that have a banking relationship with a related party of the initial borrower. In column 3, we consider only those banks that have banking relationship with only the initial borrower but not with any related party of the initial borrower. Finally, in column 4, we consider banks having a banking relationship with both the initial borrower and a related party of the initial borrower. The sample period is 2006–2020. The dependent variable LOAN_INDICATOR takes the value of 1 if the bank lends a loan to a related party of the initial borrower, and 0 otherwise. RELATED_PARTY_BANKER is an indicator variable that takes the value of 1 if the bank under consideration has an existing banking relationship with any related party of the initial borrower, and 0 otherwise. BAD_BORROWER is an indicator variable that takes a value of 1 if initial borrower is in trouble, and 0 otherwise, while BAD_BANK is an indicator variable that takes a value of 1 for low-quality banks, and 0 otherwise. All the terms have the same meaning as assigned to them in Table 1. We include borrower and bank-year level control variables in all columns. Borrower level controls include the natural logarithm of TOTAL_ASSETS, LEVERAGE, and CURRENT_RATIO, while creditor level controls include ROA and gross nonperforming asset (GNPA). We include borrower, bank, and year-fixed effects in all columns. The standard errors reported in parentheses are robust and adjusted for clustering at the industry level. ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively.

	Dependent Variable: LOAN_INDICATOR			
	1	2	3	4
BAD_BORROWER × RELATED_PARTY_BANKER	–0.042***			
	(0.004)			
BAD_BORROWER	0.022***	–0.016***	–0.002***	–0.036***
	(0.002)	(0.003)	(0.001)	(0.008)
RELATED_PARTY_BANKER	0.250***			
	(0.005)			
BAD_BORROWER × BAD_BANK		0.003	0.002**	0.004
		(0.003)	(0.001)	(0.008)
BAD_BANK		–0.011***	–0.003***	–0.016***
		(0.002)	(0.000)	(0.004)
Initial borrower-year controls	Yes	Yes	Yes	Yes
Bank-year controls	Yes	Yes	Yes	Yes
Initial borrower FE	Yes	Yes	Yes	Yes
Bank FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
No. of obs.	819,998	506,867	312,343	100,561
R^2	0.199	0.144	0.082	0.205

Third, by restricting the data to the initial borrower-related party banker-year level (or by leaving out the initial borrower's bankers from the previous specification), we ask whether the bad banks of the related party also display a higher tendency to extend connected loans when the initial borrower is in trouble. In terms of the above example, we only consider firm-bank pairs AB2 and AB4 as banks B2 and B4 have an existing relationship only with the related parties of the initial borrower A and not with A itself. The results reported in column 2 of Table 8 show that within the above subsample, low-quality banks are not more likely to fund a rescue of the initial borrowers. Thus, the connected loan seems to result from an initial borrower's troubled bank attempting to postpone default. The above conclusion makes it more likely to be part of SIE, rather than a related party's incentives to save a firm using funding from its bad bank.

Fourth, a concern could be that what appears to be a funding of SIE loans by insolvent initial borrowers' troubled bankers is, in fact, funding by related party's bankers. This can happen when initial and subsequent borrowers have common bankers. To address this concern, we restrict the sample used in Table 4 to banks that have an existing relationship only with the initial borrowers and not with any related party of the initial borrower and estimate the regression equation (2). We present the result in column 3 of Table 8. As before, the tendency of extending connected loans that are likely to be part of SIE is higher among low-quality banks, even in this subsample.

Finally, we examine whether SIE and internal capital markets hypothesis are distinct phenomena. We separately identify instances where i) a related party (subsequent borrower) of an insolvent borrower borrows from a low-quality bank of the insolvent borrower and transfers funds through RPT, and ii) such a related party passes on funds to the insolvent initial borrower without borrowing from a low-quality bank of the insolvent borrower. Note that the first set of transactions represents SIE and the second set represents internal capital market transactions without SIE.

Using the hazard model set up used in Section IV.C, we test whether the chances of loan delinquency differ for the two types of transactions. We expect only the SIE loans to default more and not loans associated with internal capital market transactions. We report the results in Table A7 of the Supplementary Material. In columns 1 and 2 (3 and 4), we consider RPT outflows (total RPTs). We find that the SIE loans continue to have higher default rates whereas loans associated with only internal capital markets do not default more. Thus, SIE and internal capital markets appear to be separate phenomena.

B. Arm's Length Loans

A reader may wonder whether SIE loans are normal arm's length loans that are extended based on risk–reward calculations. We address the above concerns in two ways. First, the results presented in Section IV.C show that the SIE loans have a higher delinquency rate than other loans. From a risk–reward perspective, a higher delinquency rate can be justified only when accompanied by a proportionately higher interest rate. The results presented in Section IV.D show that the interest cost of firms is lower in borrower-years having an SIE. Thus, SIE loans do not seem to offer high returns. Second, the arguments articulated in Section V.A regarding the type of bankers associated with SIE also help rule out the arm's length explanation. There is no reason to expect low-quality bankers of an insolvent borrower to show a greater tendency to extend arm's length loans.

C. Other Concerns

One may argue that the IE offers time to the initial borrower in trouble to recover from a shock by avoiding an immediate default. Therefore, as long as the additional default on subsequent loans is lower than the default on initial borrower loans, the SIE could benefit the bank. The argument can be extended further to state that the benefit is higher for low-quality banks as they have a higher proportion of low-quality borrowers. Note that the same argument can be articulated for DE as well. While IE transfers the loan between related parties, DE does it intertemporally within a borrower. Even in the case of DE, a default is avoided in the short term. However, as several studies cited in Section I shows, on average, DE only postpones recognition of loan default.

We expect IE to be no different and verify the hypothesis empirically. For every SIE, we compare the loan performance of initial borrowers that are a part of the SIE with other initial borrowers in trouble that are not a part of the SIE. We call the difference "defaults avoided." We then compare the same difference for subsequent borrowers. For every SIE, we compare the subsequent borrowers that are a part of SIE and other subsequent borrowers that are involved in RPTs but not in SIE. We call the difference "additional default." We test for the difference in means between "defaults avoided" and "additional default." We cannot reject the hypothesis that the difference is 0.[4] Thus, similar to DE, IE only shifts loan default from an initial borrower to a subsequent borrower. Finally, we acknowledge that the above result does not imply that cases where the banks end up with effectively lower defaults are absent. Such cases do exist. However, on average, banks do not gain by providing additional time to the initial borrower.

Finally, a concern could be that increased default by subsequent borrowers reflects either a delayed propagation of a common shock from the initial to the subsequent borrowers or the spillover of shocks from the initial to the subsequent borrowers. First of all, there is no reason to believe that the delayed propagation of a common shock or spillover is related to the SIE conditions. As we have illustrated before, when SIE conditions are not satisfied, default does not increase. Nonetheless, we directly address the above concern in column 7 of Table A6 of the Supplementary Material by showing that the probability of an SIE is higher when an initial and subsequent borrower pair belongs to unrelated industries than when they belong to related industries. We consider industries with below the median correlation in sales before our sample period as unrelated industries. As the existence of common shocks is likely to be lower between unrelated

[4]We use Propensity Score Matching to find controls firms (identical with respect to size, profitability, and leverage) for both initial borrowers and subsequent borrowers that are part of SIE, and calculate the additional defaults and defaults avoided. We then conduct a *t*-test and find that the average differences between additional defaults (2%) and defaults avoided (1%) is statistically insignificant (*t*-stat of 0.9).

industries, the above result addresses the concern that SIE merely captures delayed propagation of a common shock.[5]

VI. Motives Behind Indirect Evergreening

A. Window Dressing to Reduce the Chances of Detection

DE lets banks report better performance and reduces the need for additional capital to meet regulatory requirements. However, a regulator can still unearth this type of evergreening by closely examining borrowers' quality and their loan repayment track record with other banks. IE is different because the subsequent loan is extended to a new (connected) borrower, even an inspection of borrower quality is unlikely to reveal much as long as the subsequent borrower appears healthy on books. Thus, IE achieves the purpose of evergreening at a reduced risk of detection. Therefore, a successful IE requires that the subsequent borrower appears healthier than the original borrower in trouble.

We test the ability of IE to window dress borrower quality by regressing the difference between the accounting variables of the subsequent and the initial borrowers on the SIE variable. We limit the sample to connected loans so that both the borrowers have a loan from the same bank. Note that the subsequent borrower appears as a borrower on the bank books for the new loan. Therefore, to the extent subsequent borrowers have better accounting fundamentals than initial borrowers, the bank can show better health of its borrowers by engaging in SIE.

We report the results in Table 9. In columns 1 and 2, we consider the difference in ICR and find that the difference between subsequent and initial borrowers is nearly 5 times. In columns 3 and 4, we find that the leverage ratio of subsequent borrowers is 4.5 percentage points lower than that of initial borrowers. In columns 5 and 6, we find that the return on assets is higher by 2.1 percentage points for the subsequent borrowers of the SIE loans. The results suggest that the banks can show not only better strength of their balance sheets but also better borrower quality by resorting to SIE.

Is Indirect Evergreening Difficult to Detect?

We ask whether the window dressing of borrower quality highlighted above indeed reduces the chances of detection by regulators. Most studies on evergreening (Peek and Rosengren (2005), Caballero et al. (2008)) argue that the deliberate choice of the regulators to ignore leads to its persistence. The regulators can detect evergreening and cleanup banks when they purposefully aim to achieve it, usually after a crisis has hit (Hoshi and Kashyap (2010)). Thus, whether the lack of detection of evergreening is deliberate or due to the regulator's inability is hard to know.

The central bank's AQR, mentioned in Section II, allows us to disentangle the regulator's ability and willingness to detect evergreening. The Indian bank

[5]Untabulated results show that results shown in column 1 of Table 4 continue to hold if we add unconnected industry between two parties to the definition of connected loans. We also find that association between RPT and SIE is not significantly different for the firm pairs belonging to unconnected industries.

TABLE 9

Window Dressing of Bank Books

Table 9 presents the differences between the characteristics of subsequent borrowers and initial borrowers for connected loans. Here, the data are organized at the initial borrower-subsequent borrower-bank-year level for the sample of connected loans during the period 2006–2020. In columns 1 and 2, the dependent variable is the interest coverage ratio (ICR) for subsequent borrower minus ICR for the initial borrower. Similarly, the difference in LEVERAGE and return on assets (ROA) are used as the dependent variables in columns (3–4) and (5–6), respectively. SIE, as defined in Table 1, is used as the independent variable. The even-numbered columns include initial borrower-year, subsequent borrower-year, and bank-year level controls. We include initial borrower, subsequent borrower, bank, and year-fixed effects in all columns. The standard errors reported in parentheses are robust and adjusted for clustering at the industry level. ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively.

	Dependent Variable					
	Differences in ICR		Differences in LEVERAGE		Differences in ROA	
	1	2	3	4	5	6
SIE	5.407***	4.344***	−0.045***	−0.035***	0.021***	0.020***
	(1.022)	(1.065)	(0.011)	(0.008)	(0.003)	(0.002)
Initial borrower-year controls	No	Yes	No	Yes	No	Yes
Subsequent borrower-year controls	No	Yes	No	Yes	No	Yes
Bank-year controls	No	Yes	No	Yes	No	Yes
Subsequent borrower FE	Yes	Yes	Yes	Yes	Yes	Yes
Initial borrower FE	Yes	Yes	Yes	Yes	Yes	Yes
Bank FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
No. of obs.	32,888	31,505	33,561	33,049	34,483	32,578
R^2	0.647	0.662	0.802	0.890	0.705	0.714

regulator ordered a detailed AQR of all banks to know their "true" state of affairs. The auditors attempted to identify specific instances of evergreening of loans. Eventually, the central bank reported its own assessment of the true level of banks' bad assets. It required the banks to disclose the divergence between the actual provisions created and the central banks' assessment. The AQR was first conducted in the year 2016 and continued after that. Assuming that the regulator was not ignoring, at least during the period of AQR, is reasonable. Therefore, we can test whether the regulator can potentially detect and prevent IE.

We conduct a formal test of AQR's ability to detect DE and IE. Organizing data at a bank-year level, we ask whether the difference in the provisions suggested by the AQR and numbers reported by the bank are related to our measures of DE and IE. A significant positive association implies that the AQR exercise was able to detect evergreening, at least to some extent.

We restrict the data to the AQR years of 2016–2019. Unfortunately, we obtain only 85 bank-year observations where the divergence is disclosed. The banks are required to disclose the divergence only when the divergence in gross nonperforming assets or provisions is more than 15%. We do not know whether the divergence data is missing for these banks or the divergence is less than 15%. We present separate results assuming i) missing data; ii) 7.5% divergence; and iii) 15% divergence. The foreign banks were excluded from the AQR, and hence, we limit the sample to domestic banks. Given the low number of observations and persistence of divergence within banks, we do not include bank-fixed effects. Within the above constraints, we estimate the following regression equation:

$$(6) \quad Y_{jt} = \alpha + \beta_1 \text{DIRECT\_EVERGREEN}_{jt} + \beta_2 \text{INDIRECT\_EVERGREEN}_{jt} + \beta_3 \theta_t + \varepsilon_{jt}.$$

TABLE 10

Detection of Evergreening

Table 10 presents the association between Provisioning divergence and SIE. The data are at a bank-year level and sample period is 2016–2019. The dependent variable is PROVISIONING_DIVERGENCE which represents divergence in provisions expressed as a percentage of assets of the bank. The explanatory variables are DIRECT_EVERGREEN, which is cumulative directly evergreened loans as a proportion of bank assets and INDIRECT_EVERGREEN, which is cumulative SIE loans as a proportion of bank assets. In column 1, we consider only those bank-year observations where we have information about divergence. In column 2 (3), we assume the missing divergence to be 7.5% (15%). We include bank's ROA and PUBLIC_BANK_INDICATOR which takes a value of 1 for public sector banks as controls in all columns. We also include bank and year-fixed effects in all columns. The standard errors reported in parentheses are robust and adjusted for clustering at the bank level. ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively.

	Dependent Variable: PROVISIONING_DIVERGENCE		
	1	2	3
DIRECT_EVERGREEN	0.049**	0.040***	0.041***
	(0.019)	(0.011)	(0.010)
INDIRECT_EVERGREEN	−0.030**	−0.021***	−0.021***
	(0.014)	(0.007)	(0.006)
Bank-year controls	Yes	Yes	Yes
Bank FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
No. of obs.	85	173	173
R^2	0.311	0.298	0.252

The dependent variable is the divergence in provisions normalized by bank assets. $\text{DIRECT\_EVERGREEN}_{jt}$ ($\text{INDIRECT\_EVERGREEN}_{jt}$) is the proportion of a bank's assets directly (indirectly) evergreened. θ_t denotes year-fixed effects. The adjusted standard errors are clustered at the bank level.

We present the results in Table 10. In column 1, we ignore observations with missing divergence data. The divergence detected by the central bank is positively associated with the proportion of DE. A 1-standard-deviation increase in the DE proportion is associated with an economically meaningful 15% of the ratio of provisions to total assets of the bank. The result demonstrates that the central bank detected DE to some extent.

However, the coefficient relating to IE is negative and significant. The regulator seems unable to detect instances of IE even after an AQR. In columns 2 and 3, we attribute 7.5% and 15% divergence, respectively, for missing values. The results continue to hold. The result suggestively indicates that IE is a more effective method of masking bad assets than DE.

The question that arises is why can the regulator not adopt the same econometric approach that we have used to detect IE. It is hard to prove in a legal sense that the loan extended by the low-quality banker of the insolvent borrower to a related party of that borrower and the RPTs between the insolvent borrower and its related party are part of the same transaction chain. Banks may argue that their decision to extend the subsequent loan is unrelated to the initial loan. The loan is extended to the subsequent borrower based on the banks' assessment of the subsequent borrower. Further, banks cannot be held responsible for RPTs between two borrowers. Commercial judgment on interest rates cannot be normally questioned. Therefore, for the regulators to adjudge SIE as IE and ask banks to provide for them is hard.

Further in columns 1–4 of Table A8 of the Supplementary Material, using an event study approach, we illustrate that bank stocks do not react negatively when they extend SIE loans. However, given that banks provide several loans along with SIE loans, attributing stock price reaction only to SIE loans is difficult. In columns 5 and 6 of Table A8 of the Supplementary Material, we show that a proportion of SIE loans is not associated with significant deposit outflows. The results suggestively indicate that the financial markets do not punish banks for engaging in SIE.

B. Post Retirement Career

Studies have shown that CEOs engage in earnings management to show good performance during their tenure to secure their post-retirement career (Brickley, Linck, and Coles (1999)). The fact that in government-owned banks the end of a CEO's tenure is determined solely by age in almost all cases provides us a good setting to test whether IE is driven by CEO career concerns (Sarkar, Subramanian, and Tantri (2019)). Given the age-based retirement policy, the end of tenure is perfectly predictable.

We examine whether the SIE increases toward the end of the CEO tenure. We organize the data at a bank-year level and regress the proportion of loans evergreened by a bank on an indicator variable that takes the value of 1 for the second half of a bank CEO tenure. We limit the sample to government-owned banks and present the results in Table A9 of the Supplementary Material.

In columns 1 and 2, where we include bank and CEO-fixed effects, we find a positive association between CEO tenure and SIE. The tendency to indirectly evergreen is higher by 0.5 percentage points in the second half of a bank CEO's tenure. In columns 3 and 4, we replicate the test using the last year of the CEO's tenure and arrive at similar results. When we examine the data carefully, we find that more than 50% of the retirements are concentrated in 3 out of 10 years in our sample. Therefore, we are unable to use year-fixed effects, which absorb a large portion of the main effect because of the above concentration.

C. Circumventing De Jure Restrictions

IE potentially allows banks to circumvent internal and external restrictions that render DE hard. For instance, the bank's internal policies may not allow lending to borrowers with poor fundamentals or may impose stringent procedural requirements, including approvals from multiple departments, for extending such loans. In some cases, regulations may require banks to treat restructured loans as not standard and provide for them. As IE involves lending to a new and healthy borrower based on fresh collateral, the above restrictions do not apply.

Notably executing an IE has its own challenges. An insolvent initial borrower and a low-quality bank should be able to find a related party with a healthy balance sheet that is willing to act as a conduit for the SIE loan. Finding such a related party is difficult. Not surprisingly, we find far fewer cases of IE than DE in our data.

In fact, we find that IE is resorted to after the DE option is exercised in most cases. In the results presented in Table A10 of the Supplementary Material, we demonstrate that a related party of an already directly evergreened initial borrower in trouble has a higher chance of receiving a loan from a low-quality banker of the initial borrower in trouble. The coefficient of the triple interaction between INITIAL_BORROWER_IN_TROUBLE, BAD_BANK, and DIRECTLY_EVERGREENED is positive, with the CONNECTED_LOAN being the dependent variable.

VII. Macro Impact

A. Industry Level Macro Impact

A well-recognized impact of DE is the crowding out of credit and investments of the nonevergreened sectors and firms (Caballero et al. (2008)) because of the persistence of zombie firms. Such persistence is fueled by the bank credit extended to zombies. We test whether the SIE also has a similar impact. We ask whether the flow of credit and investment to productive firms is negatively impacted by estimating the following regression equation:

$$(7) \qquad Y_{it} = \alpha + \beta_1 \text{INDUSTRY\_EXPOSURE}_{it} + \beta_2 X_{it} + \beta_3 \theta_i + \beta_4 \gamma_t + \varepsilon_{it}.$$

Y_{it} represents outcomes at an industry year level. INDUSTRY_EXPOSURE$_{it}$ is the proportion of SIE loans out of total loans at the industry-year level. We consider the industry affiliation of the firms that receive credit in an IE transaction to identify the industry impacted. X_{it} represents the average return on assets, debt to total asset ratio and the natural logarithm of total assets at the industry year level. θ_i denotes industry-fixed effects, and γ_t year-fixed effects.

We report the results in Table 11. In columns 1 and 2, we consider the proportion of credit flowing to firms having high sales growth. We identify firms that are in the third tercile in terms of sales growth within an industry year before the year under consideration as high growth firms. We find that high sales growth firms

TABLE 11

Macro Impact

Table 11 shows the association of various outcomes at industry-year level with the industry indirect evergreening exposure. Industry is defined at NIC 3-digit level. The data is at industry-year level for the sample period 2006–2020. The dependent variables include i) CREDIT_TO_HIGH_GROWTH_FIRMS which is proportion of credit flow within the industry that goes to high sales growth firms measured as firms in the top tercile in terms of sales growth in the year in columns 1 and 2; ii) OVERALL_CREDIT which is natural logarithm of total credit inflow in columns 3 and 4; and iii) INVESTMENT which is natural logarithm of cash investment in columns 5 and 6. The main explanatory variable is INDUSTRY_EXPOSURE, an indicator that takes a value of 1 for industries with above-median indirect evergreening exposure, and 0 otherwise. The controls in the even-numbered columns include the natural logarithm of TOTAL_INDUSTRY_ASSETS, average LEVERAGE of the industry, and average profitability (ROA) of the industry. We include industry and year-fixed effects in all columns. The standard errors reported in parentheses are robust and adjusted for clustering at the industry level. ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively.

	Dependent Variable					
	CREDIT_TO_HIGH_GROWTH_FIRMS		OVERALL_CREDIT		INVESTMENT	
	1	2	3	4	5	6
INDUSTRY_EXPOSURE	–0.056***	–0.055***	0.110	0.082	–0.201*	–0.155*
	(0.019)	(0.019)	(0.097)	(0.091)	(0.116)	(0.094)
Industry-Year controls	No	Yes	No	Yes	No	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
No. of obs.	2,530	2,480	2,530	2,480	2,590	2,542
R^2	0.190	0.195	0.838	0.836	0.889	0.900

in industries highly exposed to SIE witness a significant decline in the flow of fresh credit. In columns 3 and 4, we show that credit flow in industries highly exposed to SIE does not differ significantly from that in other industries. Columns 5 and 6 show that despite the firms in industries highly exposed to SIE receiving as much credit as others, such firms invest less. Industries that have above-median SIE exposure invest 18 percentage points less than other industries. The result is in line with evergreening crowding out credit to more productive firms and leading to lower aggregate investments and growth.

B. Bank Stock Crash

As illustrated in Table 6, a large number of subsequent loans of an IE operation end up either in default or are restructured. We test whether, eventually, the equity markets recognize the problem of IE as cases build up. We ask whether stocks of banks that build up significant evergreening assets eventually crash. As shown by Baron et al. (2021), a crash in banking stocks has significant real consequences in terms of lending and investment growth of borrowers. Therefore, we examine bank stock price crashes.

We test whether IE culminates into a subsequent stock price crash using the methodology introduced by Kim, Li, and Zhang (2011). The test involves two steps. In the first step, we estimate the bank-specific weekly returns for each bank week every year. The estimation involves running the following expanded market model regression:

$$(8) \qquad r_{j,\tau} = \alpha_j + \beta_{1j} r_{m,\tau-2} + \beta_{2j} r_{m,\tau-1} + \beta_{3j} r_{m,\tau} + \beta_{4j} r_{m,\tau+1} + \beta_{5j} r_{m,\tau+2} + \varepsilon_{j,\tau},$$

where $r_{j,\tau}$ is the return on bank stock j in week τ and $r_{m,\tau}$ is the return on market-index in week τ. The lead and lag market return terms are included to allow for nonsynchronous trading. Then, the bank-specific weekly return, $W_{j,\tau}$ is estimated as $\ln\left(1+\varepsilon_{j,\tau}\right)$. Next, we define crash weeks as the weeks in which bank-specific weekly returns are 3.2 standard deviations below the mean bank-specific weekly returns. The choice of 3.2 standard deviations ensures that this event is only 0.1% likely, assuming a normal distribution. The weekly crash measure is then aggregated to the bank-year level by defining crash years as years that have at least one crash week.

In the second step we estimate the following regression to measure the association between DE and IE exposures and 1 year ahead crash probability of bank stocks:

$$(9) \qquad \text{CRASH}_{j,t+1} = \alpha + \beta_1 \text{DIRECT\_EVERGREEN}_{j,t} + \beta_2 \text{INDIRECT\_EVERGREEN}_{j,t} + \beta_3 \theta_j + \beta_4 \gamma_t + \varepsilon_{j,t},$$

where $\text{CRASH}_{j,t+1}$ is an indicator that takes a value of 1 if bank stock j suffers a crash in at least 1 week of year $t+1$, and 0 otherwise. DIRECT_EVERGREEN (INDIRECT_EVERGREEN) is the total directly (indirectly) evergreened loans as a proportion of bank assets. θ_j (γ_t) denotes bank (year)-fixed effect.

We present the results in Table 12. The data are organized at the bank-year level. In columns 1 and 2, we use the Bombay Stock Exchange (BSE) bank index as

TABLE 12

Bank Stock Crash

Table 12 presents the results of association between indirect evergreening and probability of bank stock crash in the next year. The data are organized at a bank-year level for the sample period of 2006–2020. The dependent variable, CRASH, is an indicator variable that takes the value of 1 if the bank-specific return in any week of the corresponding year is 3.2 standard deviations below the mean bank-specific return in that week, and 0 otherwise. The explanatory variables are DIRECT_EVERGREEN which represents direct evergreening as a proportion of bank assets, and INDIRECT_EVERGREEN which represents indirect evergreening as a proportion of bank assets. We include bank and year-fixed effects in all columns. Columns 1 and 2 (3 and 4) use BSE (NIFTY bank) index return for the market model used to estimate bank-specific return. The standard errors reported in parentheses are robust and adjusted for clustering at the creditor level. ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively.

	Dependent Variable: CRASH			
Market Index	BSE Index		NIFTY Bank Index	
	1	2	3	4
DIRECT_EVERGREEN		0.006		0.161
		(0.484)		(0.629)
INDIRECT_EVERGREEN	1.294***	1.292***	1.443***	1.369***
	(0.184)	(0.294)	(0.337)	(0.245)
Bank FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
No. of obs.	553	553	553	553
R^2	0.141	0.141	0.153	0.153

the measure of market return, while in columns 3 and 4, we use the National Stock Exchange (NSE) bank index as the measure of the market return. In columns 2 and 4, we run a horse race between DE and IE. We also include bank and year-fixed effects in all the columns.

The IE exposure is economically and statistically significant across all specifications. A 1-standard-deviation increase in IE exposure results in an economically significant 6.6% increase in the probability of a crash. This is about 44% of the unconditional crash probability of 15.1%. By contrast, the DE exposure is statistically insignificant. The result suggests that a higher incidence of SIE is associated with an increased probability of bank stock crash in the subsequent year, which may have macroeconomic consequences through a contraction in credit supply (Baron et al. (2021)).

VIII. Conclusion

In this article, we examined a set of transactions where a borrower in trouble is bailed out by one of its low-quality bankers through additional lending to one of its related parties. The related parties that receive the loan seem to transfer the loan to the intended original target through a web of RPTs and the borrower in trouble uses it to repay the initial loan, leading to the lower default rate of the initial loan.

However, as expected of an evergreening transaction, the subsequent loan is more likely to fail. Even the pattern of investments suggests that the set of transactions examined represents evergreening. Thus, we contribute to the literature by identifying what we call IE. We demonstrated that IE is distinct from the known ways of DE in that even a systematic audit by the regulator seems to be able to detect it. We also highlighted firm-level and industry-level real consequences of IE. We rule out several alternative explanations.

One significant limitation of our study is that we cannot explain why the borrowers, especially healthy subsequent borrowers, participate in the IE exercise. Our focus was on the incentives of banks. Several reasons could explain the participation of borrowers in the IE exercises. First, both the initial and subsequent borrowers may have a single controlling entity, and that controlling entity gains more by temporarily avoiding the default of the initial borrower even at the expense of the long-term health of the subsequent borrower. This is akin to the tunneling argument put forth in the business group literature. Second, as happens in evergreening transactions, borrowers may falsely hope that the initial borrower will recover during the next period, and hence, both the loans can be repaid. Third, borrowers could act under pressure from banks, governments, or regulators who enjoy considerable power over them. Finally, subsequent borrowers could be shell firms with made-up accounting numbers that are created for evergreening. Unfortunately, we do not have access to the required data to investigate the incentives of the subsequent borrowers.

In addition, acknowledging that our tests do not establish that subsequent borrowers do not derive any benefit out of the SIE transaction is important. First, subsequent borrowers may extract a formal or informal fee from the bank or the initial borrower. One way to achieve this is retaining a portion of the SIE loans. Second, the subsequent borrowers may benefit from the bank relationship with the insolvent-related party's bad bank that may not remain so forever. Third, some subsequent borrowers may also be able to invest a part of the SIE loans and benefit from such investments. Finally, the saved initial borrower may reciprocate by helping the subsequent borrower if and when the subsequent borrower gets into trouble in the future. Unfortunately, given the data limitations, we cannot verify the above possibilities.

Our findings have significant policy implications. Given that regulators fail to detect IE even after an ex post audit, considering other methods of detection and prevention is important. Significant restrictions on RPTs either through regulations or through loan covenants could potentially curb IE. However, such a move could be socially counter-productive in emerging markets with weak external capital markets. The extant research has shown that internal capital markets play a significant role in ensuring the flow of capital to credit-constrained firms. Therefore, restrictions on the working of the internal capital markets could lead to a significant reduction in investments and employment. Thus, the costs may outweigh the benefits of curbing IE. Nevertheless, the detection of SIE can serve as a useful starting point for investigating evergreening transactions.

Another way of addressing this issue is to enhance the regulatory toolkit to include more advanced warning signals and adopt timely actions. However, banks may find newer and even harder to detect methods of evergreening of loans. If regulators are unable to step up their game, enhancing the true economic capital of banks significantly above the Basel norms might be required to prevent several creative techniques of evergreening including the IE pointed out in this study.

Supplementary Material

Supplementary Material for this article is available at https://doi.org/10.1017/S0022109022000412.

References

Acharya, V. V.; L. Borchert; M. Jager; and S. Steffen. "Kicking the Can Down the Road: Government Interventions in the European Banking Sector." *Review of Financial Studies*, 34 (2021), 4090–4131.

Acharya, V. V.; T. Eisert; C. Eufinger; and C. Hirsch. "Whatever It Takes: The Real Effects of Unconventional Monetary Policy." *Review of Financial Studies*, 32 (2019), 3366–3411.

Almeida, H.; C.-S. Kim; and H. B. Kim. "Internal Capital Markets in Business Groups: Evidence from the Asian Financial Crisis." *Journal of Finance*, 70 (2015), 2539–2586.

Bae, K.-H.; J.-K. Kang; and J.-M. Kim. "Tunneling or Value Added? Evidence from Mergers by Korean Business Groups." *Journal of Finance*, 57 (2002), 2695–2740.

Baron, M.; E. Verner; and W. Xiong. "Banking Crises Without Panics." *Quarterly Journal of Economics*, 136 (2021), 51–113.

Bertrand, M.; P. Mehta; and S. Mullainathan. "Ferreting Out Tunneling: An Application to Indian Business Groups." *Quarterly Journal of Economics*, 117 (2002), 121–148.

Bhue, G. S.; N. Prabhala; and P. Tantri. "Creditor Rights and Relationship Banking: Evidence from a Policy Experiment." (2015).

Bonfim, D.; G. Cerqueiro; H. Degryse; and S. Ongena. "On-Site Inspecting Zombie Lending." (2020).

Brickley, J. A.; J. S. Linck; and J. L. Coles. "What Happens to CEOs After They Retire? New Evidence on Career Concerns, Horizon Problems, and CEO Incentives." *Journal of Financial Economics*, 52 (1999), 341–377.

Bruche, M., and G. Llobet. "Preventing Zombie Lending." *Review of Financial Studies*, 27 (2014), 923–956.

Caballero, R. J.; T. Hoshi; and A. K. Kashyap. "Zombie Lending and Depressed Restructuring in Japan." *American Economic Review*, 98 (2008), 1943–1977.

Chari, A.; L. Jain; and N. Kulkarni. "The Unintended Consequences of Regulatory Forbearance." (2019).

Cheung, Y.-L.; P. R. Rau; and A. Stouraitis. "Tunneling, Propping, and Expropriation: Evidence from Connected Party Transactions in Hong Kong." *Journal of Financial Economics*, 82 (2006), 343–386.

Chopra, Y.; K. Subramanian; and P. L. Tantri. "Bank Cleanups, Capitalization, and Lending: Evidence from India." *Review of Financial Studies*, 34 (2020), 4132–4176.

Cole, S. "Financial Development, Bank Ownership, and Growth: Or, Does Quantity Imply Quality?" *Review of Economics and Statistics*, 91 (2009), 33–51.

Giannetti, M., and A. Simonov. "On the Real Effects of Bank Bailouts: Micro Evidence from Japan." *American Economic Journal: Macroeconomics*, 5 (2013), 135–167.

Gopalan, R.; V. Nanda; and A. Seru. "Affiliated Firms and Financial Support: Evidence from Indian Business Groups." *Journal of Financial Economics*, 86 (2007), 759–795.

Hoshi, T., and A. K. Kashyap. "Japan's Financial Crisis and Economic Stagnation." *Journal of Economic Perspectives*, 18 (2004), 3–26.

Hoshi, T., and A. K. Kashyap. "Will the US Bank Recapitalization Succeed? Eight Lessons from Japan." *Journal of Financial Economics*, 97 (2010), 398–417.

Jaskowski, M. "Should Zombie Lending Always Be Prevented?" *International Review of Economics & Finance*, 40 (2015), 191–203.

Jia, N.; J. Shi; and Y. Wang. "Coinsurance Within Business Groups: Evidence from Related Party Transactions in an Emerging Market." *Management Science*, 59 (2013), 2295–2313.

Jian, M., and T. J. Wong. "Propping Through Related Party Transactions." *Review of Accounting Studies*, 15 (2010), 70–105.

Jiang, G.; C. M. Lee; and H. Yue. "Tunneling Through Intercorporate Loans: The China Experience." *Journal of Financial Economics*, 98 (2010), 1–20.

Johnson, S.; R. La Porta; F. Lopez-de Silanes; and A. Shleifer. "Tunneling." *American Economic Review*, 90 (2000), 22–27.

Khanna, T., and K. Palepu. "Is Group Affiliation Profitable in Emerging Markets? An Analysis of Diversified Indian Business Groups." *Journal of Finance*, 55 (2000), 867–891.

Kim, J.-B.; Y. Li; and L. Zhang. "Corporate Tax Avoidance and Stock Price Crash Risk: Firm-Level Analysis." *Journal of Financial Economics*, 100 (2011), 639–662.
Peek, J., and E. S. Rosengren. "Unnatural Selection: Perverse Incentives and the Misallocation of Credit in Japan." *American Economic Review*, 95 (2005), 1144–1166.
Sarkar, A.; K. Subramanian; and P. Tantri. "Effects of CEO Turnover in Banks: Evidence Using Exogenous Turnovers in Indian Banks." *Journal of Financial and Quantitative Analysis*, 54 (2019), 183–214.
Tantri, P. "Identifying Ever-Greening: Evidence Using Loan-Level Data." *Journal of Banking & Finance*, 122 (2020), 105,997.

https://doi.org/10.1017/S0022109022000412 Published online by Cambridge University Press