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Do election cycles, political stability, and government effectiveness matter for the risk of banks? Evidence from Indian banks

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ABSTRACT

We examine whether parliamentary elections, political stability, and government effectiveness affect banks' risk in one of the largest democracies – India. We employ four measures of bank risk – net and gross Non-Performing Loans (NPL), the extent of loans restructured, and lending to the priority sector. Using dynamic panel data with a two-step system GMM approach, we find that NPL and lending to the priority sector increase during the years parliamentary elections are held. A stable political environment reduces net NPL, while an effective government increases NPL and lending to the priority sector. Further, we document meaningful differences in the behavior of state-owned and private banks around parliamentary elections. Credit market competition and moral hazard channels drive the relationship between bank risk and elections.

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1. Introduction

Banks are the lifeline of a country's economy, providing financial services to diverse clients, both individuals and multinational corporations. Factors determining bank performance are not always bank- or country-specific. The relationship between banks and politics dates back many centuries. The political factors influencing the performance of banks and financial institutions have been established in different contexts. Ghosh (2016) documents how political unrest that began in late 2010, referred to as the Arab Spring, spanning countries in the Middle East and North Africa (MENA), affected the operational performance of banks in the region. When governed by the ruling party, government- or state-owned institutions may mobilize funds to maximize their political objectives. State-owned banks offer special services and undertake risks for the government in exchange for the latter supporting the banks (Acharya and Rajan, 2020).¹ Occasionally, state-owned banks may also be used to advance government ambitions (Baum et al., 2010). Government interference and influence in the administration of state-owned banks have always been a subject of investigation. Haber (2005) documents how the Mexican government deviated from generally-accepted accounting principles

concerning the accounting treatment of non-performing loans (NPL) to maximize the value of state-owned banks that it aimed to privatize.² Osma et al. (2019) provide evidence of government interference through an increase in the level of NPL in European banks post the adoption of IAS 39.³

Related literature has also examined the effects of certain politically-important events on bank performance and stability, such as parliamentary, presidential, gubernatorial or local elections. Cross-country and country-specific studies have examined the effect of political elections on bank performance. As parliamentary elections are important political events in any democratic setting, they can influence banks' finances, especially for state-owned banks. For example, in an official event in 2015, the Indian government pointed out that it was inapt to interfere in state-owned banks; nevertheless, political intervention was required to promote public interest.⁴ This finding indicates that

² The Mexican government allowed only the interest portion of outstanding loans to be recognized as non-performing, whenever they were past due. This would lower the ratio of the non-performing loans to total loans and avert any lowering of the market valuation of the state-owned banks.

³ IAS 39 is the accounting standard pertaining to the recognition and measurement of financial assets. Osma et al. (2019) note that IAS 39 allows less discretion and its mandatory adoption by banks across Europe is viewed as a challenge to the supervisor's control over the financial reporting policies of the banks. IAS39 is superseded by IFRS.

⁴ At the first Gyan Sangam (meeting/conclave of the top management of banks with government officials) in 2015, <https://www.moneylife.in/article/old-gyan-about-public-sector-banks/40194.html>

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¹ We refer state-owned banks as such banks which have government shareholding exceeding 50% making the latter owner of such banks.

banks, especially state-owned banks, are influenced by political motives. Acharya and Rajan (2020) argue that government interference in banks occurs through the appointment of favored candidates, expanding lending ahead of elections, or influencing banks to provide funds to favored borrowers. We note that existing literature does not present conclusive evidence in this regard, especially by including political stability (PS) and ex-ante assessments of the effectiveness of the government.

Based on these arguments, we examine the effects of election events, PS, and government effectiveness (GE) on bank risk in India. We also analyze whether these effects differ between state-owned and private banks. We employ a two-step system GMM and estimate the effects of elections, PS, and GE on the gross and net NPL of banks, restructured loans as a percentage of total assets,⁵ and the proportion of priority sector loans to total loans.⁶ We also consider banks' market power as a control variable proxied by Lerner Index (LI).

There are three motivations for selecting Indian banks. First, India has consistently been in the top seven economies globally in terms of Gross Domestic Product (GDP) in the recent past.⁷ It is one of the largest democracies in the world, and has the biggest electoral population. Apart from being a multiparty democracy, India has immense political, demographic, ethnic, and socio-economic diversity (Dinc and Gupta, 2011). Second, India's banking landscape is characterized by many state-owned nationalized banks (Hossain et al., 2013). The contribution of these banks to loans and deposits in the total banking business as of the financial year 2019–20 was 59.78% and 64.74%, respectively.⁸ The contribution of state-owned banks to the GDP, measured in terms of loans as a percentage of GDP, was 31.84% for the financial year 2019–20.⁹ Given the importance of state-owned banks in the Indian economy, we investigate the impact of parliamentary elections held every five years on the risk of state-owned banks. Finally, Indian banks have been plagued by chronic NPL issues, as determined in the Asset Quality Review (AQR) undertaken by the central bank of India—the Reserve Bank of India (RBI) in 2015–16. Poor asset quality may distort banks' financial statements and profitability. Consequently, capital adequacy norms may not be adhered to, which affects a bank's stability.

The findings of the baseline model suggest that state-owned banks have higher gross and net NPL and lower restructured loans as a percentage of their assets. While the gross and net NPL increased during election years for the overall banking sector, the gross and net NPL of state-owned banks declined during the years

in which parliamentary elections were held. GE exhibits a positive (negative) relationship with gross and net NPL (restructured loans). PS has a negative relationship with priority sector loans of banks. The results also show an improvement (reduction) in the net NPL levels of state-owned banks during election years compared to the year before the elections. We present the different theoretical channels through which GE and PS influence bank risk. While our results concerning the relationship between PS and bank risk align with existing literature, we find that the relationship between GE and bank risk contradicts findings in the extant literature (Ashraf, 2017).

This paper makes three main contributions to the literature on bank risk and electoral cycles. First, existing literature has examined the performance of banks through the lens of standard performance metrics such as return on assets, interest margin to assets (Chen and Liu, 2013; Baum et al., 2010), growth rate of loans (Micco and Panizza, 2006), level of credit (Cole, 2009), net interest income divided by the average value of assets (Jackowicz et al., 2011), ratio of overhead cost to total assets (Micco et al., 2007), and bank default risk (Eichler and Sobański, 2016), etc. However, the bank's performance depends on risk matrices such as the level of NPL and the restructured loans the banks hold on their balance sheets. We provide insights into banks' credit risk, proxied by gross and net NPL, restructured loans, and their dependence on election and pre-election year risk factors. Existing study in the literature that is closest to our study in terms of the aforementioned performance metrics is that of Ozili (2020), who uses bank loan loss provisioning to examine the performance of banks in developed countries during election years. However, this paper differs from Ozili's (2020) on some palpable counts. For example, Ozili (2020) does not consider the differential impact of election cycles on state-owned and privately owned banks. Furthermore, in the context of India, Cole (2009) and Kumar (2020) document evidence of politically-influenced lending observed through increased lending to the agricultural sector during parliamentary and state elections. Our study differs from those of Cole (2009) and Kumar (2020) in that we consider lending to the priority sector as one of the measures of banks' riskiness, whereas their study focuses on the agriculture sector only, which is a sub-segment of lending to the priority sector.

Second, we consider PS and GE¹⁰ as important exogenous variables. Political factors related to government behavior should capture performance ex-ante rather than ex-post (Glaeser et al., 2004; Ashraf, 2017). Therefore, GE is an effective measure of the ex-ante assessment of the government's actions and policy decisions. Furthermore, by interacting bank ownership with PS and GE, we can highlight whether PS and GE have any differential impact on the risk of state-owned banks vis-à-vis private banks. Considering that GE is the quality and implementation of government policies independent of political pressure, using GE as an explanatory variable allows us to examine the risk to banks when the government is being (in)effective. GE reduces the influence of regulatory forbearance, as ushered in by banking regulators, especially in emerging economies such as India (Ahmed and Mallick, 2017b). Ineffective governance, characterized by unwarranted regulatory forbearance regimes, enables banks to protect their balance sheets from large losses through loan restructuring. Therefore, a higher level of GE provides a conducive environment wherein state-owned banks have the headroom to report the actual levels of NPL without facing pressure to comply with the BASEL-3 norms and without classifying them as restructured loans (Acharya and Subramanian, 2016). In a study covering 38 economies, He et al. (2021) find that loans sanctioned by banks

⁵ Restructuring refers to the modification of terms of loans, including alteration of repayment tenor, number of installments, or rollover of the loan. Regulatory forbearance by the RBI allows lower provisioning on restructured loans, and Indian banks have used restructuring to reduce their NPL (Ahmed and Mallick, 2017a). For example, restructuring a loan could help the bank keep the loan under the "Standard" category and create a provision of 2% on the loan. In comparison, slippage of the loan to the "sub-standard" (NPL) category would entail a provision of 10% on loan (Ahmed and Mallick, 2017a). We consider restructured loans as a proxy of risk because higher restructured loans (scaled to total assets) reflect the measures taken by banks to lower their risk by reducing NPL.

⁶ As per the Master Directions of the Reserve Bank of India bank lending to the sectors of agriculture, micro, small and medium enterprises (MSMEs), export credit, housing, social infrastructure, renewable energy, education is classified as priority sector loans, accessed on <https://www.rbi.org.in/Scripts/NotificationUser.aspx?Id=11959&Mode=0>.

⁷ World Bank Data on GDP, <https://data.worldbank.org/indicator/NY.GDP.MKTP.CD>

⁸ Reserve Bank of India, "Operations and Performance of Commercial Banks", <https://rbidocs.rbi.org.in/rdocs/Publications/PDFs/6OPERATIONSPERFORMANCE47A74BB420C14199A7063F4C30842517.PDF>

⁹ Based on the GDP figures of India accessed from World Bank (1 USD = INR 73.72 as on March 31, 2019).

¹⁰ Government effectiveness exhibits how various policies framed by the government and governmental agencies are implemented.

under the supervision of powerful regulators are smaller and have shorter maturities.

Third, we provide evidence of whether election and pre-election years, PS, and GE have different impacts on state-owned banks compared with private banks. As the government is the majority shareholder and owner of state-owned banks, the banks are expected to follow government mandates rigorously. Therefore, it is likely that the influence of government policies is relatively greater on state-owned banks during election and pre-election years. For example, the government places a major thrust on developing priority sectors. This sector contributes significantly to the country's GDP and is a major source of employment. Failure to meet priority sector targets is viewed adversely, and entails the imposition of certain penalties.¹¹ Therefore, the government's thrust to serve the priority sector may increase during election years to woo the sector.

Consequently, banks' priority sector loans may change abnormally during election years. Narayanan and Mehrotra (2019) note that in India, waiver of interest on farm loans are used as an instrument for appeasement by political parties. Similar findings by Kumar (2020) point to increased lending to the agricultural sector at the expense of the manufacturing sector around state elections in India.

The remainder of this paper is organized as follows. Section 2 reviews the literature and discusses theoretical motivations and background. Section 3 presents the data and preliminary analysis. Section 4 describes the empirical models employed, while the results are discussed in Section 5. Section 6 provides the implications, and Section 7 presents the conclusion.

2. Review of literature and development of hypothesis

The theoretical channels through which elections affect bank risk include institutional and business investments. Election years discourage important investment decisions (Białkowski et al., 2008) and increase investment uncertainty, as firms may not be certain which political party will come to power or announce different policies. Banks tend to earmark higher provisions in response to elections, assuming that any unfavorable election results may increase loan losses or worsen bank risk (Ozili, 2020). Given that election events are considered systematic risks, they affect the entire financial system. During the election and pre-election years, political parties in power may develop populist loan policies to increase their likelihood of winning elections, which may impact bank risk. Accordingly, an election event is a risk factor for banks and its effects cannot be ignored.

Liu and Ngo (2014) note that elections are best suited for providing evidence of political interference in banking. Therefore, we look for evidence of variations in bank risk during election years. We also examine whether there is a meaningful difference in the riskiness of state-owned banks versus private banks around election years, considering the influence of the government, which is the majority shareholder in state-owned banks (Dinc, 2005). Ashraf (2017) explains election-induced variations in bank performance through four channels: government expropriation risk, information asymmetry, credit market competition, and moral hazard. Empirical evidence suggests the presence of these factors.

¹¹ As per the latest Master Directions of the Reserve Bank of India (dated September 9, 2020) on priority sector lending, non-achievement of priority sector lending targets set by the regulator leads to allocation of certain amounts for contribution to the Rural Infrastructure Development Fund (RIDF). The rate of interest on such deposits is determined by RBI, which is generally lower than the return on investments that banks would otherwise generate. Further, non-achievement of the targets also has implications on the grant of regulatory clearances and approvals for various purposes by the RBI.

The risk of expropriation by governments is a characteristic of emerging market economies owing to the lack of robust institutions to prevent such expropriation (Du et al., 2015). In the context of legislative elections in India, Kumar (2020) documents increased lending for agriculture at the expense of the manufacturing sector, leading to costly bailouts post elections. He shows that electoral gains are the motivation behind an increase in lending to the agricultural sector. Similarly, Carvalho (2014) suggests that politicians in emerging markets such as Brazil use bank lending to invest in manufacturing units to shift employment from politically-unattractive to attractive regions.

Information asymmetry is a channel through which political factors affect bank performance and risk. The election period is shrouded by uncertainty. While the period immediately preceding elections is uncertain regarding election outcomes, the period immediately following elections can also be uncertain in the case of a divided mandate. Additionally, if there is a change in government after the elections, markets or investors may be unaware regarding the ability of the new incumbent government, which adds to the uncertainty. The uncertainty associated with economic policymaking increases information asymmetry, as a result of which banks are vulnerable to adverse selection problems (Shabir et al., 2021). Echoing these sentiments, Eichler and Sobański (2016) find that uncertainty regarding the ability of a newly-elected government lowers the stability of banks, particularly larger banks. Ng et al. (2020) show that banks increase loan loss provisions during policy uncertainty induced by gubernatorial elections in the United States. In a cross-country study, Kim (2019) finds evidence of increased interest rates charged by banks facing political uncertainty during elections. She observes that the increase in interest rates is significant in countries with weak creditor rights and is driven by the "bank-lending channel". Bäck et al. (2017) note that there is less uncertainty surrounding policymaking when multiparty or coalition governments sign coalition agreements. In the absence of a written coalition agreement that broadly defines the contours of policymaking, coalition governments are characterized by policy paralysis, leading to increased uncertainty and information asymmetry. In the specific context of democracies such as India, coalition governments have been the norm for the past three decades.

In addition to government expropriation and information asymmetry, credit market competition is another channel through which political events such as elections affect bank performance and risk. Incumbent governments find the period preceding elections to be an opportune time to announce populist measures, including interest rate subsidies or tax breaks. Kern and Amri (2021) find that such government policies have led to the expansion of the credit market. Banks are driven by the increased demand for low-cost debt from firms and individuals alike to lend more and maximize their share in the market created by the additional demand for credit around elections. Competition among banks to gain market share could occur at the expense of increased risk taking. In the context of the presidential elections in the United States, Antoniadis and Calomiris (2020) find that presidential candidates are punished with unfavorable outcomes if there is a contraction in the supply of mortgage credit during credit contractions in the market. The fear of losing elections could explain why governments announce policies that lead to an increased supply of credit around parliamentary elections. Huang and Thakor (2022) provide examples of how governments induce competition among banks to lend more to a specific targeted voter base or minority group through various means. They note that governments may indirectly nudge banks by organizing events and loan camps/programs or expressing concerns on social media about the lack of access to credit (loans) to a certain minority group. Such actions or statements by the government create

pressure among banks to lend to minority groups or sectors and increase competition among banks.

Lastly, political events such as elections reportedly influence banks through moral hazard risk. Empirical evidence shows that governments use banks to expropriate gains for political benefits. Against this backdrop, governments cannot afford banks failures because it could have widespread ramifications that adversely affect PS. Therefore, governments are expected to bail out banks during bank runs. Furthermore, in an emerging market such as India, characterized by presence of numerous state-owned banks, bank failures can erode public trust in state-owned banks. The near-bank-run situation faced by Yes Bank, a midsized private bank in India, prompted the Indian government to bail it out. The government oversaw additional capital infusion in Yes Bank, through a consortium led by the country's largest state-owned bank—the State Bank of India.¹² Liu and Ngo (2014) find that the possibility of bank failure, measured through hazard rate, exhibits a considerable reduction in the 12 months leading to gubernatorial elections in the United States. They find that the relationship is explained by the government's political control when there is a lack of competition between the ruling party and the opposition. Dam and Koetter (2012) use political factors to identify the effects of moral hazard. They argue that political factors explain the expectations of bank bailouts, but that the former does not affect banks' risk-taking. This feature of political factors helps disentangle whether bank bailouts are related to bad behavior or bad luck.

Based on recent empirical evidence, we expect bank lending to increase around elections through credit market competition. However, lending around elections could focus on targeting certain sections of voters (Kumar, 2020; Huang and Thakor, 2022). These sectors include housing, education, agriculture, and small and medium-sized businesses. Lending focused on these areas can be gauged by banks' exposure to the priority sector. We posit that lending to priority sector increases during elections. Increased lending, focusing on a particular segment, may increase default risk. Therefore, credit quality around elections may deteriorate as reflected by an increase in banks' NPL.

Empirical studies (Ozili, 2020; Ghosh, 2022) examining the relationship between bank riskiness and elections use loan loss provisions as a measure of the former. However, loan provisioning is a function of NPL. Therefore, loan provisioning can be manipulated to manage earnings. Banks may underreport their NPL and create lower provisioning. RBI determined a large divergence in reporting provisions and NPL by several banks during an Asset Quality Review (AQR) conducted in 2015–16. The findings prompted the RBI to mandate banks to mention divergences in reporting NPL, provisions, and profits beyond a certain threshold in their annual financial statements.¹³ Based on these facts, we argue that NPL is better suited as a proxy for bank risk than loan loss provisions, because the latter is computed based on the former.

An increase in bank NPL makes it riskier and jeopardizes its stability. The empirical evidence presented by Liu and Ngo (2014)

¹² Shukla Piyush, "As Yes Bank crisis team heads for exit, a relook at India's biggest bank bailout", *Moneycontrol*, June 14, 2022, accessed on April 19, 2023, <https://www.moneycontrol.com/news/business/banks/as-yes-bank-crisis-team-heads-for-exit-a-relook-at-indias-biggest-bank-bailout-8685141.html>.

¹³ RBI vide circular DBR.BP.BC.No. 63/21.04.018/2016-17 dated April 18, 2017 made it mandatory for banks whose additional provisioning requirements as assessed by RBI exceeds 15% of the published net profit after tax for reference period or additional gross NPL as assessed by RBI exceeds 15% of the published incremental gross NPL for the reference period or both, should publish the divergence details in the prescribed format as notes to accounts in annexures to their annual financial statements. The circular was subsequently amended vide RBI circular dated April 1, 2019, inter alia amending the threshold levels for reporting of divergences in the annual financial statements.

suggests that governments may not prefer banks to fail when elections are near. Therefore, to avert imminent bank failure, governments may directly or through regulators announce forbearance measures such as restructuring loans that are not being repaid regularly. Consequently, banks may resort to restructuring riskier loans to prevent such loans from turning into NPL. Ahamed and Mallick (2017b) observe that banks use regulatory forbearance by banking regulators to restructure their corporate loans, resulting in lower provisioning of restructured loans and increase bank stability. Based on these arguments, we propose the following hypothesis:

H1. The NPL (gross and net) of banks increase in the year parliamentary elections are held.

H2. Banks are more likely to restructure their loans in the year parliamentary elections are held.

H3. Banks' exposure to priority sector loans increases in the year parliamentary elections are held.

Given the risks involved in financial intermediation banks are highly regulated, specialized institutions. However, heterogeneity exists in bank performance based on ownership structure. Iannotta et al. (2013) observe that government protection in state-owned banks induces higher risk-taking by such banks. Findings from the literature on the variation in performance between state-owned and private banks, in general, and specifically around elections, are ambiguous and inconclusive. Chen and Liu (2013) find that political pressure during elections does not affect the lending of state-owned institutions. Baum et al. (2010) document similar findings for Turkey's banking sector. They do not observe any meaningful difference in the behavior of state-owned banks from that of private-sector banks (domestic and foreign) around elections. In contrast, Ghosh (2022) finds that the reduction in provisions created by banks around elections is seen primarily in state-owned and old private banks, and not in new private banks. In a cross-country study of developing and industrial economies, Micco et al. (2007) find that state-owned banks in developing economies are less profitable than their private-sector counterparts, and the divergence in performance increases during election years.

A salient feature of India's banking landscape is the dominance of state-owned banks.¹⁴ Against this backdrop, we conjecture that the government's influence and interference manifest predominantly in state-owned banks, where the former is the owner. Bank ownership allows the government to appoint representatives on state-owned bank boards who act as conduits for the owner's influence and interference in the latter. Protection from bank run given to state-owned banks by virtue of government ownership leads to increased operational risk while reducing default risk (Iannotta et al., 2013). Accordingly, we argue that government ownership encourages state-owned banks to increase their lending around elections. Therefore, we expect state-owned banks' exposure to the priority sector to increase during election cycles through credit market competition. Simultaneously, owing to protection from bank run, we expect the default risk proxied by the NPL and the extent of loan restructuring to be lower for state-owned banks than for private banks during elections. Based on these arguments, we propose the following hypotheses:

H4. The default risk, as proxied by the NPL (gross and net) of state-owned banks, decreases in the year parliamentary elections are held.

¹⁴ Majority (53%) of publicly traded banks in India are state-owned, as compared to 2% in high income countries (Demirgüç-Kunt et al., 2021).

H5. The extent of loan restructuring by state-owned banks is significantly lower than that of private banks in the year parliamentary elections are held.

H6. State-owned banks' exposure to priority sector loans is significantly higher than that of private-sector banks in the year parliamentary elections are held.

Parliamentary elections not only affect financial institutions' riskiness; they are also associated with PS and GE. Inadequate attention has been paid to detailed analyses of the relationship between election events and financial institution risks by considering the governance index (which includes PS and GE). Although the empirical models in Ashraf (2017) control for GE, we employ it as an explanatory variable, especially in the context of state-owned vis-à-vis private banks, which has yet to be explored. Contrary to Ashraf (2017), this study considers two more variables—restructured advances and priority sector lending, because they play an important role in the Indian banking system. Since restructured loans pose a significant amount of risk¹⁵, as a major share of restructured loans may become NPLs later, it is imperative to use this measure as a proxy of bank riskiness. As GE captures the quality of government policies independent of political pressures and the credibility of its commitment to such policies, it is important to consider whether the government wants to remain effective only during elections and whether GE affects bank risk. In contrast to Ashraf (2017), we examine whether the impacts of election events or pre-election events are mediated by PS and GE. Accordingly, we propose the following hypotheses:

H7. PS is positively associated with bank risk.

H8. GE has a positive relationship with bank risk.

3. Data and preliminary analysis

We collect extensive data on scheduled Indian commercial banks from the Database on Indian Economy (DBIE), the RBI data warehouse. We obtain data on the financial performance of state-owned and private banks from 2005 to 2019 from the Prowess database of the Centre for Monitoring Indian Economy (CMIE). During the sample period, parliamentary elections were held thrice, in 2009, 2014, and 2019.

State-owned banks refer to banks with more than 50% government ownership; all other banks are considered private. We do not include foreign banks in the sample, as they do not have a significant share of business in the Indian banking ecosystem and are fewer in number. Furthermore, foreign banks operating as subsidiaries of their overseas parents are not listed on stock exchanges in India. Collecting data on the financial positions of foreign banks can be difficult and unreliable. We exclude banks with data available for two or fewer years from the sample. Our final sample consists of 638 bank-year observations with non-missing data from the DBIE and Prowess of the CMIE. The sample period is consistent with existing literature (Chen and Liu, 2013).

Table 1 presents the summary statistics of the variables used in this study. The dependent variables employed in this study are gross NPL (as a percentage of total assets), net NPL (as a percentage of total assets), restructured loans (as a percentage of total assets), and priority sector loans (as a percentage of total

¹⁵ Rebello, J. (2022). Bank NPAs down but restructured advances could pose problems: Economic survey. URL: https://economictimes.indiatimes.com/industry/banking/finance/banking/bank-npas-down-but-restructured-advances-could-pose-problems-economic-survey/articleshow/89246386.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst

loans). As per the extant guidelines of RBI, NPL (interchangeably used as Non-Performing Asset in India) represent loans on which interest payments and/or installments are due for more than 90 days.¹⁶ Gross NPL represents the bank's total NPLs, while net NPL represents the NPL arrived at after deducting provisions and such claims, or part payments received and held pending adjustments from gross NPL.¹⁷ The average gross and net NPL during the sample period is 5% and 2%, respectively, reflecting the relatively stable position of banks during the period. The gross and net NPL rose significantly, reflected through maximum levels of 25% and 13% after RBI's AQR. Considering the average size of the bank in our sample (INR 17271.91 billion) in terms of total assets, NPL assumes significance on an economic scale.

Restructured loans are loans that have been restructured by modification of any or a combination of the terms of such loans, including, but not limited to, alteration of the payment period, payable amount, number/amount of installments, rollover of credit, and sanction of additional or enhanced credit facilities or loans.¹⁸ Priority sector loans or lending to the priority sector refers to bank lending to the following sectors: agriculture; micro, small, and medium enterprises; export credit; education, housing, social infrastructure, and renewable energy.¹⁹ In addition to gross and net NPL, the level of restructured loans provides a glimpse into the level of stress in the bank's balance sheet and reflects its risk. The explanatory variables comprise election year (an indicator variable with a value of 1 if parliamentary elections are held in that year and 0 otherwise), bank ownership (i.e., state-owned, or private), PS, and GE. Ownership is an indicator variable with a value of 1 if the bank is state-owned and 0 otherwise. We winsorize the continuous variables at 1 and 99 percentiles to avoid the effects of outliers on the results.

Ashraf (2017) shows that political variables such as the PS and GE of a country are positively related to banks' risk-taking. Higher PS and GE facilitate banks to take higher risks, as reflected by the bank risk indicators used as dependent variables in our study. There is insufficient evidence as to how PS and GE would affect risks such as gross and net NPL. We collect annual data on PS and GE in India from the data published by World Bank.²⁰ The political stability index is computed and published annually for all countries. It ranges from -2.50 to 2.50, with negative and positive values representing weak and strong PS, respectively. The average PS during the sample period is -1.08, representing an unstable political environment. Consistent with the extant literature (Ashraf, 2017; Ozili, 2020; Roe and Siegel, 2011; Vaugirard, 2007), we include PS as an important exogenous variable. Considering the sample period of 15 years spanning three parliamentary elections, it is reasonable to consider PS as a variable affecting bank risk.

In addition to PS, we include GE, which shows how various policies framed by the government and governmental agencies

¹⁶ Definition as per Reserve Bank of India (RBI) Master Circular on Income Recognition, Asset Classification, Provisioning and Other Related Matters – UCBS, dated April 1, 2022. https://rbi.org.in/Scripts/BS_ViewMasCircularDetails.aspx?id=12283

¹⁷ As per Glossary of Terms on the website of Reserve Bank of India (RBI); accessed at <https://www.rbi.org.in/Scripts/Glossary.aspx>

¹⁸ Definition of restructuring as per the Prudential Framework for Resolution of Stressed Assets, issued by the Reserve Bank of India (RBI), <https://www.rbi.org.in/Scripts/NotificationUser.aspx?id=11580#:~:text=Restructuring%20is%20an%20act%20in,grants%20to%20the%20borrower.>

¹⁹ Based on the Master Directions of the Reserve Bank of India (RBI) on Priority Sector Lending (PSL), accessed on <https://www.rbi.org.in/Scripts/NotificationUser.aspx?id=11959&Mode=0>

²⁰ World Bank – Worldwide Governance Indicators - <https://info.worldbank.org/governance/wgi/>

Table 1
Descriptive statistics of variables²³.

Variable	N	Mean	Standard deviation	Min	Max
Gross NPL (%)	638	0.05	0.05	0	0.25
Net NPL (%)	638	0.02	0.02	0	0.13
Restructured loans/Total Assets (%)	638	0.03	0.03	0	0.13
Priority Sector loans (%)	638	0.34	0.07	0.18	0.57
Political Stability	638	-1.09	0.19	-1.35	-0.70
Government Effectiveness	638	0	0.13	-0.21	0.28
Ownership	638	0.57	0.49	0	1
Lerner Index	638	0.01	0.01	0	0.05
Interest Income	638	0.08	0.01	0.06	0.11
Total Assets (in INR bn)	638	17271.91	25734.38	170.95	175000
Return on Assets	638	0.60	0.79	-3.31	1.86
Capital to Assets ratio	638	6.66	2.52	2.51	33.57
Gross Domestic Product (GDP) growth	638	0.07	0.01	0.03	0.08
Economic Policy Uncertainty	638	94.61	59.71	32.27	239.42

Table 2
Pairwise correlation of variables.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Gross NPL (1)	1													
Net NPL (2)	0.9372*** (0.0000)	1												
Restructured loans to total assets (3)	0.3667*** (0.0000)	0.4816*** (0.0000)	1											
Priority sector loans to total loans (4)	0.2502*** (0.0000)	0.222*** (0.0000)	-0.0371 0.3489	1										
Political stability (5)	0.5198*** (0.0000)	0.5152*** (0.0000)	0.143*** (0.0003)	0.2254*** (0.0000)	1									
Government effectiveness (6)	0.4072*** (0.0000)	0.4019*** (0.0000)	-0.0394 (0.3207)	0.2168*** (0.0000)	0.4147*** (0.0000)	1								
Ownership (7)	0.2424*** (0.0000)	0.269*** (0.0000)	0.3681*** (0.0000)	0.055 (0.1654)	-0.0378 (0.3406)	-0.0336 (0.397)	1							
Lerner Index (8)	0.0039 (0.9227)	-0.0185 (0.6401)	-0.0581 (0.1428)	-0.3637*** (0.0000)	0.0221 (0.578)	0.0255 (0.5197)	0.1979*** (0.0000)	1						
Interest Income (9)	-0.3825*** (0.0000)	-0.2959*** (0.0000)	0.1138*** (0.004)	0.1599*** (0.0000)	-0.1831*** (0.0000)	-0.3263*** (0.0000)	-0.3383*** (0.0000)	-0.292*** (0.0000)	1					
Size (10)	0.2188*** (0.0000)	0.2299*** (0.0000)	0.1553*** (0.0001)	-0.3755*** (0.0000)	0.2213*** (0.0000)	0.1624*** (0.0000)	0.2239*** (0.0000)	0.8448*** (0.0000)	-0.2647*** (0.0000)	1				
Profitability (11)	-0.7833*** (0.0000)	-0.7646*** (0.0000)	-0.3426*** (0.0000)	-0.1575*** (0.0001)	-0.3865*** (0.0000)	-0.334*** (0.0000)	-0.2222*** (0.0000)	0.1263*** (0.0014)	0.3465*** (0.0313)	-0.0852** (0.0000)	1			
Capital to assets ratio (12)	-0.1723*** (0.0000)	-0.2076*** (0.0000)	-0.2107*** (0.0000)	-0.1501*** (0.0001)	0.0534 (0.1779)	0.0741 (0.0614)	-0.5486*** (0.0000)	0.0494 (0.2128)	0.2351*** (0.0000)	0.0503 (0.2049)	0.3402*** (0.0000)	1		
GDP growth (13)	0.1126*** (0.0044)	0.1094*** (0.0057)	-0.1241*** (0.0017)	0.1575*** (0.0001)	0.3399*** (0.0000)	0.2798*** (0.0000)	0.0043 (0.9139)	0.0209 (0.5974)	-0.3398*** (0.0000)	-0.0283 (0.476)	-0.0436 (0.2717)	-0.0325 (0.4123)	1	
Economic Policy Uncertainty (14)	-0.355*** (0.0000)	-0.3081*** (0.0000)	0.0098 (0.8039)	-0.2361*** (0.0000)	-0.6055*** (0.0000)	-0.4445*** (0.0000)	0.0122 (0.7583)	-0.0324 (0.4134)	0.4057*** (0.0000)	-0.0576 (0.146)	0.2473*** (0.0000)	0.0193 (0.6261)	-0.5409*** (0.0000)	1

are implemented.²¹ Similar to the PS, GE also ranges between -2.50 and 2.50. Considering that banks, especially state-owned, are instrumental in implementing government policies, GE is posited as an important variable that affects bank performance.²² We also employ different bank-specific and macro variables as controls.

We estimate the pairwise correlation coefficients along with statistical significance of each variable, as shown in Table 2.

We present a year-wise breakup of the number of state-owned and private banks and their share of total loans and deposits over the sample period in Table 3. We observe that the number of private banks remains almost the same over the 15 years, while the number of state-owned banks has reduced. The number of private banks remains the same despite the banking regulator - RBI - issuing new licenses for opening new ones. Some existing private banks were merged with or acquired by other private

²¹ Government effectiveness was used by Kaufmann et al. (1999) as an indicator of competence of the bureaucratic apparatus and quality of delivery of the public delivery system.

²² Supervisory Power (of regulators) is negatively correlated with government effectiveness. Beck et al. (2006) associate higher supervisory power with higher levels of corruption in bank lending resulting in suboptimal allocation of the resources. Consequently, strong negative correlation between supervisory power and government effectiveness indicates that countries scoring high on GE have regulators with lesser supervisory power and less corruption, leading to better and efficient allocation of resources (Beck et al., 2006).

²³ We have also bifurcated the descriptive statistics of the variables based on the election years and one year prior to the elections and did not find significant differences based on the same. We have not reproduced the table here for the sake of brevity.

banks during the sample period. The reduced number of state-owned banks can be attributed to mergers among state-owned banks during the corresponding period. While the number of private banks remains unchanged during the sample period, their share of loans and deposits increases constantly, except during a brief period from 2009 to 2012. State-owned banks accounted for more than four-fifths of the total loans in 2005; however, this share dropped to 60% in 2020.

We note that the share of loans and deposits of private (state-owned) sector banks increased (decreased) substantially during the sample period, from 2005 to 2019. A distinctive change in market dynamics is observable during the review period, as the market share of private banks has outgrown their state-owned sector counterparts.

The changing market share also reflects the slow but increasing market power of private banks relative to state-owned banks. Therefore, we include banks' market power as an important control variable.²⁴ We assess the impact of banks' market power on their risk using LI, which is a useful proxy for banks' market power. It is used extensively in banking literature (Shabir et al., 2021). Market power affects bank performance metrics such as net interest margin (NIM) as well as pricing of bank deposits and loan products. Higher (lower) LI reflects higher (lower) bank

²⁴ Market power of banks influence their risk performance. A stiff competition may lead to excess lending risk being taken by the bank. A well-developed body of literature argues that excessive competition can distort the value of banks by affecting risk-return performance of banks (Ariss, 2010; Besanko and Thakor, 1995; Kabir and Worthington, 2017; Keeley, 1990). Conversely, another school of thought puts forward that bank competition increases efficiency and performance (Fiordelisi and Mare, 2014; De Nicolò et al., 2006).

Table 3
Year-wise break-up of the number of state-owned and private banks and their share in loans and deposits.

Year	No. of PSBs	No. of Private Banks	State-owned Banks		Private Banks	
			% share in Loans	% share in Deposits	% share in Loans	% share in Deposits
2005	28	22	80.21	82.90	19.79	17.10
2006	28	22	78.43	79.68	21.57	20.32
2007	28	22	77.71	78.43	22.29	21.57
2008	28	22	77.63	78.44	22.37	21.56
2009	27	21	79.71	80.88	20.29	19.12
2010	27	21	81.03	81.78	18.97	18.22
2011	26	20	80.56	81.35	19.44	18.65
2012	26	20	80.05	80.98	19.95	19.02
2013	26	20	79.64	80.45	20.36	19.55
2014	26	20	79.16	80.54	20.84	19.46
2015	26	20	77.56	79.68	22.44	20.32
2016	26	21	74.25	77.70	25.75	22.30
2017	26	21	71.46	75.90	28.54	24.10
2018	21	21	68.15	73.27	31.85	26.73
2019	20	22	64.04	69.24	35.96	30.76

Note: The table shows the year-wise break-up of the state-owned and private banks. The percentages of the share in loans and deposits are computed based on state-owned and private banks.

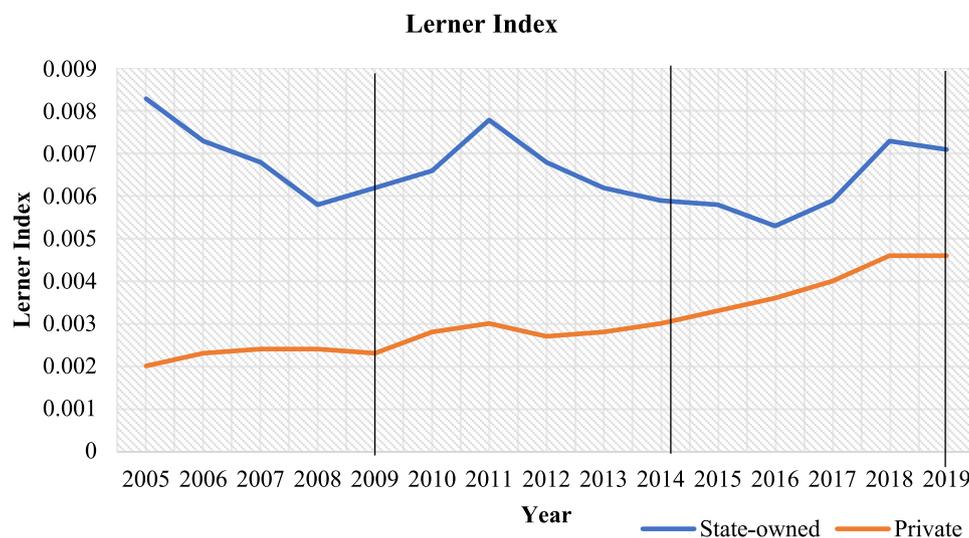


Fig. 1. Trend in Lerner index.

power and lesser (greater) competition. As NPL, restructured loans and priority sector loans are influenced by bank power either directly or indirectly, LI is an important composite control variable. Considering a bank’s competitive position in the market, one can charge higher interest rates on loans or pay lower interest rates on deposits. This competitive power consequently manifests in the levels of loans and the bank’s ability to negotiate loan restructuring or write-offs and recover loans, indirectly affecting gross and net NPL. LI is a composite variable consisting of banks’ different financial aspects such as total assets, operating expenses, financing costs, and administrative expenses. Accordingly, LI captures different bank-specific variables in a single series without employing other variables that represent operating efficiency, size, and profitability. A detailed approach to LI estimation is presented in Appendix.

Fig. 1 shows that the LI of state-owned banks fluctuated over the sample period. By contrast, the LI of private banks showed a constant increase, except for a marginal dip (in 2009 and 2012) during the corresponding period, reflecting the increase in market power of private banks. The trend in banks’ LIs is consistent with the market share of banks shown in Table 3.

To examine the year-on-year trends in gross and net NPL, restructured loans, priority sector loans, PS, and GE, we plot them in Figs. 2–7. Vertical lines represent election years to gauge performance during such exogenous events.

The gross and net NPL levels (Figs. 2 and 3) did not vary significantly in the case of private banks, whereas there was a continuous increase in the NPL levels of state-owned banks post-2010, which increased sharply post-2015, on account of the AQR conducted by RBI. Restructured loans as a percentage of total assets were similar across state-owned and private sector banks from 2006 to 2008 (Fig. 4). However, the gap between state-owned and private banks widened from 2009 and continued to increase during the sample period. We find no significant differences in priority sector loans between state-owned and private banks (Fig. 5).

In Figs. 6–7, PS and GE change significantly during the election years. After the 2009 elections, GE improved marginally in 2010, followed by a continuous decline until 2014. However, after the 2014 elections, which witnessed a change in government, GE exhibited a sharp increase until 2018. Similarly, PS declined from 2005 to 2009 but started to increase after the re-election of the government in 2009, and the improvement in PS was sustained after the election in 2014.

4. Empirical models

The dependent variables are bank-specific risk variables: gross NPL, net NPL, restructured loans, and priority sector loans. Higher

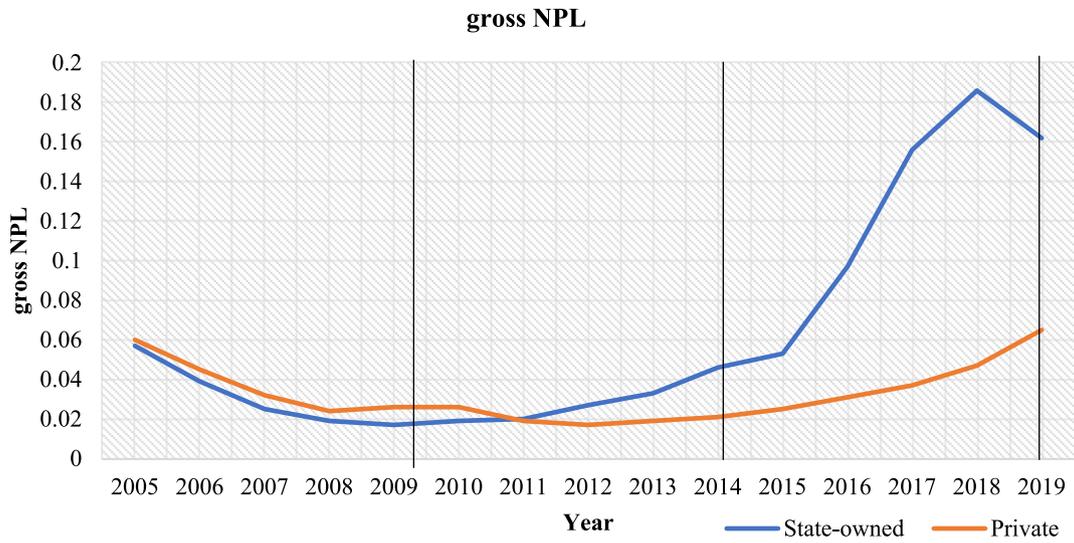


Fig. 2. Trend in gross NPL.

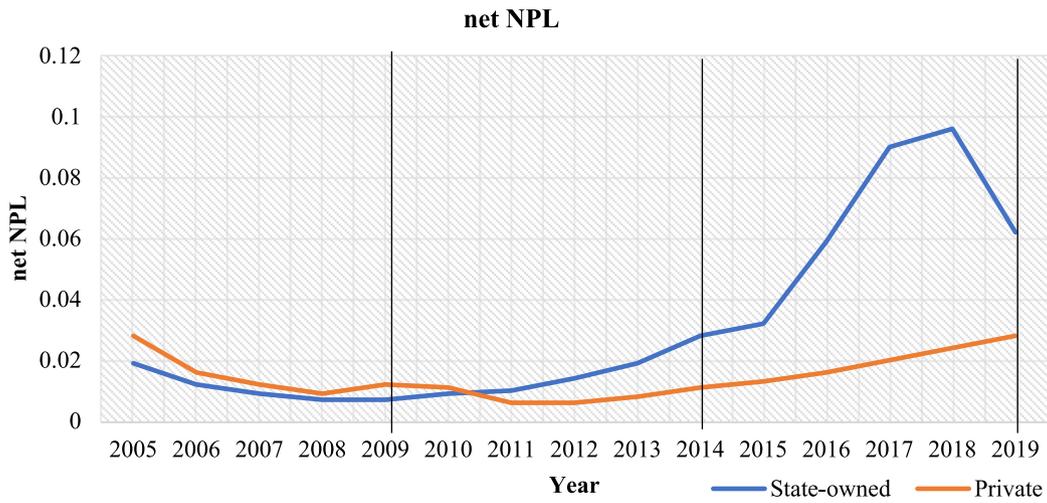


Fig. 3. Trend in net NPL.

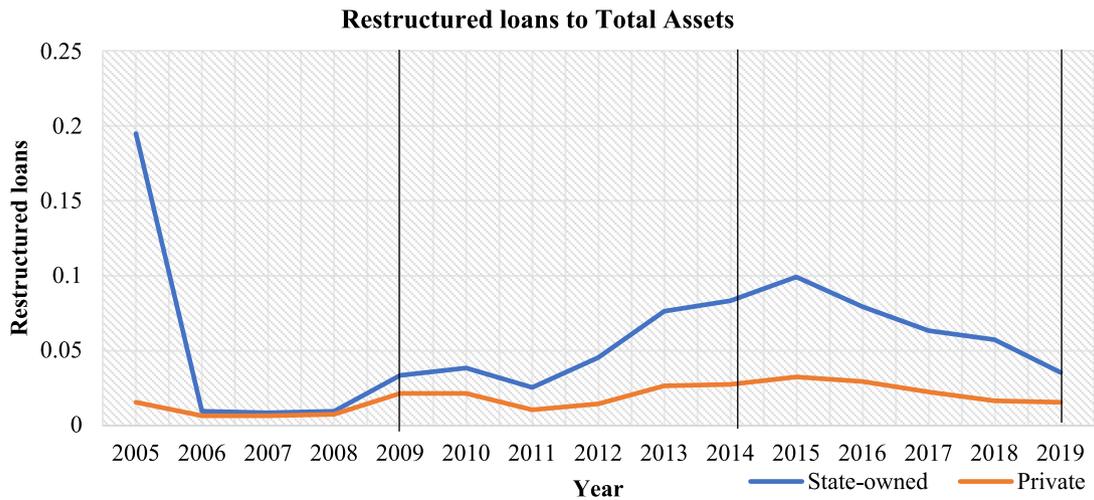


Fig. 4. Trend in restructured loans.

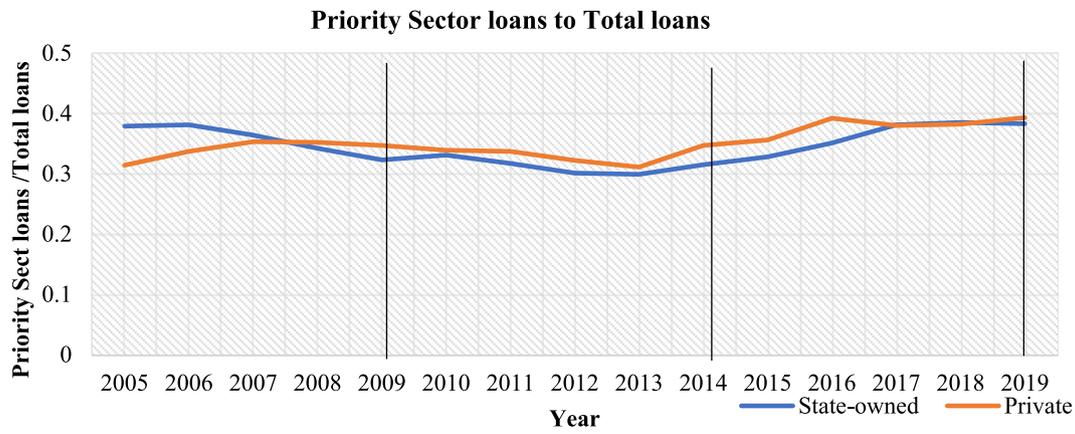


Fig. 5. Trend in priority sector loans.

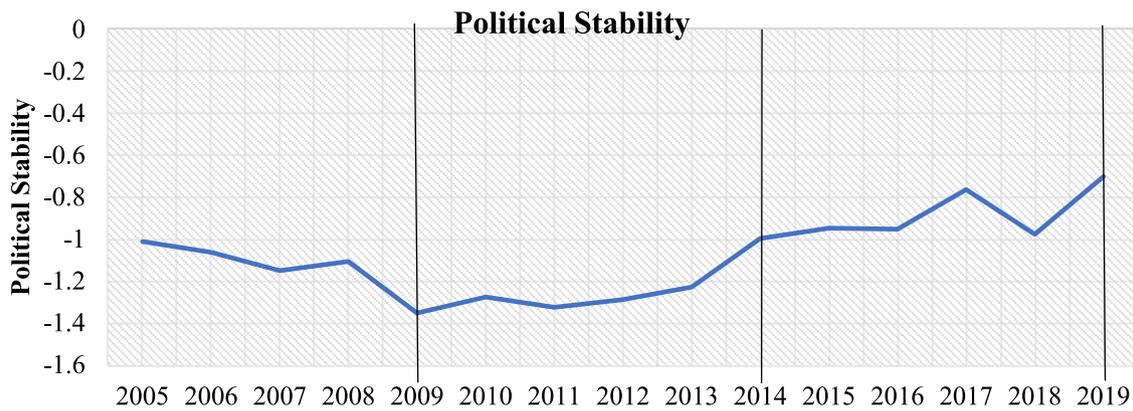


Fig. 6. Trend in Political Stability in India.

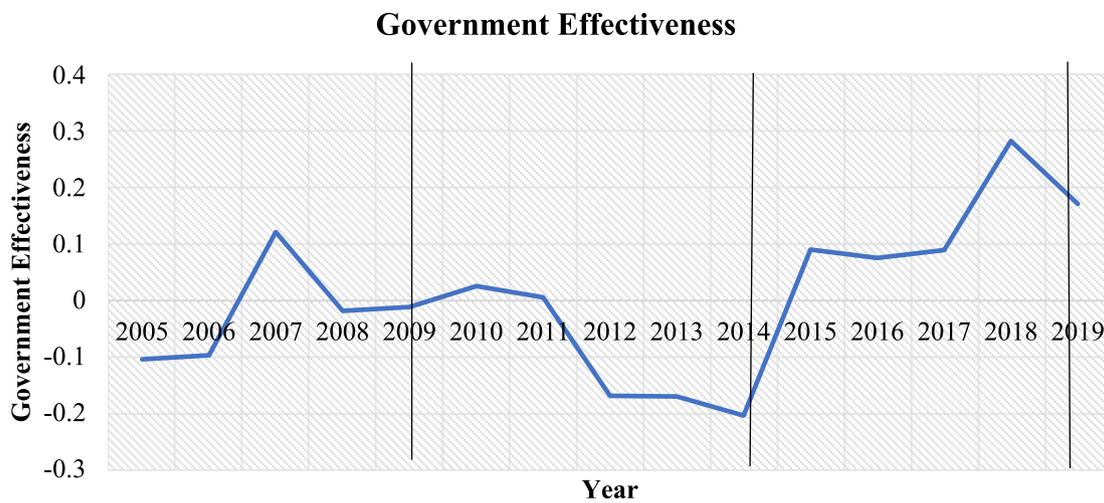


Fig. 7. Trend in Government Effectiveness in India.

NPL levels jeopardize bank stability. The increased prospects of banks' imminent failure force regulators to intervene with regulatory forbearance, and such measures entail an increased dependence on the restructuring of loans by banks (Ahamed and Mallick, 2017a). Therefore, we consider NPL (gross and net) and restructured loans suitable measures of bank risk. Kumar (2020) documents that politicians influence banks to increase lending to specific sectors, such as agriculture, around state elections to woo voter base and swing electoral outcomes in their favor. He notes that such targeted lending often leads to costly bailouts,

triggering bank losses. Therefore, banks' exposure to priority sectors could indicate incremental risk. Based on this argument, we consider priority-sector loans to be a proxy for risk.

Empirical studies (Baum et al., 2010; Chen and Liu, 2013; Louzis et al., 2012) account for the persistence of bank performance or risk indicators over time. Gulati et al. (2019) find that credit risk, reflected through NPL, persists in the Indian banking sector. Following the existing theory, we employ the lagged value of the dependent variable to control the stickiness of the dependent variable. We employ a dynamic panel data model in line

with the literature (Louzis et al., 2012), controlling for the lagged values of the dependent variable. Our explanatory variables are bank ownership, election year, PS, and GE, in addition to their interaction terms with ownership. The first two variables are indicator variables whereas PS and GE are continuous variables. Bank ownership is a bank-specific indicator variable that remains constant over the sample period (no bank ownership changed from state-owned to private, or vice versa, during the sample period). Election year, PS, and GE are explanatory variables at the macroeconomic level, whereas the control variables are bank-specific and macroeconomic variables such as GDP and EPU. We posit that macroeconomic variables influence bank risk variables (the dependent variable) with a lag (Cifter et al., 2009; Louzis et al., 2012). Accordingly, we take one lag for the macroeconomic variable – EPU – and two lags for GDP growth. The relationship between bank risk or stability and macroeconomic variables such as GDP is discussed in detail in the literature. While some empirical studies show a contemporaneous relationship between the two, another stream demonstrates that macroeconomic variables, such as GDP growth, have a lagged effect on bank risk. Cifter et al. (2009) find that the industrial production cycle affects the default cycles of different sectors at different time scales, ranging from 2 to 64 months. They show that while the industrial production cycle affects manufacturing sectors, such as textiles and leather products, and service sectors, such as hotels and restaurants, within 2 to 8 months, the construction sector takes as many as 32 to 64 months. In our context, banks' NPL are from diverse sectors, including manufacturing, service, allied sectors, construction, and infrastructure. Louzis et al. (2012), who examine determinants of NPL across different sectors, such as mortgage, business, and consumer loan portfolios, also employ up to two lags of GDP growth, following the findings of Cifter et al. (2009). Similarly, in an empirical study examining the determinants of NPLs across the United States, Ghosh (2015) employs two-period (two-year) lagged values of regional economic variables such as unemployment rates and homeownership rates. Consistent with the literature, we consider a lag of two years to account for the varying timescales at which macroeconomic factors, such as industrial production cycle or GDP, affect bank risk.

Given the nature of the model specification, we do not include year dummies to control for unobserved heterogeneity over time. We use election and pre-election year dummies that are collinear with the year dummies (Baum et al., 2010). Therefore, incorporating year dummies as well as election and pre-election year dummies could lead to inaccurate results. Specifically, as year fixed effects control for unobserved heterogeneity over time, their use in our model could suppress the variation in bank performance/riskiness around elections, which we attempt to capture in our study. In the untabulated analysis, we observe a qualitative change in our results after incorporating year dummies. We follow the empirical approaches of Eichler and Sobański (2016) and Ghosh (2022), who do not consider year dummies, while exploring the relationship between politics/political elections and bank risk/stability.

4.1. The base model

$$Fin_{i,t} = \alpha_0 Fin_{i,t-1} + \alpha_1 Ownership_i + \alpha_2 X_{i,t} + \alpha_3 EPU_{t-1} + \alpha_4 GDP_{t-2} + \mu_{i,t} \quad (1)$$

$Fin_{i,t}$ is the dependent variable indicating the riskiness of bank i during year t . Bank risk proxies are gross NPL, net NPL, restructured loans, and priority sector loans. Explanatory variables in the base model comprise the lagged value of the dependent variable,

bank ownership, an indicator variable with a value of 1 if the bank is state-owned and 0 if the bank is a private sector bank. $X_{i,t}$ is the bank-specific control variable of bank i during the year t , EPU and GDP refer to macroeconomic variables during years $t-1$ and $t-2$ respectively, and $\mu_{i,t}$ is the error term.

4.2. Second model

We augment the base model (Eq. (1)) by incorporating the variables PS and GE, and the effects of elections and their interactions with ownership and PS and GE on bank risk.

$$Fin_{i,t} = \alpha_0 Fin_{i,t-1} + \alpha_1 Ownership_i + \alpha_2 Elections_t + \alpha_3 Ownership_i * Elections_t + \delta_1 PS_t + \delta_2 GE_t + \alpha_4 Ownership_i * PS_t + \alpha_5 Ownership_i * GE_t + \lambda X_{i,t} + \alpha_6 EPU_{t-1} + \alpha_7 GDP_{t-2} + \mu_{i,t} \quad (2)$$

The additional variables included in the model are $Elections_t$, an indicator variable with a value of 1 if parliamentary elections are held during year t and 0 otherwise; PS_t and GE_t represent PS and GE, respectively, during year t . $X_{i,t}$ represents bank-specific control variables, while EPU and GDP represent macroeconomic variables during $t-1$ and $t-2$, respectively. The additional variables – elections, PS, and GE – are interacted with the ownership variable to examine whether PS and GE affect the risk of state-owned banks compared to private banks.

4.3. Third model

We extend the second model to examine whether the pre-election year affects bank risk.

$$Fin_{i,t} = \alpha_0 Fin_{i,t-1} + \alpha_1 Ownership_i + \alpha_2 Elections_t + \alpha_3 Elections_{t-1} + \gamma_1 Ownership_i * Elections_t + \gamma_2 Ownership_i * Elections_{t-1} + \delta_1 PS_t + \delta_2 GE_t + \alpha_4 Ownership_i * PS_t + \alpha_5 Ownership_i * GE_t + \lambda X_{i,t} + \alpha_6 EPU_{t-1} + \alpha_7 GDP_{t-2} + \mu_{i,t} \quad (3)$$

The variable $Elections_{t-1}$ is an indicator variable with a value of 1 if the year precedes the parliamentary election year, and 0 otherwise. We interact the variable $Elections_{t-1}$ with $Ownership_i$ to examine if bank risk of state-owned differ from private banks in the year prior to elections.

Parliamentary elections during the sample period were held once every five years, as per provision of the Constitution of India. During the sample period, the ruling political party did not advance or postpone the timing of parliamentary elections.²⁵ Therefore, following Kumar (2020), we treat the variable $Elections_t$ as exogenous. The dependent variables in our model that proxy for bank risk exhibit persistence over time, as documented in the literature (Louzis et al., 2012; Gulati et al., 2019) and are controlled for by taking the lagged values on the right-hand side of the equations representing the empirical model. Controlling for the lagged value of the dependent variable could lead to endogeneity arising from the correlation of the lagged dependent variable with the error term. However, bank ownership is pre-determined because the ownership of all banks in the sample remains unchanged. We treat PS and GE as exogenous in our model, because their past values are unlikely to be correlated with the error term.

²⁵ There are instances wherein the ruling political party has advanced parliamentary elections. In 2004, the Bharatiya Janata Party (BJP) held early parliamentary elections.

Table 4
Risk, bank ownership, and bank competition.

	gross NPL (%) (1)	net NPL (%) (2)	Restructured loans/Total Assets (%) (3)	Priority sector loans to total loans (%) (4)
gross NPL_{t-1}	0.865*** (0.000)			
net NPL_{t-1}		0.713*** (0.000)		
(Restructured loans/Total Assets) $t-1$			0.830*** (0.000)	
(Priority sector loans to total loans) $t-1$				0.967*** (0.000)
Ownership	0.333*** (0.000)	0.419*** (0.000)	-0.209* (0.055)	0.047 (0.390)
Lerner Index t	-0.080 (0.111)	-0.137** (0.032)	-0.015 (0.774)	-0.108 (0.229)
GDP $t-2$	-0.084** (0.016)	-0.027 (0.415)	0.016 (0.547)	0.008 (0.903)
EPU $t-1$	0.087* (0.081)	0.035 (0.469)	0.271*** (0.000)	0.059 (0.307)
Bank Years	586	565	571	588
Hansen p -value	0.8120	0.8123	0.9110	0.7577
AR (2) p -value	0.0600	0.1161	0.1262	0.3184
Instruments	63	62	63	61

Note: The table shows the results of the baseline regression of gross NPL, net NPL, restructured loans, and priority sector loans. The dependent variables are regressed on their lagged values, ownership, and bank-specific variables. Ownership is a dummy variable with a value equal to 1 if the bank is state-owned and 0 otherwise. Figures in parenthesis represent z-statistics, and ***/**/* represents significance at 1%, /5% / 10%, respectively. Robust standard errors are used. Continuous variables are winsorized at 1%.

We address the possibility of endogeneity in our model by applying a two-step Generalized Method of Moments (GMM) in line with the related literature (Baum et al., 2010; Chen and Liu, 2013). Furthermore, the dependent variable may exhibit reverse causality with the bank-specific variable, making the fixed effect models inconsistent. The two-step GMM addresses endogeneity and other econometric concerns, such as heteroscedasticity and autocorrelation. We prefer the two-step GMM to the one-step GMM because the former is more accurate.

Moreover, as documented by Chen and Liu (2013), the GMM model developed by Hansen (1982) and extended by Arellano and Bond (1991) and Arellano and Bover (1995) is adept at addressing econometric issues arising from short macro panels, including endogeneity and the resultant omitted variable bias. The two-step GMM involves the use of instrumental variables in the level and difference equations. The lagged levels of the dependent variable and the bank-specific endogenous control variable (LI) are used as instrumental variables for difference equations, whereas lagged differences are used as instrumental variables for the level equations. We expect the lagged dependent variable to correlate with the error terms in our model. Therefore, we use up to two lags of the lagged dependent variable as the instrumental variable.

We use Hansen’s test to evaluate the validity of the instruments. The null hypothesis of the Hansen’s test is that the estimates are consistent; hence, rejecting the null hypothesis indicates instrumental specification errors. We also provide the second-order autocorrelations of the residuals (AR (2)). GMM are estimated by considering heteroscedasticity adjustments in error terms (i.e., robust standard errors).

5. Result and discussion

Section 5 is further divided into four subsections. Section 5.1 estimates and explains the baseline model results in which we examine only the effects of ownership and competition on banks’ risk. Section 5.2 elaborates further by incorporating three more variables – Elections, PS and GE – and their interaction with bank ownership to investigate their impact on banks’ risk levels. Section 5.3 extends the analysis by including pre-election

year (indicator variable) and its interaction with bank ownership. Finally, Section 5.4 estimates the GMM model after replacing the LI with bank-specific variables representing size, operational efficiency, capital levels, and profitability.

5.1. Risk levels, bank ownership, and competition

The base model specified in Eq. (1) shows the effects of bank ownership and competition on bank risk (see Table 4). We observe that the lagged values of the dependent variables are positively associated with the dependent variable, and the coefficients are statistically significant for all four bank risk indicators, suggesting the persistence of risk. Bank ownership (a dummy variable) is positively associated with bank risk indicators—gross NPL, and net NPL. This positive relationship implies that state-owned banks have higher gross and net NPL levels than their private-sector counterparts. However, restructured loans as a percentage of total assets are negatively associated with bank ownership. Higher levels of NPL – gross and net – reflect the operational inefficiencies of state-owned banks compared with private sector banks. Priority sector loans as a percentage of total loans do not exhibit any significant relationship with bank ownership.

The control variable – LI – has a negative relationship with a bank’s net NPL. We interpret that a higher LI indicates a bank’s increased market power, which corroborates the bank’s superior risk (lower risk), owing to which the levels of net NPL are lower. GDP is negatively associated with gross NPL, indicating that NPL increases during economic distress in industries or during downturns. The period of GDP growth is associated with an expansion in lending and increased investment. Firms are less likely to fail during these economic cycles. The negative relationship between NPL and GDP is consistent with previous findings (Louzis et al., 2012). Furthermore, we find a positive association between EPU, gross NPL, and restructured loans. The positive coefficient of the control variable EPU shows that higher uncertainty in economic policy adversely affects bank risk and stability. These findings are similar to those of Shabir et al. (2021), who show that EPU reduces bank stability.

The Hansen p -value is not significant across all dependent variables, indicating that the GMM model is valid. Furthermore,

the AR (2) p -value across all dependent variables is insignificant, indicating the absence of second-order autocorrelation.

5.2. Risk levels, bank ownership, elections, PS, and GE

We estimate a two-step GMM model by incorporating *Elections* as an additional variable, as shown in Eq. (2). The lagged value of the dependent variable is positive across all the four risk indicators (Table 5). Bank ownership significantly affects bank risk (except for restructured loans), as reflected by the positive and statistically significant coefficient of *Ownership*. These results are consistent with those of the baseline model. The positive coefficient of bank ownership for priority sector loans supports our argument that the government nudges state-owned banks to conduct state-sponsored welfare schemes that include lending for housing and education, boosting export credit for opening the economy, and aiding the growth of the agricultural sector, all of which are covered under the priority sector. Therefore, the government's thrust to show development in these sectors is reflected in state-owned banks' increased lending to the priority sector.

We find that election events are positively related to the level of NPL (gross and net), while there is no significant impact on restructured or priority sector loans. The results support our first hypothesis (H1) that NPLs (gross and net) of banks increase in the years parliamentary elections are held, while we find partial support for the second (H2) and third (H3) hypotheses, as the coefficients of the term *Elections* although positive, have no statistically significant effects on the dependent variables—restructured and priority sector loans. However, when election year (*Elections*) interact with the bank ownership dummy, the co-efficient of the interaction term is negative and statistically significant for NPL (gross and net) and restructured loans. These findings indicate that state-owned banks exhibit marked improvements in risk levels during the years parliamentary elections are held. The results support hypotheses H4 and H5 that the default risk, as proxied by NPL (gross and net) of state-owned banks, decreases in the year parliamentary elections are held, and the extent of loan restructuring by state-owned banks is lower than private banks in the year parliamentary elections are held. However, our findings do not support hypothesis H6, which states that state-owned banks' exposure to priority sector loans is higher than that of private section banks in the year parliamentary elections are held.

These findings can be explained by the fact that state-owned banks may be pressured to perform well during election years to reflect the incumbent government's performance as the latter is the majority shareholder and owner of state-owned banks. Lower levels of NPL result in increased bank profitability, thereby increasing the dividend payout to the owner—the government. The results of the effects of elections on bank risk are supported by Baum et al. (2010) and Chen and Liu (2013) regarding the significant influence of elections on bank performance. However, contrast to their findings, we notice that the behavior of state-owned banks differs significantly from that of private banks during elections by lowering the level of bank risk.

Furthermore, the dependent variable – restructured loans (priority sector loans) – has a positive (negative) relationship with PS. These results partially support hypothesis H7, which proposes that PS is positively associated with bank risk. A stable political environment entails certainty and continuity in policy-making. Furthermore, a stable political environment is conducive to business ecosystems and facilitates corporate investment. Consequently, banks are forthcoming to take risks and restructure loans they deem economically viable and financially feasible. The negative relationship between PS and priority sector loans can be

attributed to banks' preference to lend more to large firms (non-MSMEs) that are forthcoming with investments in stable political environments. These findings are consistent with Barth et al. (2013), who show that bank efficiency is positively related to the World Governance Index, including PS. Moreover, the negative relationship between priority sector loans and PS also suggests that a stable political environment facilitates least interference from the incumbent government, and therefore leads to optimal choices of lending behavior by banks. This is consistent with the argument of Osma et al. (2019) that political parties interfere in bank affairs through regulators, that is, central banks. National governments pressurize regulators to use accounting standards that facilitate higher income smoothing for political gains and country stability. The bank ownership and PS interaction term shows that state-owned banks have higher gross and net NPL levels, even during a stable political regime. The level of priority sector loans during periods of high PS is also higher for state-owned banks, indicating the government's entrenchment level and its thrust to achieve priority sector targets. We find that all four channels influence the relationship between PS and bank risk independently, as documented in Ashraf (2017).

In addition to PS, we examine the effects of GE on bank risk (Table 5). We find that GE has a positive relationship with the risk indicator – gross NPL – and a negative relationship with restructured loans. We find partial support for hypothesis H8 that GE has a positive relationship with bank risk, demonstrating that risk levels increase under a sound government system. The arguments for higher competition in the credit market among lenders and moral hazard problems among banks support a positive relationship. The possibility of moral hazard arises from the expectation that the government may come forward and bail banks out of the clutch of financial default (Ashraf, 2017). A high degree of GE reflects the swiftness in implementing the government's policies and effectiveness in implementing the same. Furthermore, countries scoring high on GE can be posited to interfere less in the running and decision-making of banks and rely more on regulators to monitor banks effectively. This argument is rooted in the “political/regulatory capture view”—a premise under which supervisory agencies in countries with a strong institutional mechanism do not exploit institutions for private gains (Beck et al., 2006). As such, high GE facilitates wider benefits to the overall economy rather than any political gains that may correspond with lesser regulatory forbearance because banks are made to disclose the actual levels of NPL. Furthermore, it can also be argued that banks resort to lower restructuring of their loans because of effective regulatory supervision. The findings are in line with the observation of Acharya and Subramanian (2016) that in the context of emerging market economies such as India, banks utilize regulatory forbearance ushered in by the banking regulator to restructure corporate loans in their books to increase their stability brought about by the lower provisioning of restructured loans. We do not observe any difference in the effect of GE on the risk of state-owned banks vis-à-vis private banks, implying a uniform effect regardless of ownership. We note a positive relationship between EPU and bank risk, in line with findings in the literature, while GDP exhibits a positive relationship with the bank risk measure—restructured loans. Hansen- p value is insignificant across all dependent variables, validating the effectiveness of the GMM model.

5.3. Risk levels, bank ownership, election and pre-election events, PS, and GE

We also augment the model as described in Eq. (2) by considering the pre-election years (*Elections*_($t-1$)) and interact the same with bank ownership to examine whether there is any change

Table 5
Bank risk, elections, political stability, and government effectiveness.

	gross NPL (%) (1)	net NPL (%) (2)	Restructured loans/Total Assets (%) (3)	Priority sector loans to total loans (%) (4)
gross NPL_{t-1}	0.544*** (0.000)			
net NPL_{t-1}		0.531*** (0.000)		
(Restructured loans/Total Assets) $t-1$			0.822*** (0.000)	
(Priority sector loans to total loans) $t-1$				0.801*** (0.000)
Ownership	1.787*** (0.000)	1.943*** (0.000)	0.111 (0.731)	1.051*** (0.000)
Election Year t	0.101** (0.027)	0.153** (0.045)	0.001 (0.986)	0.071 (0.189)
Ownership * Election Year t	-0.258*** (0.000)	-0.498*** (0.000)	-0.150** (0.020)	-0.080 (0.242)
PS t	0.039 (0.506)	0.006 (0.894)	0.094* (0.064)	-0.221*** (0.000)
GE t	0.223*** (0.002)	0.152 (0.163)	-0.227** (0.022)	0.164 (0.217)
Ownership * PS t	1.497*** (0.000)	1.567*** (0.000)	-0.008 (0.982)	0.991*** (0.000)
Ownership * GE t	0.063 (0.563)	-0.012 (0.903)	-0.010 (0.941)	-0.105 (0.420)
Lerner Index t	-0.049 (0.211)	-0.076** (0.040)	-0.008 (0.798)	-0.209 (0.159)
GDP $t-2$	-0.058 (0.316)	-0.066 (0.161)	0.097*** (0.009)	-0.054 (0.400)
EPU $t-1$	0.313*** (0.000)	0.260*** (0.002)	0.136*** (0.001)	0.022 (0.794)
Bank Years	586	565	571	588
Hansen p value	0.6479	0.8186	0.8081	0.7056
AR (2) p -value	0.0199	0.0676	0.1193	0.2820
Instruments	63	62	63	61

Note: The table shows the results of the regression of gross NPL, net NPL, restructured loans, and priority sector loans. The dependent variables are regressed on their lagged values, Ownership, Election year dummy, bank-specific variables, country-specific variables, and their interaction with the bank's ownership. Ownership is a dummy variable with a value equal to 1 if the bank is state-owned and 0 otherwise. $Elections_t$ is a dummy variable with a value of 1 if parliamentary elections are held in the year t and 0 otherwise. Country-specific variables: PS – Political Stability and GE – Government Effectiveness have been employed. Figures in parentheses represent z-statistics. ***/**/* represents significance at 1%/5%/10% levels, respectively. Robust standard errors are used. Continuous variables are winsorized at 1%.

in the risk behavior of banks in and around election years. The dependent variables exhibit a similar relationship with ownership and election year dummies, in line with earlier models (Tables 4 and 5). However, the coefficients of the indicator variable $Elections_{t-1}$ are different from those of $Elections_t$ in terms of sign and statistical significance. The results indicate that bank risk differs significantly for the years in which parliamentary elections are held and for the years preceding them. Furthermore, the interaction term between $Elections_{t-1}$ and the bank ownership variable has a positive relationship with gross NPL and restructured loans, in contrast to the interaction between $Elections_t$ and Ownership. We observe that bank risk differs significantly during the years in which parliamentary elections are held and the year preceding such elections. We find no qualitatively significant changes in the relationship between the dependent variables and PS, GE, or the interaction between PS and GE with the ownership dummy variable compared to previous models. The p -value of the Arellano–Bond AR(2) tests is insignificant, suggesting no second-order serial correlation across the models. The control variables, GDP and EPU, continue to exhibit relationships consistent with earlier models, and the results align with the findings of the literature. The Hansen statistic for overidentifying restrictions exhibits the orthogonality of the instruments to errors (see Table 6).

5.4. Robustness tests

In our earlier models, we controlled for heterogeneity across banks using LI as a measure of market power. In the additional

test, we replace LI with bank-level controls—return on assets, interest income as a percentage of total assets, bank size, and the level of bank capital (scaled to total assets). Following the literature (Baum et al., 2010), we use the lagged variables of these controls to avoid simultaneity bias and reverse causality. Furthermore, we use the lagged levels of the dependent variable, incorporate bank-level control variables as instrumental variables for the difference equations, and use lagged differences as instrumental variables for the level equations. The results are qualitatively similar to the original findings concerning the explanatory variables.

We observe that interest income is positively associated with the dependent variables – gross and net NPL – and priority sector loans to total loans. Higher interest income as a percentage of total assets reflects higher interest rates on loans. Higher interest rates can result from riskier loan portfolios, leading to higher NPL. The positive relationship between interest income and bank risk aligns with the findings of Ozili (2020), who documents a positive association between the NIM and loan loss provisions of banks. Higher NPL leads to greater loan losses. We note that profitable firms – firms with a higher return on assets – report higher net NPL and restructure their loans to a greater extent. These results are counterintuitive, as profitable banks are relatively stable (Shabir et al., 2021).

We find that bank size and capital level do not significantly affect bank risk. The findings of these empirical studies show that the relationship between bank size and bank risk is ambiguous and inconclusive. According to the “diversification” hypothesis, large-sized banks are expected to exhibit a negative relationship

Table 6
Bank risk, election, pre-election events, political stability, and government effectiveness.

	gross NPL (%) (1)	net NPL (%) (2)	Restructured loans/Total Assets (%) (3)	Priority sector loans to total loans (%) (4)
gross NPL_{t-1}	0.467*** (0.000)			
net NPL_{t-1}		0.455*** (0.000)		
(Restructured loans/Total Assets) $t-1$			0.804*** (0.000)	
(Priority sector loans to total loans) $t-1$				0.764*** (0.000)
Ownership	2.330*** (0.000)	2.330*** (0.000)	0.367 (0.238)	1.044*** (0.004)
Election Year t	0.130*** (0.007)	0.230** (0.022)	-0.023 (0.825)	0.036 (0.625)
Election Year $t-1$	-0.100** (0.047)	0.022 (0.586)	-0.094 (0.381)	-0.120 (0.285)
Ownership * Election Year t	-0.228*** (0.000)	-0.535*** (0.000)	-0.117 (0.321)	-0.067 (0.453)
Ownership * Election Year $t-1$	0.238*** (0.000)	0.078 (0.282)	0.195* (0.079)	0.032 (0.835)
PS t	-0.078 (0.190)	-0.035 (0.468)	0.020 (0.674)	-0.220*** (0.005)
GE t	0.401*** (0.000)	0.214** (0.044)	-0.163 (0.187)	0.268 (0.109)
Ownership * PS t	2.242*** (0.000)	1.991*** (0.000)	0.379 (0.230)	0.986*** (0.007)
Ownership * GE t	-0.067 (0.534)	-0.031 (0.788)	-0.083 (0.551)	-0.143 (0.472)
Lerner Index t	-0.058* (0.086)	-0.083** (0.034)	-0.023 (0.423)	-0.215* (0.096)
GDP $t-2$	-0.144** (0.024)	-0.118* (0.057)	0.046 (0.262)	-0.021 (0.725)
EPU $t-1$	0.314*** (0.000)	0.281*** (0.000)	0.131*** (0.001)	0.079 (0.338)
Bank Years	586	565	571	588
Hansen p value	0.7047	0.6578	0.8516	0.8006
AR (2) p -value	0.0740	0.1565	0.2040	0.2326
Instruments	63	62	63	61

Note: The table shows the results of the regression of gross NPL, net NPL, restructured loans, and priority sector loans. The dependent variables are regressed their lagged values, bank ownership, election year dummy, bank and country-specific variables, and their interaction with the ownership. *Ownership* is a dummy variable with a value equal to 1 if the bank is state-owned and 0 otherwise. *Elections* t is a dummy variable with a value of 1 if parliamentary elections are held in the year t and 0 otherwise. *Elections* $t-1$ represents a dummy variable with a value of 1 if the year precedes the election year and 0 otherwise. Country-specific variables: PS – Political Stability and GE – Government Effectiveness have been employed. Figures in parentheses represent z-statistics. ***/**/* represents significance at 1%/5%/10% levels, respectively. Robust standard errors are used. Continuous variables are winsorized at 1%.

with bank risk, as large banks are in a better position to diversify their activities and lower their overall risk (Ahamed and Mallick, 2017a). Meanwhile, it can be argued that large banks are likely to take higher risks by being “too-big-to-fail”, which creates a moral hazard problem (Louzis et al., 2012). Berger and DeYoung (1997) explain the relationship between capital levels and bank risk using the moral hazard hypothesis. They note that banks with low capital levels induce moral hazard risks, resulting in higher NPL levels. However, we find no significant relationship between gross NPL and capital-to-assets. The insignificant relationship between bank risk and capital could be because the government allocates budgetary funds for the recapitalization of state-owned banks or bailouts during the bank run Table 7).

6. Implications

Our findings concur with the existing literature; however, the results for state-owned banks differ from those for private banks. The results of our empirical study suggest that private sector banks generally outperform their state-owned counterparts in bank risk. Furthermore, higher market power is associated with better performance in terms of bank risk (lower gross and net NPL) and a lower proportion of priority sector loans. However, during the years in which parliamentary elections were

held, state-owned banks exhibited different behaviors, reflected in gross and net NPL levels, showing marked improvement over the previous year. In stable political environments, banks restructure their loans more and have less exposure to priority sector loans. Effective governance, reflected by a high GE score, ensures that priority sector targets are reached, actual gross NPL levels are reported, and banks do not resort to restructuring their loans under the garb of regulatory forbearance. These findings have important policy implications for future studies. The results provide important insights into the behavior of state-owned banks vis-à-vis private banks during in/around election years. The findings also provide some answers as to what leads to the difference in the performance of state-owned banks compared to private banks around election years with respect to loan delinquency, restructuring, and loans made to the priority sector. The findings lend credence to any prospective steps by the banking regulator to insulate the sector from excess political interference in banks' affairs, especially in/around parliamentary elections.

7. Conclusion

This study examines whether parliamentary elections held in India once every five years have any bearing on bank risk. We cover three parliamentary elections conducted between 2005 and

Table 7
Bank risk, election, pre-election events, political stability, and government effectiveness, using bank-specific variables.

	gross NPA (%) (1)	net NPA (%) (2)	Restructured loans/Total Assets (%) (3)	Priority sector loans to total loans (%) (4)
gross NPA _{t-1}	0.375** (0.028)			
net NPA _{t-1}		0.834*** (0.000)		
(Restructured loans/Total Assets) _{t-1}			0.803*** (0.000)	
(Priority sector loans to total loans) _{t-1}				0.547*** (0.000)
Ownership	2.474*** (0.001)	2.154*** (0.001)	1.184 (0.161)	0.632** (0.044)
Election Year _t	0.131** (0.043)	0.181** (0.021)	0.008 (0.948)	0.050 (0.533)
Election Year _{t-1}	-0.075 (0.291)	0.017 (0.777)	-0.160 (0.219)	0.008 (0.949)
Ownership * Election Year _t	-0.114 (0.140)	-0.439*** (0.000)	-0.116 (0.396)	-0.055 (0.439)
Ownership * Election Year _{t-1}	0.328*** (0.004)	0.085 (0.474)	0.274** (0.028)	-0.004 (0.975)
PS _t	0.233 (0.113)	0.062 (0.589)	-0.106 (0.505)	-0.017 (0.855)
GE _t	0.617*** (0.000)	0.237** (0.049)	-0.020 (0.881)	0.106 (0.459)
Ownership * PS _t	1.878*** (0.006)	1.915*** (0.003)	1.362 (0.122)	0.514* (0.096)
Ownership * GE _t	-0.065 (0.594)	-0.093 (0.462)	-0.160 (0.251)	0.046 (0.756)
Size _{t-1}	-0.362 (0.176)	-0.179 (0.102)	0.055 (0.605)	-0.079 (0.605)
Int income _{t-1} (%)	0.258** (0.048)	0.165** (0.041)	-0.069 (0.518)	0.300*** (0.000)
Return on Assets _{t-1}	-0.031 (0.876)	0.386*** (0.008)	0.261* (0.077)	-0.049 (0.420)
Capital to assets ratio _{t-1}	0.701 (0.196)	-0.014 (0.956)	-0.298 (0.207)	-0.141 (0.438)
GDP _{t-2}	-0.143* (0.082)	-0.106** (0.034)	0.052 (0.291)	0.094* (0.070)
EPU _{t-1}	0.301** (0.013)	0.218** (0.011)	0.160** (0.013)	-0.109 (0.212)
N	585	564	570	587
Hansen p-value	0.7410	0.7141	0.8514	0.9751
AR (2) p-value	0.3044	0.1260	0.6070	0.2216
Instruments	63	62	63	61

Note: The table shows the regression results (as per Equation 3) of gross NPL, net NPL, restructured loans, and priority sector loans. Bank-specific control variable Lerner Index is replaced with other bank-level variables reflecting size – represented by the logarithmic transformation of Total Assets, Interest Income as % of Total Assets, and Return on Assets (ROA). *Ownership* is a dummy variable with a value equal to 1 if the bank is state-owned and 0 otherwise. *Elections_t* is a dummy variable with a value of 1 if parliamentary elections are held in the year t and 0 otherwise. *Elections_{t-1}* represents a dummy variable with a value of 1 if the year precedes the election year and 0 otherwise. Country-specific variables: PS – Political Stability and GE – Government Effectiveness have been employed. Figures in parentheses represent z-statistics. ***/**/* represents significance at 1%/5%/10% levels, respectively. Robust standard errors are used. Continuous variables are winsorized at 1%.

2019. This period witnessed an economic boom from 2005 to 2008 and a downturn during and after the global financial crisis. Our study is perhaps the first to examine the effect of politically-sensitive events, such as parliamentary elections, and governance indicators, such as PS and GE, on the risk level of banks in India. The results provide insights into the entrenchment of political influence in the running of banks, especially state-owned banks, calling for reforms in the sector and the need to ring fence banks from exploitation by political parties.

The findings show that banks' NPL increase during the year parliamentary elections are held. Our results show how the behavior of state-owned banks changes during election years. We can also substantiate the changes in bank risk through election cycles with the help of macro variables such as PS and GE. We also establish that the change in the risk of state-owned banks manifests predominantly in the election year and not in the year preceding the election. The positive relationship between NPL and GE indicates that an economy under a sound government system increases credit market competition, resulting in higher risk levels for banks. Moreover, moral hazard in banks supports a positive

relationship. As bank risk levels are negatively (positively) related to PS (GE), the findings indicate that bank credit market competition and moral hazard problems may not be the only reasons for an increase in bank risk levels. Nevertheless, other channels, such as bank expropriation risk (Haber et al., 2008; Liu and Ngo, 2014) and minimization of information asymmetry (Bushman et al., 2004; Chen et al., 2014) are also responsible for higher risk levels. The findings indicate the need to formulate policy interventions by banking regulators that alleviate the negative effects of political interference in the affairs of banks, prevalent in emerging economies, to improve bank risk.

CRedit authorship contribution statement

Jagannath MVK: Conceptualization, Methodology, Software, Writing. **Debasish Maitra:** Data curation, Methodology, Analysis, Writing – review & editing.

Appendix

The Lerner Index (LI) was first developed by Abba P. Lerner in 1934. We employ LI to measure the bank competition following Lerner (1934). The present study employs the traditional LI. In the context of banks, competition is measured by Lerner Index, which is represented as:

$$L = (p - MC) / p$$

Where, p = total revenues/total assets (revenues = interest income) MC is determined by a trans logarithmic cost function, which is expressed as under:

$$\begin{aligned} \ln C_i &= c_0 + s_0 \ln q_i + 1/2 s_1 (\ln q_i)^2 \\ &+ \sum_{j=1}^3 \ln W_{ji} + \ln q_j \sum_{m=1}^3 s_{m+1} \ln W_{mj} + \\ c_4 \ln w_{1j} \ln w_{2j} &+ c_5 \ln w_{2j} \ln w_{3j} \\ &+ c_6 \ln w_{1j} \ln w_{3j} + \sum_{m=1}^3 c_{m+6} (\ln w_{ij})^2 \end{aligned}$$

Marginal Cost is arrived at as mentioned here under:

$$MC_i = \frac{C_i}{q_i} [s_0 + s_1 \ln q_i + \sum_{m=1}^3 s_{m+1} \ln W_{mj}]$$

Where,

q_i = Total Assets, w_1 = (Payments and provisions for Employees)/Total Assets, w_2 = Operating expenses excluding employee expenses/Fixed Assets, and w_3 = Finance Costs/Total Deposits.

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