



Article

# A Holistic Perspective on Bank Performance Using Regulation, Profitability, and Risk-Taking with a View on Ownership Concentration

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**Abstract:** There is a lack of a holistic perspective on bank performance. This study proposes a multi-dimensional (three-pronged) approach encompassing regulation, profitability, and nonperforming assets (NPAs) and their interactions as a measure of the performance of a bank. Moreover, the impact of equity holdings of promoters, institutional investors, and retail investors on the proposed three-pronged approach of the bank performance are also explored. Values of the concerned variables were gathered from 2016 to 2019. The dynamic panel data method was applied to empirically test the proposed model. The main findings supported the premises of the proposed approach to bank performance. Furthermore, various ownership classes provided mixed results for their impact on bank performance. Unfavorable roles of promoters and institutional investors and an indifferent role of the retail investors group were startling outcomes of the study. Successful empirical endorsement of the proposed approach for bank performance provides a fresh perspective and has varied policy- and managerial-level implications. The findings regarding various shareholder groups (ownership classes) can be a catalyst to set the policy for ownership distribution in banks, as well as shareholder protection and activism, which are conspicuously absent in India.

**Keywords:** regulation; profitability; NPA; ownership; retail investors; institutional investors; promoters



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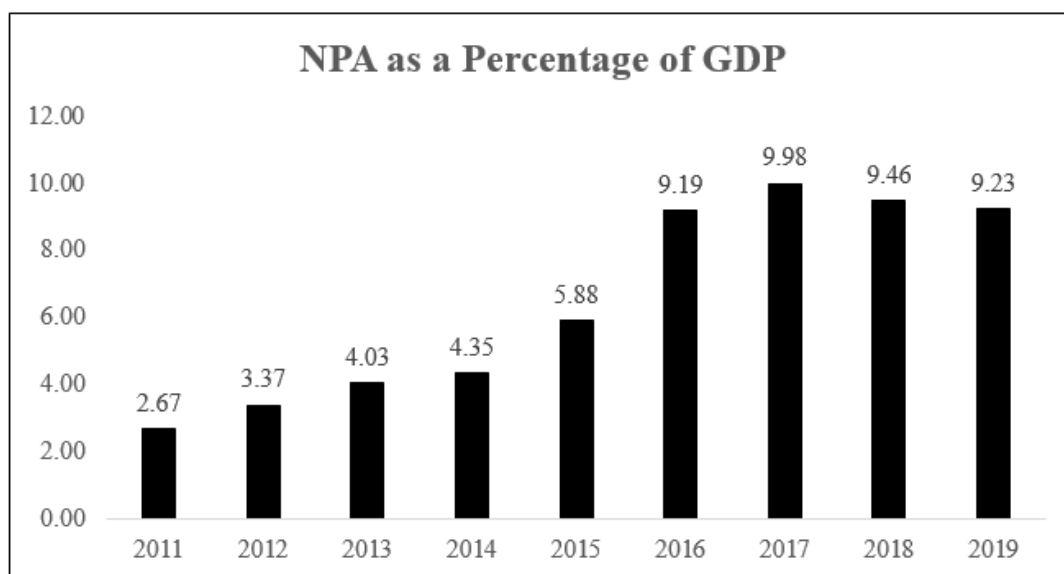
## 1. Introduction

The performance of a bank cannot be assessed by a single measure because banks per se have diversified goals to fulfill, including financial, social, and regulatory sub-goals (Burgess and Pande 2005; Iqbal and Sami 2017; Iqbal et al. 2003; Ugwu and Kanu 2012). Literature is replete with discussion and evidence that states that different stakeholders view the performance of a bank differently. As a consequence, the performance of a bank depends on the yardstick being used to assess the performance.

Financial profitability (mainly return and margin ratios) is an evergreen measure of the performance of a bank (Mohammed and Muhammed 2017). However, the sustainability of the performance of a bank strongly depends upon risk-taking, which is aptly reflected by the proportion of nonperforming assets (NPAs) (Figure 1) (Rajaraman and Vasishtha 2002; Sen and Sen 2015). Veracity (or issues of transparency and disclosure) of NPAs are usually assumed to be perfect, which may not be true all the time. This is another area to explore, and is not covered in the scope of the current study (Oino 2019). In the present study, it is assumed to be correct. The reflection on the performance of a bank does not end with measures like profitability and risk-taking. Another popular measure of performance is the efficiency of the bank (Haque and Shahid 2016; Kumar 2010). Risk comes in all shapes and sizes. Therefore risk measures, other than NPAs, are also treated as another measure to judge the performance of a bank (Laeven and Levine 2009; Barry et al. 2011). The fifth and last

performance measure brought to the table in the current study is stock-market returns. The value or wealth created by a bank's stock for its shareholders is also an obvious measure of bank performance, especially for the listed banks (Hadad et al. 2011; Inoguchi 2013).

Although a long list of five bank-performance measures is discussed, it may not be exhaustive. It is quite possible that to label a bank as performing, a favorable measure of bank performance can be considered. However, in reality this may not be case if the performance of the bank is seen in totality. Judging the performance of a bank using one measure at a time is too myopic. Therefore, conjecture that this short-sightedness might have caused bank failures, especially during the 2008 financial crisis, which could not be spotted in time, makes sense (Baselga-Pascual et al. 2015; Mohammed and Muhammed 2017; Moosa 2010).



**Figure 1.** Level of NPAs as a percentage of GDP in India. Source: Data is taken from the official website of World Bank (<https://data.worldbank.org/indicator/FB.AST.NPER.ZS?end=2019&locations=IN&start=2008&view=chart>; accessed on February 2021).

This study does not claim to establish a link between the two, but the lack of a comprehensive measure of bank performance must have contributed to the whole imbroglio. The financial system and the financial fraternity would have had some premonition had a holistic definition of bank performance been in place. This argument holds sway because the 2008 world financial crisis happened despite the BASEL Accord being in full swing, which was supposed to be a panacea for all the woes of banks in the world (Demirgüç-Kunt and Detragiache 2011; Pakravan 2014). The main motivation of our study is to explore a more holistic measure for assessing bank performance. A type of measure that can encompass more than one aspect of bank performance and can provide a true assessment of bank soundness.

In addition to varied measures of bank performance, there are myriad factors that may impact it. A few among them are widely researched: regulation (Delis et al. 2011; Klomp and De Haan 2015); transparency and disclosures (Baumann and Nier 2004; Oino 2019); competition or market power (Ariss 2010; Tabak et al. 2015); intellectual capital (Buallay et al. 2019); autonomy (Barnabas and Mekoth 2010; Lybek 1999); and ownership issues (Grassa et al. 2019; Sarkar and Sarkar 2018; Ozili and Uadiale 2017). Among the many factors that can have a significant impact on bank performance, it is believed that ownership concentration can have the most influence. Consideration of ownership concentration is pertinent because it is supposed to be the most veritable contributor to value creation for banks (Ozili and Uadiale 2017; Rahman and Reja 2015; Shehzad et al. 2010).

The popular and accepted yardsticks to measure bank performance include profitability measures (Mohammed and Muhammed 2017; Gupta and Mahakud 2020; Khan and Zahid 2020; Kumar 2010). NPAs are also used to assess the performance of a bank (Rajaraman and Vasishtha 2002). Estimation of efficiency is also a popular measure of bank performance (Haque and Shahid 2016; Kumar 2010; Hadad et al. 2011). Several pieces of literature have also recognized stock-market results as a performance measure of banks (Inoguchi 2013; Hadad et al. 2011). There are a few studies on linking risk management, especially liquidity and default-risk measures, to bank performance (Demirgüç-Kunt and Detragiache 2002; Iannotta et al. 2013).

In addition to this, there are several studies or measures that used a few ratios or other things collectively to form a new measure of bank performance: Tobin's Q, Altman's Z-score, and CAMEL. Tobin's Q measure uses the market and book value of assets to estimate the performance of firms/banks (Abraham 2013; Lee and Kim 2013). Altman's Z-score uses the possibility of bankruptcy of a firm/bank (Lepetit and Strobel 2013; Pradhan 2014). CAMEL, which is exclusively meant to assess the performance of banks (Kabir and Dey 2012; Muhmad and Hashim 2015), uses six categories—capital adequacy, assets, management capability, earnings, liquidity, and sensitivity—to assess the performance of a bank. Some other studies have tried to use another collective measure to assess the bank performance. Kumar (2010) linked profitability (which is considered as effectiveness) and asset turnover ratio (which is considered as efficiency) to the performance of banks. Khan and Zahid (2020) used profitability and Tobin's Q to assess the performance of banks.

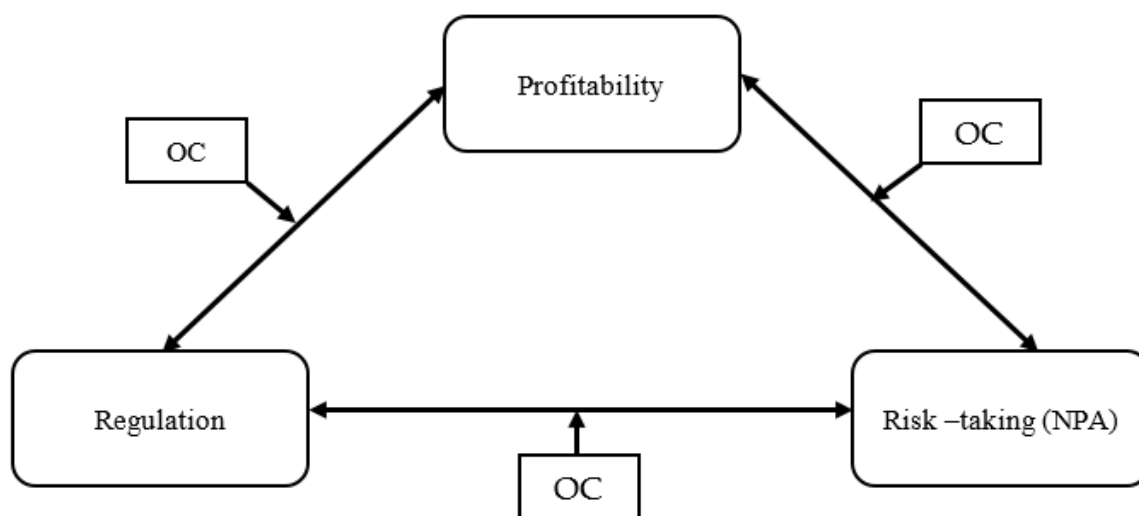
Despite such rich literature on the combined measures of the performance of banks, we observed that practitioners and academicians alike use them scarcely. Some studies assess the impact of several factors on bank performance, but use only one or two measures. It is explicitly clear that banks have varied interests and concomitantly various goals to meet; therefore, using any one measure of bank performance at a time is undermining the larger spectrum of the performance. This implies that to prove a point or two, studies use a particular measure of bank performance, which suits their convenience. We observed that the performance of a bank is one of the loosely used terms in some studies (Gupta and Mahakud 2020; Hadad et al. 2011; Inoguchi 2013; Iannotta et al. 2013).

The 2008 financial crisis is also evidently clear in highlighting this limitation in assessing the performance of banks by these popular measures (Baselga-Pascual et al. 2015; Cornett et al. 2011; Erkens et al. 2012; Rastogi 2014). Even the BASEL Accords (BASEL II, as well as BASEL III) have been criticized heavily for their failure to handle the affairs of banks, and especially to ensure the best risk-management practices (Chockalingam et al. 2018; Moosa 2010; Pakravan 2014; Schwerter 2011).

In addition to this, the literature is full of studies that discuss assimilating profitability, regulation, risk measure (mainly NPAs), and market power to collectively explore bank performance (Keeley 1990; Agoraki et al. 2011; Triki et al. 2017; Athaley et al. 2020). Either the world is overwhelmed with the BASEL Accords as the best risk-management options in banks despite their apparent failure (Chockalingam et al. 2018; Pakravan 2014), or due to the lack of popularity, other studies do not want to recognize the role which these items (profitability, risk-taking, and regulation) inevitably play in assessing the performance of the banks. The current study takes its motivation from these studies, which are hitherto not considered a very popular measure of bank performance, and proposes a holistic measure, which mainly uses the features discussed in these studies regarding bank performance.

Measures of profitability and risk-taking are considered as two important bank-performance measures. There is no qualm that regulation also is an important factor that does impact the performance of a bank (Delis et al. 2011). Keeley (1990) is considered the pioneer of thought along these lines, followed by other researchers later (Agoraki et al. 2011; Triki et al. 2017). However, it was never presented as a comprehensive measure of bank performance (Athaley et al. 2020). A three-pronged model comprising the three measures (profitability, risk-taking, and regulation) is proposed in the current study as a

holistic tool to empirically test the performance of Indian banks. The performance of a bank is considered to be a delicate balance of these three items (Figure 2).



**Figure 2.** Conceptual model. OC is ownership concentration (includes promoters', institutional investors', and retail investors' proportion of ownership in the banks).

Our paper aims to: (1) explore holistic measures of the performance of banks, and (2) analyze the impact of ownership of various stockholder class (promoters, institutional investors, and retail investors) on the performance of banks.

## 2. Review of Literature and Formulation of Hypotheses

The factors that impact the performance of banks are reasonably important and their discussion at length is pertinent to enrich the discussion of bank performance. Starting with regulation, it is evident in the literature that regulation has a meaningful and cogent impact on bank performance (Delis et al. 2011; Triki et al. 2017). Transparency and disclosure (T&D), though part of corporate governance, have a veritable impact on the performance of banks (Barakat and Hussainey 2013; Zhang et al. 2019; Bushman 2016). Competition and market power are some other factors that have been thoroughly researched that have an impact on the performance of banks (Arrawatia et al. 2015; Niinimäki 2004; Tan 2016). Moreover, autonomy and freedom are also supposed to have an impact on the performance of banks (Sufian and Habibullah 2014). Even investment in information, communication, and technology (ICT) is considered as a factor (Al-Busaidi and Al-Muharrami 2020). These studies on ICT and bank performance make sense because of the fast-changing dynamics of banking in favor of more use of ICT to be competitive and successful in operations. Intellectual capital is also frequently explored for its impact on the performance of banks (Buallay et al. 2019; Joshi et al. 2013).

Among many other such factors that are considered as important for having an impact on bank performance, ownership is also researched often and contributes significantly to the existing lode of knowledge. However, most of the research done in the area of ownership and its impact on banks have two straight gaps. First, most of the work on bank ownership and performance of banks focuses on the issues of public versus private banks (Barry et al. 2011; Cornett et al. 2010), domestic versus foreign banks (Abraham 2013; Banerjee and Velamuri 2015; Chen 2001; Lee and Hsieh 2014), family-run banks versus banks run by professionals (Rahman and Reja 2015), and ownership concentration by the majority shareholder or shareholder group (Bian and Deng 2017; Ozili and Uadiale 2017). However, there is a dearth of studies that explore the class of ownership (promoters, institutional investors, and retail investors) and its impact on the performance of banks. However, some studies discuss institu-

tional ownership and performance of firms, but of these, the study by [Elyasiani and Jia \(2010\)](#) does not talk about banks exclusively.

Second, when studying the impact of ownership classes on bank performance, usually either one bank performance measure or a few measures in some combination are applied. However, there are a dearth of studies on how ownership classes impact the holistic definition of bank performance. The current study addresses these gaps to explore the relevance of ownership class on the holistic measure of performance of the banks, and predominantly talks about the interaction of profitability, regulation, and risk-taking in banks.

This proposed holistic approach largely takes input from the triad of regulation, profitability, and risk-taking in banks (Figure 2) ([Barth et al. 2008](#); [Barth et al. 2004](#); [Triki et al. 2017](#)). The model advocated in the study hinges on three parameters: the impact of regulation on NPAs, the impact of regulation on profitability, and the impact of NPAs on the profitability of the bank. Accordingly, our study uses the following holistic approach for the performance of a bank:

- (a) The regulation initiatives should positively impact the level of NPAs in banks (they should reduce the NPA levels).
- (b) Regulation should not impact the profitability of banks. The banks should be self-regulated enough that regulation need not adversely impact profitability.
- (c) An increase in NPAs should not impact profitability. The risk of NPAs should be estimated in advance, and enough provisioning should have been done to ward off any possible contingency of increased NPAs on profitability.

The contours of the holistic model of bank profitability are stringent but realistic, and truly reflect upon the performance of a bank.

Regulation and its positive impact on NPAs is quite prominently discussed in the literature. [Boudriga et al. \(2009\)](#) advocate that regulation influences banks in more than one way ([Mohsni and Otchere 2018](#)), including its impact on reducing NPAs. The influence is more effective if the banking system of the country is weak and fragile. Regulation, especially on capital, is considerably effective to reduce the risk-taking in banks ([Rahman et al. 2018](#); [Repullo 2004](#)). It is evident that capital-stringent regulation increases the costs, but the benefits in terms of fewer NPAs far more outweigh reasons not to support the regulation. Even Altman's Z-score, which measures bankruptcy risk, is also positively linked to the regulation of banks ([Klomp and De Haan 2015](#)). However, [Barth et al. \(2004\)](#) evince the concerns of disclosures along with regulation to make it more effective. Some instances of limitations of capital-intensive regulation, especially the BASEL Accords, are criticized for their impact on bank performance ([Barth et al. 2008](#); [Pakravan 2014](#)). Thus, we would like to test that regulation should be impactful in reducing NPAs to be effective through the following hypothesis:

**Hypothesis 1 (H1).** *Regulation initiatives should impact NPA levels in banks.*

Examples in the literature on the association between regulation and profitability are mixed. One of the studies evinces that regulation may be good in itself, but it adversely impacts the profitability of a bank ([Nguyen 2012](#)). On the contrary, another studies advocates that regulation, especially capital-adequacy regulation and supervisory control regulations, do not impact profitability except in the instance of some extreme event ([Delis et al. 2017](#)). [Laeven and Majnoni \(2003\)](#) exhibit that regulation in terms of provisioning for bad loans veritably increases the risk management of banks, and ensures profitability. There are also studies that are indecisive as far as regulation and profitability are concerned ([Lee and Hsieh 2013](#)). Therefore, it is proposed that for a good bank, regulation should not adversely impact the profitability:

**Hypothesis 2 (H2).** *Profitability of a bank should not be impacted by the regulation of banks.*

There are studies that strongly believe that NPAs surely impact the performance or profitability of a bank (Balasubramaniam 2012; Messai and Jouini 2013; Sen and Sen 2015). However, there is also strong evidence in favor of the bad-management hypothesis, in which profitability leads to liberal credit policy, which leads to high NPAs, and eventually high NPAs adversely affect profitability (Berger and DeYoung 1997; Rajan 1994). Another study proposed that proper provisioning of bad loans and effective risk-management practices can dismantle the clubbing of NPAs with profitability (Bauer and Ryser 2004). Bad debts, per se, are not the issue unless until they are due to poor risk-management practices adopted by banks. The risk-management practices, which are beyond the call of regulatory mechanisms, can break this trend, and NPAs may not be able to adversely impact the profitability of banks (Konovalova et al. 2016). Thus, the following hypothesis is framed for empirical testing:

**Hypothesis 3 (H3).** *NPAs should not adversely impact the profitability of banks.*

As discussed in the previous section, this paper focuses on the issues of ownership concentration versus diversified ownership. Ownership concerns regarding promoters, institutional investors, and retail investors are relatively novel ideas in the context of the performance of banks. Assessing the performance of banks with these ownership concerns, which are less commonly used in the academic literature, adds value to the novelty and contribution. This study aims to empirically verify that diversified ownership supports the better performance of banks.

Barry et al. (2011) presents that high ownership stake of promoters or promoter groups positively influences (reduce) the asset and default risks. Iannotta et al. (2007), in a study of 181 banks in Europe, presents that high ownership concentration does not impact profitability, but the quality of loans and advances are significantly improved. Shehzad et al. (2010) advocate that high ownership concentration significantly improves the NPA levels condition compared to the low level of shareholder activism and supervisory control. However, Laeven and Levine (2009) evince that high ownership concentration increases the tendency to take on more risk. The studies differ in their findings, but agree that high ownership concentration significantly impacts the performance of banks. Thus, the following hypothesis is formulated regarding ownership issues (promoter stakes) and the performance of banks:

**Hypothesis 4 (H4).** *Promoter stakes impact the performance of banks.*

Literature is scarce on the association of the proportion of institutional investors in the ownership and performance of the banks. Barry et al. (2011) exhibits that high institutional ownership leads to riskier policies and strategies in banks. In one study on firms in India, it was found that institutional investors do not influence the transparency levels (Nair et al. 2019). In another study on the dividend-payment behavior of firms by Roy (2015), it was found that institutional investors do not influence the dividend-distribution policy of firms. Thus, the following hypothesis is framed regarding institutional investors and the performance of banks.

**Hypothesis 5 (H5).** *Institutional investor stakes in a bank impact the performance of a bank.*

Studies directly linking retail investors with the performance of banks have not been found, but ownership diversification is tantamount to higher retail investors, and the same concept is applied here. Bian and Deng (2017) found that high ownership diversification improves profitability and reduces the nonperforming assets of the banks in China. Chen (2001) also endorsed the finding of Bian and Deng (2017) that diversified ownership improves the performance of the banks. However, Ozili and Uadiale (2017) present mixed results regarding the impact of diversified ownership in banks. Therefore, the following hypothesis is framed for empirical testing regarding retail investors and performance of banks:

**Hypothesis 6 (H6).** Retail shareholders impact the performance of banks.

### 3. Data and Methodology

#### 3.1. Data

This study uses panel data from 34 banks from 2016 to 2019. The data of the banks were gathered from the CMIE Prowess database<sup>1</sup>, RBI<sup>2</sup> (Reserve Bank of India), and annual reports of the individual banks. Table 1 provides a list of variables used in the study. The definition of each variable used in the study is also discussed in Table 1. RoA (return on assets) and NIM (net interest margin), both measures of profitability, were applied to capture the diversity in the data concerning profitability (Boudriga et al. 2009; Petria et al. 2015; Tan 2016; Bitar et al. 2016; Tan et al. 2017). Similarly, both CAR (capital adequacy ratio) and LR (leverage ratio) were applied to measure regulation in the study (Banerjee and Velamuri 2015; Laeven and Levine 2009; Lee and Hsieh 2013; Pennathur et al. 2012; Srairi 2013).

**Table 1.** List of variables.

SN	Name of the Variable	Symbol	Definition	Sources
1	Nonperforming Assets	NPAs	The proportion of loans that remained unpaid.	(Boudriga et al. 2009; Bian and Deng 2017; Mohsni and Otchere 2018)
2	Net Interest Margin	NIM	An indicator of profit earned from investing activities. It is measured as the difference between interest earned and interest paid out, divided by average interest-earning assets.	(Tan 2016)
3	Return on Assets	ROA	A profitability measure of a bank. It is defined as net income divided by assets.	(Boudriga et al. 2009; Lee and Hsieh 2013; Tan 2016)
4	Capital Adequacy Ratio	CAR	An indicator of capital within the bank that depicts the health of a bank.	(Laeven and Levine 2009; Lee and Hsieh 2013; Zheng et al. 2017)
5	Leverage Ratio	LR	The ratio of a bank's core/tier 1 capital and total assets.	(Srairi 2013; Battaglia and Gallo 2017; Mohsni and Otchere 2018)
6	Promoter Holding	PROM	The percentage of equity holding by promoters.	(Laeven and Levine 2009; Barakat and Hussainey 2013; Haque and Brown 2017; Zheng et al. 2017; Ozili and Uadiale 2017)
7	Institutional Investor Holding	IIH	The percentage of equity holding by institution.	(Laeven and Levine 2009; Barakat and Hussainey 2013; Haque and Brown 2017; Zheng et al. 2017; Ozili and Uadiale 2017)
8	Retail Investor Holding	RIH	The percentage of equity holding by retail investors.	(Laeven and Levine 2009; Barakat and Hussainey 2013; Haque and Brown 2017; Zheng et al. 2017; Ozili and Uadiale 2017)

Sources: Authors' own analysis.

<sup>1</sup> CMIE Prowess: CMI Prowess is a wide database of companies in India. The database is popular and carries reliability and authenticity for the data it provides.

<sup>2</sup> RBI: Reserve Bank of India (RBI) is the central bank of India. RBI published statistics of different banks.

Table 2 reports the descriptive statistics of the variables used in the study. None of the pairs of exogenous variables had a significant correlation of more than 0.80, which ensured that the data is free from multicollinearity issues. The average NPA value was 4.32%, which implies a normal condition of NPAs in India. However, low average NIM and RoA are serious areas of concern. This may also imply disclosure issues, as profitability is poor despite NPAs being normal. Issues of transparency and disclosure (T&D) are not covered in this study, and should be researched in the future.

### 3.2. Methodology

An econometric model specification having a lagged dependent variable as the explanatory variable may have a problem of bias due to the correlation between the lagged dependent variable and the error term. This problem of endogeneity due to the presence of a lagged dependent variable as an exogenous variable is further exacerbated due to short panels ( $N$  (number of cross-sectional terms)  $>$   $T$  (the time period in the panel)). The panel used in the present study used data from 34 banks during a four-year period, confirming the possibility of Nickell's bias in the data (Nickell 1981). Further, Anderson and Hsiao (1981) propose the 2SLS IV (2-Stage Least Square Instrument Variable) approach to handle this situation. However, it was found that the instruments proposed in such a model may be weak and may not be able to capture all the relevant information present in the data.

As a result of this, Arellano and Bond (1991) presented a GMM (generalized method of moment)-based Arellano–Bond (AB) estimator to solve the problem. An AB estimator uses lagged terms of endogenous variables as instruments. An AB estimator rectifies both the issues of correlation between lagged endogenous variable and the error term and the short-panel problem. Use of an AB estimator is justified in the given dataset of the short panel and dynamic specification.

The following models are estimated to empirically test the hypotheses used in the study.

$$\Delta Y_t = \beta_1 \Delta Y_{i,t-1} + \beta_2 \Delta X_{i,t} + \Delta u_i + \Delta \varepsilon_{it} \quad (1)$$

where  $\beta_1$  and  $\beta_2$  are coefficients.  $Y_{it}$  is the endogenous variable, and the lagged term of the dependent variable is applied as an exogenous variable in the construction of the model.  $X_{it}$  is the set of strictly exogenous variables used in the model.  $u_i$  is the individual unobserved term, and  $\varepsilon_{it}$  is the usual random error (unobserved) term in the model. Using Equation (1), a dynamic panel data model was estimated for the proxy variable of the regulation (CAR and LR), profitability (RoA and NIM), and nonperforming assets (NPAs). The set of  $X_{it}$  variables also includes promoter stake (PROMO), institutional stake (IIH), and retail-investor holdings (RIH), the proxy variables for ownership issues regarding the performance of the bank.  $\Delta$  is the first difference operator. If the given case is  $N > T$  (cross-sectional items are more than the time intervals), stationarity can be taken for granted, and the panel unit root test can be ignored (Baltagi 2008).

An ontological assumption here is that regulation, NPAs, and profitability are all linked to the performance of a bank. An epistemological assumption is that the application of the panel data and source of data provide genuine values. All the established practices were adhered to, and the shared results were genuine and meant to add value to the banks, which is an axiological assumption of the study. A radical structure paradigm was used in our study. A deduction approach was applied to arrive at the results. Positivism is the philosophy of research that was applied in the current research. The dynamic panel data model was used based on the secondary data.



**Table 2.** Descriptive statistics.

Descriptive and Correlation Matrix										
	NPA	NIM	ROA	CAR	LR	PROM	IIH	RIH	Mean	SD
NPA	–								4.3236	3.1792
NIM	–0.7023 *	–							2.6118	0.7198
ROA	–0.7209 *	0.6583 *	–						0.1479	1.1388
CAR	–0.6111 *	0.4951 *	0.6485 *	–					13.219	2.5317
LR	–0.0255	0.1349	0.0517 *	0.0696	–				0.1277	0.7227
PROM	–0.7162 *	–0.5408 *	–0.5682 *	0.3722 *	–0.1119				40.06	33.39
IIH	–0.5546 *	0.5369 *	0.6230 *	0.6076 *	0.0416	0.6120 *	–		34.27	23.10
RIH	–0.4181 *	0.2130 *	0.1727 *	–0.0605	0.1047	–0.7255 *	–0.1003	–	25.67	26.52

Note: Values are correlation coefficients. \* significant at 5%. NPA, NIM, ROA, CAR, LR, PROMO, IIH, and RIH are in percentages.

### 4. Results

Dynamic panel data regression (Equation (1)) was estimated in three stages to empirically test the proposed hypotheses. In the first set of estimations, NPAs were regressed on regulation. CAR and LR were used as a proxy for regulation, and the results are reported in Table 3. As shown in Table 3, Model 1 used CAR as the representative variable for regulation, and Model 2 used LR to represent regulation. Both the models were run four times to capture all the scenarios of no ownership concern, with promoters, with institutional investors, and with retail investors. In Model 1, CAR was significantly associated with NPAs in all cases. Similarly, LR was also significantly associated with NPAs in all cases. Moreover, the lag of NPAs was also significantly associated with NPAs in all the models shown in Table 3. Among the ownership concerns, institutional investors were also significantly associated with NPAs in both cases (with Model 1 and Model 2). However, neither promoters nor retail investors had a significant association with NPAs in either model. The Arellano–Bond test of autocorrelation remained insignificant in all the equations, as shown in Table 3. However, the Sargan test of overidentification was significant in all the cases, which indicates a problem of overidentification.

**Table 3.** Regression results: NPAs as a dependent variable on regulation.

	Model 1 (CAR for Regulation)				Model 1 (LR for Regulation)			
	No OC	For PROMP	For IH	For RIH	No OC	For PROMP	For IH	For RIH
NPAs (−1)	−0.7859 [0.1299] (0.0000)	−0.7618 [0.1720] (0.0000)	−0.4459 [0.1931] (0.0210)	−0.8332 [0.1289] (0.0000)	−0.7975 [0.1606] (0.0000)	−0.4799 [0.1652] (0.0040)	−0.4312 [0.2070] (0.0370)	−0.8036 [0.1527] (0.0000)
CAR	−0.3686 [0.1313] (0.0050)	−0.3598 [0.1566] (0.0220)	−0.2844 [0.1154] (0.0140)	−0.4702 [0.1643] (0.0040)	−	−	−	−
LR	−	−	−	−	0.0637 [0.0038] (0.0000)	0.0575 [0.0040] (0.0000)	0.0719 [0.0062] (0.0000)	0.0656 [0.0089] (0.0000)
PROM	−	−0.0135 [0.0346] (0.6360)	−	−	−	−0.0586 [0.0357] (0.1010)	−	−
I IH	−	−	0.0812 [0.0403] (0.0440)	−	−	−	0.0811 [0.0459] (0.0780)	−
RIH	−	−	−	−0.0774 [0.0512] (0.1300)	−	−	−	−0.0090 [0.0476] (0.8490)
Sargan Test	7.3808 (0.0250)	8.1094 (0.0173)	7.857 (0.0197)	7.0055 (0.0301)	9.2586 (0.0098)	9.1038 (0.0105)	9.0566 (0.0108)	9.2619 (0.0097)
Arellano–Bond AR(1)	−0.3731 (0.7091)	−0.4477 (0.6544)	−1.2620 (0.2069)	−0.2351 (0.8142)	−0.6975 (0.4855)	−1.3485 (0.1774)	−1.4583 (0.1448)	−0.7135 (0.4755)

Note: PROMO = promoter holdings; IH = institutional investor holdings; RIH = retail investor holdings; CAR = capital adequacy ratio; LR = leverage ratio. The Sargan test is the test of overidentification issues under the GMM framework. The null hypothesis of the Sargan test is that there is no over-identification problem in the dynamic panel data model. The Arellano–Bond test used in the analysis is for serial autocorrelation in the first differenced error terms of the order 1. Values in brackets [ ] are standard errors, and those in parenthesis ( ) are p-values.

Table 4 shows the second set of regressions. Profitability was regressed on regulation. Again, the two models were applied here (Equation (1)). The table is divided into two subparts (Model 1 and Model 2), and each subpart is further divided into two upper and lower parts. In the upper part of Model 1, NIM was taken as a measure for profitability. Out of the two regulation measures, only LR was significantly associated with NIM (CAR was not significantly associated). However, in the lower part of the Model 1 results, where RoA was taken as a measure of the profitability, both CAR and LR were significantly associated

with RoA. In Model 2, where ownership issues are reported again in the upper part of Table 4, NIM was used as profitability, and in the lower part of the table, RoA was used as a measure of the profitability. In the upper part, CAR was significantly associated with NIM in two out of three cases. Similarly, LR was also significantly associated with NIM (except one out of three cases). On the contrary, in the lower part, CAR, as well as LR, were significantly associated with RoA in all the cases. However, all three measures of ownership concerns had mixed results. Both promoters and institutional investors were significantly associated with profitability measures in only one out of four cases (when NIM was the profitability measure and LR was the regulation measure). However, retail investors were insignificant in all four cases under both the measures of profitability and regulations. The Sargan test of the over-identification problem remained insignificant across all the estimated models reported in Table 4. The Arellano–Bond test of autocorrelation also remained insignificant except in two out of eight occasions, largely ensuring there was no autocorrelation problem in the estimation.

The regression of profitability on NPAs is reported in Table 5. Two models were estimated as well: Model 1 is without ownership concerns, and the Model 2 is with ownership concerns. Both the models were tested for NIM and RoA separately. NPAs were negative (except in Model 1 with NIM as a dependent variable) and significantly impacted the profitability of the banks across all the models tested and reported in Table 5. In addition to this, the promoter stakes also negatively and significantly impacted the profitability of the banks. The Sargan test for Model 2 with promoters as an independent variable was significant. The Sargan test with all the other models was insignificant, which meant there was no problem of overidentification in the estimation of the dynamic panel data models. The Arellano–Bond tests for autocorrelation were also insignificant for all the models, which suggests no problem of autocorrelation in any of the models estimated in Table 5.

The first hypothesis that regulation should impact the NPA level was supported, as all the eight concerned cases were significant (Table 3). This implies that NPAs in Indian banks are sensitive to regulation, as desired. The second hypothesis, that profitability should not be adversely impacted by regulatory measures, was also supported in the study. The acceptance of Hypothesis 2 was desired for the good performance of a bank. In five out of eight cases, the results were positive and significant, which implies that the association of regulation with profitability existed and was positively related. Moreover, the insignificant cases were also positively related, except for one case (Table 4). The third hypothesis, that NPAs should not impact profitability, was not supported in our study. It was postulated in the proposed model that for good performance of banks, NPAs should not impact profitability. However, the significant association of NPAs with profitability proves otherwise. The seven out of eight relevant cases are significant (Table 5). This implies that Indian banks are faltering on this aspect of good performance. The three pillars of performance we proposed have been tested empirically through the three hypotheses. It was found that out of the three parameters of good performance of banks in the proposed model, two parameters were supported whereas the third parameter was not. Hypotheses 1 and 2 were supported as expected in the model, and Hypothesis 3 was not supported as postulated in the model.

**Table 4.** Regression results: profitability (NIM/ROA) as the dependent variable on regulation.

KERRYPNX	Model 1			Model 2				
	CAR	LR		CAR			LR	
DV: NIM			PROMP	IIH	RIH	PROMP	IIH	RIH
NIM (−1)	0.0403 [0.6456] (0.9500)	0.5204 [0.7616] (0.4940)	0.2564 [0.6498] (0.6930)	0.3179 [0.6416] (0.6200)	−0.2524 [0.4630] (0.5860)	0.3649 [0.6641] (0.5830)	0.5583 [0.6887] (0.4180)	−0.0933 [0.4452] (0.8300)
CAR	−0.0289 [0.0251] (0.2480)	−	0.0094 [0.0044] (0.0350)	0.0090 [0.0265] (0.7340)	0.0471 [0.0242] (0.0520)	−	−	−
LR	−	0.0111 [0.0051] (0.030)	−	−	−	0.0120 [0.0044] (0.0070)	0.0070 [0.0060] (0.2490)	0.0151 [0.0043] (0.0000)
PROM	−	−	0.0050 [0.0260] (0.8460)	−	−	0.0102 [0.0031] (0.0010)	−	−
IIH	−	−	−	−0.0171 [0.1040] (0.1010)	−	−	−0.0197 [0.0091] (0.0310)	−
RIH	−	−	−	−	0.0077 [0.0134] (0.5640)	−	−	0.0004 [0.0119] (0.9710)
Sargan Test	2.4558 (0.2929)	2.9002 (0.2345)	1.4627 (0.4813)	1.209 (0.5461)	2.7488 (0.2530)	1.7000 (0.4274)	1.5917 (0.4512)	4.0142 (0.1344)
Arellano–Bond AR(1)	−0.3137 (0.7537)	−0.4632 (0.6432)	−0.6845 (0.4937)	−0.5831 (0.5588)	0.2798 (0.7643)	−0.7443 (0.4567)	−0.6879 (0.4915)	−0.0441 (0.9648)
RoA (−1)	CAR 0.4829 [0.2804] (0.0920)	LR 0.2817 [0.2417] (0.2340)	PROMP 0.5515 [0.3132] (0.0780)	IIH 0.5537 [0.2929] (0.0590)	RIH 0.4412 [0.2983] (0.1390)	PROMP 0.3059 [0.2857] (0.2840)	IIH 0.2946 [0.2721] (0.2790)	RIH 0.3210 [0.2665] (0.2280)
CAR	0.1675 [0.0774] (0.0310)	−	0.21804 [0.0681] (0.0010)	0.1856 [0.0758] (0.0140)	0.1900 [0.0783] (0.0150)	−	−	−
LR	−	−0.0219 [0.0062] (0.0000)	−	−	−	0.0221 [0.0076] (0.0030)	−0.0188 [0.0096] (0.0490)	−0.0246 [0.0062] (0.0000)
PROM	−	−	0.0256 [0.0222] (0.2480)	−	−	−0.0200 [0.0229] (0.3820)	−	−
IIH	−	−	−	0.0141 [0.0196] (0.4710)	−	−	0.0163 [0.2054] (0.4290)	−
RIH	−	−	−	−	0.0271 [0.0278] (0.3310)	−	−	0.0112 [0.0278] (0.6860)
Sargan Test	1.8791 (0.3908)	5.1439 (0.0764)	2.0789 (0.3536)	1.9435 (0.3784)	1.848 (0.3970)	5.3386 (0.0679)	5.2742 (0.0716)	5.7310 (0.0570)
Arellano–Bond AR(1)	−1.4827 (0.1382)	−0.7081 (0.4789)	−2.6670 (0.0076)	−2.3175 (0.0205)	−1.3128 (0.1892)	−1.2263 (0.2201)	−0.9663 (0.3332)	−0.8311 (0.4059)

Note: DV = dependent variable; PROMO = for promoter holdings; IIH = institutional investor holdings; RIH = retail investor holdings; CAR = capital adequacy ratio; LR = leverage ratio. The Sargan test is the test of overidentification issues under the GMM framework. The null hypothesis of the Sargan test is that there is no overidentification problem in the dynamic panel data model. The Arellano–Bond test used in the analysis is for serial autocorrelation in the first differenced error terms of the order 1. Values in brackets [ ] are standard errors, and those in parenthesis ( ) are *p*-values.

**Table 5.** Regression results: profitability (NIM/ROA) as the dependent variable on NPAs.

	Model 1 (Without OC)		Model 2	
DV: NIM		PROMP	IIH	RIH
NIM (−1)	0.0489 [1.0301] (0.9620)	−0.1024 [1.030] (0.9210)	−0.0148 [1.0431] (0.9890)	−0.4123 [0.5442] (0.4490)
NPAs	0.0607 [0.01434] (0.0000)	−0.0571 [0.1306] (0.0000)	−0.0542 [0.0175] (0.0020)	−0.0602 [0.0109] (0.0000)
PROM	−	0.0031 [0.0051] (0.5390)	−	−
IIH	−	−	−0.0098 [0.0114] (0.4190)	−
RIH	−	−	−	−0.0030 [0.0109] (0.7840)
Sargan Test	2.1202 (0.3464)	2.2426 (0.3259)	1.9918 (0.3694)	1.5850 (0.4528)
Arellano–Bond AR(1)	−0.1122 (0.9106)	0.0205 (0.9833)	0.0262 (0.9791)	0.8423 (0.3996)
DV: RoA		PROMP	IIH	RIH
RoA (−1)	0.2916 [0.2101] (0.1650)	0.2169 [0.2398] (0.3660)	0.3024 [0.2344] (0.1970)	0.3099 [0.2270] (0.1720)
NPA	−0.2151 [0.0804] (0.0070)	−0.2266 [0.0785] (0.0040)	−0.2385 [0.0858] (0.0050)	−0.2240 (0.0806) (0.0050)
PROM	−	−0.0442 [0.0200] (0.0270)	−	−
IIH	−	−	0.03713 [0.0175] (0.0340)	−
RIH	−	−	−	0.0038 [0.0275] (0.8910)
Sargan Test	5.8870 (0.0527)	5.4570 (0.0065)	0.5412 (0.0668)	6.1070 (0.0472)
Arellano–Bond AR(1)	0.1221 (0.9026)	−0.4328 (0.6651)	−0.3907 (0.6960)	0.0605 (0.9517)

Note: PROMO = promoter holdings; IIH = institutional investor holdings; RIH = retail investor holdings; CAR = capital adequacy ratio; LR = leverage ratio. The Sargan test is the test of overidentification issues under the GMM framework. The null hypothesis of the Sargan test is that there is no overidentification problem in the dynamic panel data model. The Arellano–Bond test used in the analysis is for serial autocorrelation in the first differenced error terms of the order 1. Values in brackets [ ] are standard errors, and those in parenthesis ( ) are *p*-values.

Hypothesis 4, that the promoter stakes impact the performance of a bank, was rejected in the study. Out of eight relevant cases, only two were significant (Tables 3–5). On the NPA levels, promoters did not have any impact, as both the relevant cases were insignificant (Table 3). This insignificant impact of the promoter stakes on NPAs has mixed repercussions. However, on profitability, promoters had a negative significant impact (Table 5), which had serious implications, especially from the corporate governance point of view. Hypothesis 5, that institutional investor stakes impact performance, was inconclusive (neither supported nor rejected) in the study. Out of eight relevant cases, four were significant and four were not significant (Tables 3–5). It was found that institutional investors significantly (positively) impacted NPA levels, which is a very surprising result (Table 3). On the other hand, the role of the institutional investor on profitability existed, but out of four cases, two cases were significant and two were not significant; therefore, it was good to be considered as inconclusive (Tables 4 and 5). The sixth hypothesis, that retail investors impact the performance of a bank, was not supported. All eight relevant cases were not significant (Tables 3–5). This implies that retail investors did not influence the performance of the banks in India.

## 5. Discussion and Policy Implications

The findings of the current paper are comparable to some of the earlier studies. Even though there has been no direct study that used three-pronged bank performance measures and/or used ownership classes of promoters, institutional investors, and retail investors, some studies provide comparable findings worthy of discussion here. Barry et al. (2011)

conducted a study of 249 European banks, and found that institutional investors positively reduce risk, and higher ownership concentration increases the risk-taking in banks. They also found that individual investors caused a bank to take more risks by the virtue of being a stock investor, contrary to the findings of the current study, which show that institutional investors increase the NPA levels in the banks. In addition to that, it was also found in the current study that retail investors do not contribute to the affairs of banks.

A study on risk-taking by high ownership concentration and regulation was done by [Laeven and Levine \(2009\)](#), including data from banks collected across countries. It was found that high shareholding concentration increased the propensity to take a risk, and made regulation less effective regarding risk management. However, [Shehzad et al. \(2010\)](#), in a study of 500 banks in 50 countries from 2005–2007 found that high ownership concentration reduced NPA levels and positively impacted the capital adequacy ratio. The current study found that promoters had no effect on NPA levels, but there were instances when high promoter shareholding reduced the profitability of banks.

[Bian and Deng \(2017\)](#), in a study on 115 Chinese banks (from 2007–2014), found that high ownership concentration adversely impacted bank performance (return ratios and NPA levels), partly supporting the findings of the current paper for profitability. However, an adverse impact on NPAs by a high ownership concentration was not supported in the current study. Opposite to the findings of [Bian and Deng \(2017\)](#), a study by [Ozili and Uadiale \(2017\)](#) on the banks of developing economies found that a high ownership concentration improved return over assets, return over equity, and profitability of the banks. In another study on 181 banks of 15 European countries ([Iannotta et al. 2007](#)), it was found that a high ownership concentration did not impact profitability, but improved the quality of loans.

A comparison of the findings of the current study with earlier studies revealed that high ownership concentration has a mixed response. However, most of the studies found a positive association between ownership concentration and bank performance, which was not supported by the current study. In addition to this, the premise that institutional investors bring stability and reduce risk also was not supported by the current study. Above all, the positive role of individual or retail investors was also completely missing in the findings of the current study.

Our findings significantly contribute to the existing lode of knowledge on the topic. A three-pronged measure of bank performance was the first set of contributions in the paper. The model was empirically tested on Indian banks, and proved the point that a holistic measure serves the purpose of assessing the performance of a bank better than a piecemeal approach. The main findings of the three-pronged bank performance measure on Indian banks were: (1) regulation impacts NPA levels positively, as expected for the good performance of a bank; (2) regulation does not impact the profitability of banks (neither adversely nor otherwise) in India, which is also favorable for a bank; and (3) NPA levels negatively impact the profitability of banks, which was against the expectation for performing banks. These findings imply that Indian banks are exceedingly poor in risk management for NPAs, including ineffective use of provisioning to contingent bad debts, which is a very significant contribution of our study.

The second set of contributions regarded the impact of ownership concentration on the three-pronged measure of bank performance in India. The findings that promoter holdings do not impact the NPA were of a mixed nature, and depended on how it was viewed. This finding can be viewed negatively in that promoters are supposed to impact NPA levels to reduce them. Contrary to this, it can be viewed positively that promoters do not influence the NPA levels of banks, which is favorable. However, promoter holdings negatively impact profitability, which is a poor finding for promoters.

Institutional investors impacted NPA levels negatively, which was a very surprising result. However, the impact of institutional investors on profitability was mixed, and hence remains inconclusive. Above all, regarding the third component of ownership concentration, retail investors do not have any impact on the bank performance in India.

These are important contributions to the study. On one hand, the negative association of institutional investors on NPAs needs to be checked; on the other hand, the role of retail investors should be made more meaningful so that they can also contribute to the better performance of banks. Both the concerns are germane for the corporate governance and ownership structure policy of banks. Such findings contribute significantly and provide impetus to policymakers to investigate and decide their way forward.

The first implication of the findings of the study is to have a reorientation toward the holistic performance of the bank. The proposed three-pronged measure of bank performance can be accepted and recognized in practice. The second implication is to recognize that risk-management practices in Indian banks are not up to the mark. They need to be scaled up to meet the standard so that both the issues of timely recognition of NPAs and provisioning are done so that banks do not encounter surprises in terms of distress in cash flow or a dent in profitability.

The third implication of the study is for the promoters. The negative association of promoters with profitability is an area of concern and needs further investigation. As of now, through this study, it can be proposed and recommended to have more diversified ownership and professional management in place. Moreover, the cap on promoter holdings in private banks (Ganguli 2013) can be further made applicable to public sector banks. The fourth implication of the study is for institutional investors. The negative association of institutional investors with NPAs is also an equally serious finding that needs further study. However, at this juncture, using the findings of the current study, it suffices to say that the process and procedure of granting advances should be free from interference, especially from institutional investors. The sixth and last implication of the study is regarding retail investors. Shareholder activism should be promoted, and a more formal mechanism should be developed to let small investors make their presence felt. Effective execution of corporate governance practices to be implemented, especially those provisions that are concerned with retail shareholders.

## 6. Conclusions, Limitations, and Future Scope

A three-pronged bank performance measure was empirically tested on 34 public and private sector banks in India. The findings evinced that this approach could aptly assess the performance of the banks, and could detect the real issues being faced by the banks. As evident from the results, banks in India need to revamp their risk-management practices to cater to NPA issues. The three-pronged measure of bank performance and its empirical significance is one of the main contributions of our study. The empirically tested, multidimensional approach to bank performance adds value to the literature, as well as the industry in dealing with the issues of bank performance.

In addition to this, the study vociferously advocates changes in policy to let promoters, institutional investors, and retail investors play their respective roles in a much more effective way so that the corporate governance can truly be practiced in Indian banks. The findings of our study regarding ownership concentration are another important contribution. Regulatory bodies can take their input from the current study to frame policy on the equity-stake distribution of the ownership in a bank to create more impactful corporate governance, transparency, and disclosure policies. Findings for ownership concentration also provide opportunities to look into existing policies on the shareholding cap for promoter holdings. The findings can also be used to ensure that best practices prevail in banks concerning the presence of the institutional investors. Above all, one of the main implications of the study is that it strongly advocates for a much more effective role of retail investors in the functioning or governance of banks. The findings have strong implications for the support of shareholder activism, especially by marginal and small retail investors.

The first part of the three-pronged holistic model, that regulation should impact NPAs, was found to be appropriate for the Indian banks. The second part of the model, that regulation should not negatively impact profitability, also was largely found intact in the Indian banks, with six out of eight cases giving a favorable outcome to endorse the

proposed model. The third and final part of the model proposed that NPAs should not adversely impact profitability if requisite risk-management approaches and provisions are made in adequate amounts. Indian banks are performing poorly on the third aspect of the holistic performance of banks. We concluded that Indian banks are performing well on two out of three performance measures for the holistic performance of the banks.

In addition to the findings of the proposed model, it was also found that promoters do not influence NPAs, but institutional investors do influence NPAs negatively. Promoters negatively impact profitability, whereas the impact of institutional investors on profitability remains inconclusive. Above all, retail investors are indifferent to bank performance. This finding regarding retail investors paves the way for more effective formal arrangements for shareholder protection and activism in India, especially for bank shareholders.

This study could not explore the qualitative aspects of NPAs, including the definition of NPAs, their timely reporting to the authorities, and a transparent approach to the risk-management against advances. The lack of qualitative aspects, which are equally important for the performance of banks, was a limitation of our study. The inconsistent profitability and NPA measures hint at further exploration of the data, which venture into transparency and disclosure issues that remain unattended in the present study, and are limitations of sorts. These issues can be a future scope of the topic. Studies on the following areas can also be done in the future: whether the delicate balance of the three-pronged approach to bank performance may be disturbed due to a lack of transparency and disclosures of a bank, as well as the assessment of prevailing risk-management practices, and their adequacy and impact on the performance of a bank in the long run.

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