Capturing the impact of accounting and regulatory variables on stock prices of banks – an empirical study of Indian banks in panel data modeling

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Abstract

Purpose – Analysts expect reduced bank earnings as a result of the impact of the increase in bad loans. Banks have strategically created high provision coverage ratios allocating large funds for possible deterioration in asset quality. Given the expected faster growth and recovery in the bank lending sector, investors have always been interested in banking stocks, despite the waves of non-performing assets (NPAs) and recessionary influences. Historical references reiterate that the banking stocks have been better performers in their returns compared to the capital markets.

Design/methodology/approach – The study aims to examine the impact of key accounting variables on the stock prices of Indian banks in the panel data framework.

Findings – The current study explores the impact of accounting variables on the market prices of shares. After the study, it may be concluded that earning per share (EPS), return on equity (ROE), capital adequacy ratio (CAR) and net interest margin (NIM) have an incremental impact on the prices of banking stocks, and the current ratio (CR) and NPAs have a detrimental impact on them.

Practical implications – Studying their impact on stock prices is the most convenient fundamental analysis that could be conducted on the stock prices of the banks.

Originality/value – To provide insights into the association of the accounting and regulatory variables there is a severe limitation in the quantity of the literature available. This study has attempted to build a relationship between the accounting and regulatory variables and the stock prices of banking stocks, to help investors with some reliable methods to estimate the stock prices in the future.

Keywords Banking stocks, Financial variables, Regulatory variables, Panel data modeling

Paper type Research paper

Erratum: It has come to the attention of the publisher that the article Sharma, S., Bhardwaj, I. and Kishore, K. (2023), "Capturing the impact of accounting and regulatory variables on stock prices of banks – an empirical study of Indian banks in panel data modeling", *Asian Journal of Accounting Research*, Vol. 8 No. 2, pp. 184-193. https://doi.org/10.1108/AJAR-11-2020-0110, was originally published with the tables presented as supplementary material via external links; these have now been amended and the supplementary material is hosted alongside the article to ensure that it remains accessible in perpetuity.

1. Introduction
Banks have catalyzed economic growth (Mohapatra and Jha, 2018), and thus, the soundness
of the financial system and the banking sector are reckoned as an important parameter for the
robustness of the economy. As financial intermediaries, banks channel savings into
productive investments, promote credits and perform other valuable services like dealing in
foreign exchange management, treasury functions, capital issue market, dealing in debt
securities, wealth management, financial planning, industrial financing, etc. In a developing
country like India, the development of other sectors in the economy is dependent on its sound
banking system. Especially during the post outbreak of the pandemic, the responsibility of
economic recovery has been made according to the credit lending systems which have been
given the impetus by the government to enhance and enrich the flow of funds into a starved
economic system, especially in the MSME sector. The government has been focusing on a
sound banking system for the past few years (Ramanaiah and Singh, 2018; Bhatt, 2018). A
significant element of the strategy to revitalize assets includes restructuring of the debt and
refinancing of assets to improve overall asset performance for banks and corporates. It has
been observed that 30% of companies listed on benchmark indices are banks, both private
sector and public sector banks. The fascination among investors toward banking stocks is
strengthened by the fact that large and well-capitalized banks are even more attractive for
both institutional and retail investors. This paper attempts to build a predictive model for the
stock prices of banking stocks in India.

The current literature on determinants of banking sector performance is largely focusing
on the profitability of banks rather than on their stock prices. Thus substantial literature is
not available on the determinants of the stock prices of the banking sector. A study done by
Narayan et al. (2014), examines the determinants of stock prices in terms of macroeconomic
variables like interest rates, economic activity and exchange rates. A study done by Rjoub
et al. (2017) is very closely related to the current study based on determinants of stock prices
in Turkey. Pradhan et al. (2016) have done a similar study on Nepalese banking stock prices.
There is limited literature available on the impact of accounting variables on the stock prices
of banks and no study is available to study the same in India. Therefore this study has
attempted to apply panel data modeling for analyzing the significant determinant of the stock
prices of banks. This study will thus provide a unique contribution to the literature related to
the determinants of prices of Indian banking stocks.

The study has applied pooled ordinary least square (OLS) and has concluded that earning
per share (EPS), return on equity (ROE), capital adequacy ratio (CAR), net interest margins
(NIMs), book value per share (BVS) and assets turnover ratio (ATR) have a positive and
significant impact on stock prices, whereas current ratio (CR) and non-performing assets
(NPA) have a negative and significant impact on stock prices of the banking sector. The
establishment of these relationships is of great significance because of the ease of availability
of data and ease of analysis thereafter.

The paper has been divided into sections dedicated to a brief introduction to the Indian
banking structure, followed by a literature review, research methodology empirical analysis
and conclusions.

1.1 Indian banking
India has a robust network of banking systems governed by sound banking regulations.
There are public sector banks that are majority-owned by the Government of India. After a
recent merger of various public sector banks, twelve public sector banks operate in India,
including the State Bank of India (SBI) which itself is a monolith created by the amalgamation
of its various subsidiary banks. All these public sector banks are listed entities on Stock
Exchanges. Then there are private sector banks that are set up as public limited companies

under the company law. Though private banks existed earlier, the financially significant private banks emerged after the onset of economic reforms in the 1990s. These new private sector banks are larger in size and operations and give effective competition to public sector banks. However, public sector banks continue to dominate the banking business both in terms of deposits and lending in as much as 65% of business is in the hands of public sector banks. Public and private banks play a crucial role to strengthen the economic activities in the developing and emerging Indian economy. From a historical perspective, private sector banks in India have been found to be more efficient than public sector banks (Mohan, 2003; Jha, 2011; Prasad and Reddy, 2012). On the other hand, the size of public sector banks is far more than the private sector because of its wider reach. Investors are thus fascinated by banking sector stocks but due to regulatory vulnerability like high NPAs, CAR, etc., these stocks seem like high-risk investments for an average investor. This study provides a detailed perspective on the determinants that significantly affect the stock prices of Indian banks and facilitates insightful decisions related to investments in banking stocks.

2. Literature review
An extensive literature review on the impact of accounting variables and disclosures on the stock prices of banks has revealed a few analytical studies which have been enumerated below.

2.1 Banking stock performance analysis from a global context
Studies done on the determinants of the profitability of the banking sector provide significant insights into the selection of determinants of the current study. Aburime (2008) also identified determinants of profitability of Nigerian banks. The study was done by Sufian and Chong (2008) focused on the determinants of banks in developing countries. Later again, Sufian (2011) researched further and identified significant factors for predicting the profitability of Korean banks. The study considered various bank-specific and macro factors to determine their profitability. A study was done by Ozturk and Karabulut (2017), which analyze that there is a positive significant relationship between share prices and PE ratio and NIM whereas insignificant and negative relation with CR. Masum (2014) studied the Dividend policy and its impact on stock prices. Emamgholipour et al. (2013) identified that EPS had a positive significant impact on stock returns. Variables such as PE and market value to book value ratios also have a significant impact on stock returns. A study by Ben Naceur and Goaied (2008) showed that the NIM and profitability are highly associated with the amount of capital a bank is holding. Another study was conducted by Almaaiteh and Alsaraireh (2019), in order to identify the impact of some accounting indicators on the market price of the share (MPS) of the Jordanian commercial banks listed on the Amman Stock Exchange (ASE) for the period 2006 to 2017. The study establishes the relationship between accounting indicators as independent variables (IVs) include: ROE, EPS, market price per share to book value per share (MPBV), dividend payout ratio (DPR), retained earnings per share (RPS), financial leverage (FL), CR and the MPS. The study had interesting results which exhibited a positive and significant relationship between ROE, EPS, MPBV, DP and MPS. The study also concluded that there is a negative and significant relationship between RPS and the MPS. The study also revealed very interesting that there was a negative and insignificant relationship between FL and the MPS. The present study gave sound recommendations to the investors in ASE that they must pay attention to the accounting indicators in general and especially to ROE, EPS, MPBV and DPR in order to invest wisely. A study by Rjoub et al. (2017) focused on the micro and macroeconomic determinants of stock prices in the Turkish banking sector. The paper used the fixed panel and panel Granger causality test to analyze the asset quality,

corporate governance factors, earnings, size and macro factors as the significant variables that assist in predicting the prices of stocks in the banking sector. The study is very important and directly related to the objective of the current study, and since it has been done in the context of Turkey, it thus leaves scope for the Indian capital market. Another study conducted by Pradhan *et al*. (2016), concluded that the important variables in determining the stock price are EPS, dividend per share, price-earnings ratio, BVS of the firm, return on asset and size. Out of these, *size* came out to be the most important variable in the context of Nepalese Commercial Banks. In the same context, a study done by Almumani (2014) has also identified determinants of equity share prices of the banks listed on ASE. This study analyzed that EPS, BV/share, PE ratio and size were significant determinants to predict the share prices of banking stocks. These studies are quite significant and directly related to the problem but out of the Indian jurisdiction thus leaving the scope in the Indian context.

2.2 Banking stock performance analysis from an Indian context
According to recent research in the Indian stock market, market news, combined with historical indicators, predicts the stock market trend closer to the actual trend. This study has found deep neural networks with LSTM algorithms outperform deep neural networks with RNN and other baseline machine learning classifiers in terms of predictive accuracy of the NSE NIFTY50 (Eachempati *et al*., 2021). In the Indian context, Srivastava and Gupta (2013) conducted a study on NPA's of foreign banks in India. This study concluded that NPA is a significant parameter for assessing the financial efficacy of banks. The mounting volume of NPAs will reflect the monetary well-being as far as profitability liquidity and economies of scale in operation are concerned. A study by Shrivastav (2019) was conducted on identifying the determinants for the survival of Indian Banks with the help of machine learning. The factors that were analyzed for being responsible for Banks failure were z-score, return on net worth, profit after tax, return on assets, equity, overheads, total assets, income, loan, inflation CPI, interest on revenue, liabilities and GDP growth. The focus of the study provided insights into key accounting and macro indicators that influenced the financial distress in the banking sector. Although the study was related to the survival of the banks rather than the determinants of stock prices it is still important for the investors' perspective as it gives investors an idea of what to look for in the financial reports of banks while investing in banking stocks.

The existing literature is based on the determinants of the banking sector largely focusing on profitability rather than share prices. The study is thus a unique contribution to the literature on the determinants of Indian banking stocks as it uses a new technique for the analysis and does it in light of the scenario which saw the advent of large NPAs in the banks. It has been observed that studies done earlier on the determinants of banking stocks are related mostly to jurisdictions outside India. They all have brought to light the various financial variables that cast an impact on the stock prices of banks. In the context of Indian banks, there is hardly any research to identify the variables that may be used to predict the prices of banking stocks. Hence the current study fills an important existing literature gap by focusing on the impact of financial variables on the stock prices of banks in India.

3. Research methodology
3.1 Data sourcing
The study examines the relationship between key eight financial variables and regulatory indicators on the stock prices of banks. For this, the study considered 27 banks (Refer. Table 1.1), where 15 are private, and the rest 12 are public sector banks. Here the Private sector banks were reduced to 15 from 22 because of discrepancy and unavailability of data.

The annual closing prices of select banks and select key financial and regulatory variables are fetched from capitaline and www.rbi.org, from 2015 to 2019. This was the period when the banking sector saw the upheavals of NPAs and the subsequent invocation of the Bankruptcy and Insolvency laws in India. The reason that the data used is pre-pandemic is to rule out the extraordinary impact of the pandemic on the stock prices. The capital markets perform unusually during pandemics and hence the results may get distorted especially when the study is studying the effect of macro variables. The total number of observations of a panel is 135 (i.e. 27 banks having 5 years data points).

Table 1.1 is available in supplementary material to article.

On the basis of past studies, the current study has considered the following 8 variables as determinants to analyze the banking stock prices. The variables selected for examination purposes are EPS (Emamgholipour *et al.*, 2013; Almumani, 2014; Rjoub *et al.*, 2017), BVS (Almumani, 2014; Pradhan *et al.*, 2016; Rjoub *et al.*, 2017), ROE (Rjoub *et al.*, 2017), ATR (Pradhan *et al.*, 2016; Rjoub *et al.*, 2017), CR (Ozturk and Karabulut, 2017), NIM (Ozturk and Karabulut, 2017), CAR (Aspal and Nazneen, 2014) and net NPA (Srivastava and Gupta, 2013).

3.2 Research technique – panel data analysis

The study has used panel data analysis. Panel data analysis helps in controlling individual unobserved heterogeneity. It gives more informative data, more variability, less collinearity among variables, more degree of freedom and more efficiency. Panel data analysis can better detect and measure relationships that simply cannot be observed in pure cross-section or time-series data.

The panel data set is a set of Xit and Yit where Xit are exogenous variables (independent variable); Yit are endogenous variables (dependent variable); $i = 1, \ldots, N$ is Cross-Section $t = 1, \ldots, T$ is Time-Series. The basic regression model for panel data is

$$y_{it} = \beta_{0it} + \beta_{1it}X_{1it} + \beta_{2it}X_{2it} \ldots + \beta_{kit}X_{kit} + \in_{it} \tag{1}$$

where, Yit is dependent variable for ith cross-sectional unit and for tth time unit; β_{0it} is the intercept term in the model which is related to ith cross-sectional unit and tth time unit. β_{1it} is the coefficient of kth independent variable in the model related to ith cross-sectional unit and tth time unit. $\in_{it}$ is error term, related to ith cross-sectional unit and tth time unit.

Our panel is short panel. In a short panel, time period, T, is small and $N \rightarrow \alpha$; that is N is very large.

OLS. Further, the study has applied Pooled OLS. In this method, there is no heterogeneity or individuality in cross-sectional units like in various firms/companies/countries (in our study it is banks). It means all the observations are pooled together for running a regression. It is simply an OLS technique applied on panel data. The pooled equation is explained as follows:

$$y_{it} = \beta_{0i} + \beta_{1i}X_{1it} + \beta_{2i}X_{2it} \ldots + \beta_{ki} + \in_{it} \tag{2}$$

In pooled OLS, the coefficients in the Model do not have any subscript for time but only for cross-sectional units.

4. Findings from data analysis

Empirical analysis has been done in various phases for identifying the determinants of banking stocks. The initial investigation has been done through visualization of the data followed by analyzing the degree of association among the dependent variable (DV) and IV with the help of the correlation matrix. The correlation matrix also provides the level of multicollinearity among IVs which is desirable for the OLS. Finally, the panel data regression

has been done. The results of the empirical analysis have been discussed in the following paragraphs.

4.1 Results of descriptive statistics
The consolidated descriptive statistics of 9 variables both for selected 15 private and all 12 public sector banks of India, in terms of mean, median, standard deviation, kurtosis and skewness (Table 1.2). The mean of ROE comes out to be negative and skewed negatively, for the reason that the few public sector banks have negative bottom lines because of high operating costs and NPAs. Variables under study have exhibited significant volatility in the consolidated data of banks as the standard deviation ranges from the maximum of BVS of the firm (126.130) to the minimum of the CR (0.030). This analysis shows that the BVS is highly positively skewed because of the inclusion of some well-capitalized public sector banks. As far as skewness is concerned, financial or regulatory variables such as BVS, ATR, CR, NIM, CAR, NPA and Stock returns are positively skewed for all banks whereas financial variables such as EPS and ROE are negatively skewed. The study leads to an observation that despite increasing revenues, size, turnover and liquidity, the NPAs of the banks have been constantly increasing and this has also been one of the major concerns of regulators. Moreover, the stock returns of the banking sector are positively skewed because of the extraordinary returns of a few private sector banks like HDFC and Kotak Mahindra (Mohan, 2003; Jha, 2011; Prasad and Reddy, 2012). This could be one of the reasons that the highest weight of indices has been dedicated to banking stocks. The inferences drawn from descriptive statistics have further been complimented through the correlation matrix.

Table 1.2 is available in supplementary material to article.

4.2 Result of correlation analysis
To analyze the degree and direction of associations, correlation analysis has been done (see. Table 1.3). Here it has been observed that share price shows a positive and high correlation with EPS (0.446), followed by ROE (0.443), CAR (0.274), NIM (0.239), BVS (0.207) and ATR (0.122). On the other hand, the share price has a negative correlation with CR (-0.169) and NPA (-0.309). The evidences drawn from the correlation matrix are rational and in consensus with the theory. NPA and share price have a negative correlation, hence increase in NPA is bad for financial performance and thus negatively affects the share price (Srivastava and Gupta, 2013). CR relation with share price is again negative because of the feature of two-edged sword of liquidity. Thus increase in the CR means sacrificing in profitability leading to a decrease in prices. However, the NIM, ROE, EPS, CAR and ATR reflect positive relation with share price, as they are true indicators of revenues, profitability, turnover and liquidity of banking sector. Any increase in these indicators is positively reflected in the share prices. The positive relation of these indicators with banks' performance are in consensus with the results of previous studies (Ben Naceur and Goaied, 2008; Almumani, 2014). But all these inferences have to be statistically inferred by the application of panel data analysis.

Table 1.3 is available in supplementary material to article.

4.3 Results from panel data analysis
A regression model has been designed by including the selected financial variables which influence the stock prices. This study considers nine variables, where share return is taken as dependent or endogenous variable and rest eight out of them, i.e. EPS, ROE, BVS, ATR, CR, NIM, CAR and NPA are considered as IVs. Regression coefficient ($\beta 1$, $\beta 2$, $\beta 3$ …… $\beta 8$)

signifies a proportionate change in share price as a result of the influence of the explanatory variables. The correlation matrix described above not only provides the direction of change but also furnishes the collinearity among the IVs. To run OLS, absence of multicollinearity among IVs is essential. If the problem of multicollinearity is not addressed, then the properties of best linear unbiased are violated and the results of OLS become spurious and useless. The rationale for choosing variables and incorporating them into the model must always be backed by theory. According to Goldberger and Goldberger (1991), more than 65% correlation among variables is considered indicative of the presence of multicollinearity. Thus, taking into consideration the theoretical perspective, despite having multicollinearity among variables, the study comes up with two segregated models. The eight IVs provide detailed insights to analyze the performance of banks. From the correlation matrix, it has emerged that EPS and ROE have a strong positive correlation between them. The relation is obvious and expected because if EPS is high, the ROE is greater. Another strong association is revealed between EPS and book value, which again is, as expected. Thus, taking into consideration the directional relationship, its degree of association, presence of multicollinearity and lastly the theoretical thrust, two separate regression equations has been derived:

$$Returns = \alpha + \beta_1 ROE + \beta_2 BV\ per\ share + \epsilon_t \tag{3}$$

$$Returns = \alpha + \beta_1\ EPS + \beta_2\ ATR + \beta_3\ CR + \beta_4\ NIM + \beta_5 CAR + \beta_6 NPA + \varepsilon_t \tag{4}$$

Panel data modeling has been applied in two ways, i.e. static and dynamic. The study considers static panel data modeling under three models, i.e. pooled, fixed and random. The poolability test assumes that no heterogeneity or individuality exists among units. Thus, it could be inferred that pooled model considers the units homogeneous, and the same coefficients could be considered for all units. For analyzing and understanding the nature of the data whether heterogeneous or homogeneous, PF test has been applied and it has a potential to analyze the data at an early stage to capture similarity or peculiarity among units. The null hypothesis is that the same coefficient captures the nature of all units, i.e. the pooled method is stable whereas the alternate hypothesis is that same coefficients are not stable and therefore heterogeneity persists among the units. The results of the PF test are encapsulated in Table 1.4. The results show that the p value is greater than 0.05. Thus, the null hypothesis cannot be rejected and it could be inferred that all units show homogeneity and pooled OLS is stable for further analysis.

Table 1.4 is available in supplementary material to article.

4.4 Results of pooled OLS
The results of pooled OLS of both equations have been encapsulated in Table 1.5. In the first model equation, share returns is taken as DV or endogenous variable and two IVs or exogenous variables are ROE and BVS. It has been observed that the Model-1 is fit, as the p-value is less than 0.05 at the 95% confidence level. The overall R square is 0.45, hence it could be fairly concluded that the overall model explains 45% of value of share prices. Interestingly, the two variables have a significant impact on share returns, as both variables are significant at 0.05 sig level as the t values are 5.7 and 2.44, respectively.

ROE is the most important indicator for investors, as it provides the actual picture of returns that belongs to investors. Thus, any increase in ROE will increase the expectation of investors and leads to an increase in share prices. BVS is reflecting the size of the banks and is thus considered as a crucial indicator for investors. These results are in consensus with the previous literature (Pradhan *et al.*, 2016; Masum, 2014). Thus, it has been fairly concluded that share returns have been significantly explained through ROE and BVS.

Table 1.5 is available in supplementary material to article.

Results of the second model equation are also summarized later in Table 1.5. The model considers share return as dependent variable, where independent variables are EPS, CR, NIM, CAR and NPA. The table shows that the model is fit, as the p value is less than 0.05. The explanatory power is 0.49, implying that the dependent variables explained approximately 50% of the values of share returns. EPS is considered as a significant variable that has positive effect on share returns as the t value is 5.76, which is significant at the 0.05 significance level. The results are in consensus of the Emamgholipour *et al.* (2013). ATR has not been found to be a significant variable. CR is found to be significant as the t-value is -1.98. Interestingly, the impact is found to be negative, i.e. the CR has a negative effect on share returns. This could be explained by the two-edged sword feature of liquidity ratio, i.e. trade-off between risk and return. Maintaining high liquidity adversely affects profitability. This could be validated that the CR has a negative relation with ROE and same is with EPS. Thus, it can be inferred that the effect of CR on share price could be captured by the mediating variable, i.e. ROE. These results are further partially in consensus with the study done by Ozturk and Karabulut (2017). NIM was considered as the most crucial factor to determine the share price of the banks as it is an indicator of the core operating revenues of the banks. In various valuation reports, this factor is considered as a relevant variable to build up valuation models, Ben Naceur and Goaied (2008). The table has also captures impact of NIM on share prices that shows significantly positive impact. The significant positive impact has been found in earlier studies (Ben Naceur and Goaied, 2008). Moreover, CAR has also shown a positive significant impact on the share price as the t value is 3.29, which is significant at the 0.05 significance level. Thus, it could be concluded that these two variables have a strong relation and justify the theory and are in consensus with the results of Olalekan and Adeyinka (2013). Lastly, NPA is the most crucial and critical variable influencing the banking industry. The impact reflected in the table is significant as the t value is -3.75. Again, if we revisit the descriptive statistics, it was evident that the large NPAs are not considered by investors as the decision variable for investments as long as the other fundamentals are strong. SBI is having very high NPAs but still, the majority of the savings are attracted by the bank because of its high reach and high book value and other fundamentals. The impact of NPAs is seen to have a negative relationship with share returns, which is again in tune with the theoretical perspective, as exhibited by the existing literature (Ramakrishnan and Toppur, 2016).

5. Conclusion

The study has used techniques which remove the deficiencies of a few techniques that have been used earlier. The data revealed by the study reiterate some aspects of the stock markets in India peculiar to the banking stocks in terms of high risk and return despite NPAs, capital inadequacy and recessionary impact of the pandemic. The descriptive statistics of banking stock prices have shown a pattern of positive skewness, which provide evidence of high yield in banking stocks. Historically too, banking stocks have shown major growth in prices, and amid the pandemic majority of the banking stocks have been undervalued. In view of the returns expectations, investors are fascinated by banking stocks. However recent years of rising NPAs have made the banking stocks highly volatile. In view of the high risk associated with banking stocks, analysis of the share value before investing becomes a difficult process; hence this research facilitates easy analysis using readily available variables to predict the stock price movements. This study contributes to a deeper understanding of the financial variables driving the investors' earnings from banking stocks. This will help investors be aware of the probable returns in the future also if they are able to analyze the banking stocks as per the process adopted by this study.

6. Future scope of study

The study is limited to Indian Banks, and hence the modeling could be extended to other emerging economies banking stocks. A similar study of the stock prices, post pandemic which will imbibe the impact of capital infusion by the government of India may give another set of interesting results. The study could further be enriched methodologically by applying dynamic panel data modeling or wavelet analysis.

References

Aburime, T. (2008), "Determinants of bank profitability: macroeconomic evidence from Nigeria", available at: SSRN 1231064.

Almaaiteh, W.A. and Alsaraireh, A.S. (2019), "Accounting indicators and their impact on market prices of shares of commercial banks listed on the Amman stock exchange for the period 2006-2017", *International Review of Management and Marketing*, Vol. 9 No. 4, p. 32.

Almumani, M.A. (2014), "Determinants of equity share prices of the listed banks in Amman stock exchange: Quantitative approach", *International Journal of Business and Social Science*, Vol. 5 No. 1, pp. 91-104.

Aspal, P.K. and Nazneen, A. (2014), "An empirical analysis of capital adequacy in the Indian private sector banks", *American Journal of Research Communication*, Vol. 2 No. 11, pp. 28-42.

Ben Naceur, S. and Goaied, M. (2008), "The determinants of commercial bank interest margin and profitability: evidence from Tunisia", *Frontiers in Finance and Economics*, Vol. 5 No. 1, pp. 106-130.

Bhatt, M.R. (2018), "Managing NPAs of Indian banks: recent developments", *FIIB Business Review*, Vol. 6 No. 4, pp. 10-19.

Eachempati, P., Srivastava, P.R., Kumar, A., Tan, K.H. and Gupta, S. (2021), "Validating the impact of accounting disclosures on stock market: a deep neural network approach", *Technological Forecasting and Social Change*, Vol. 170, 120903.

Emamgholipour, M., Pouraghajan, A., Tabari, N.A.Y., Haghparast, M. and Shirsavar, A.A.A. (2013), "The effects of performance evaluation market ratios on the stock return: evidence from the Tehran stock exchange", *International Research Journal of Applied and Basic Sciences*, Vol. 4 No. 3, pp. 696-703.

Goldberger, A.S. and Goldberger, A.S.G. (1991), *A Course in Econometrics*, Harvard University Press.

Jha, C. (2011), "ADD HDFC Bank", *PAT (INRbn)*, Vol. 9, pp. 34-39.

Masum, A. (2014), "Dividend policy and its impact on stock price – a study on commercial banks listed in Dhaka stock exchange", *Global Disclosure of Economics and Business*, Vol. 3 No. 1, 2 February, 2014, available at: https://ssrn.com/abstract=2724964

Mohan, T.R. (2003), "Long-run performance of public and private sector bank stocks", *Economic and Political Weekly*, Vol. 38 No. 8, pp. 785-788.

Mohapatra, A.K. and Jha, S. (2018), "Bank recapitalization in India: a critique of public policy concerns", *FIIB Business Review*, Vol. 7 No. 1, pp. 10-15.

Narayan, P.K., Narayan, S. and Singh, H. (2014), "The determinants of stock prices: new evidence from the Indian banking sector", *Emerging Markets Finance and Trade*, Vol. 50 No. 2, pp. 5-15.

Olalekan, A. and Adeyinka, S. (2013), "Capital adequacy and banks' profitability: an empirical evidence from Nigeria", *American International Journal of Contemporary Research*, Vol. 3 No. 10, pp. 87-93.

Ozturk, H. and Karabulut, T.A. (2017), "The relationship between earnings-to-price, current ratio, profit margin and return: an empirical analysis on Istanbul stock exchange", *Accounting and Finance Research*, Vol. 7, p. 109.

Pradhan, P., Shyam, R. and Dahal, S. (2016), "Factors affecting the share price: evidence from Nepalese commercial banks".

Prasad, K.V.N. and Reddy, D.M. (2012), "Performance evaluation of public and private sector banks: a multivariate analysis", *International Journal of Financial Management*, Vol. 2 No. 1, p. 55.

Ramakrishnan, P. and Toppur, B. (2016), "A study of banking stocks in India to develop a model for prudent investment", *Universal Journal of Management*, Vol. 4 No. 9, pp. 477-487.

Ramanaiah, G. and Singh, B. (2018), "A study on performance of nationalised banks in Indian stock market", *FIIB Business Review*, Vol. 2 No. 2, pp. 40-45.

Rjoub, H., Civcir, I. and Resatoglu, N.G. (2017), "Micro and macroeconomic determinants of stock prices: the case of Turkish banking sector", *Romanian Journal of Economic Forecasting*, Vol. 20 No. 1, pp. 150-166.

Shrivastav, S.K. (2019), "Measuring the determinants for the survival of Indian banks using machine learning approach", *FIIB Business Review*, Vol. 8 No. 1, pp. 32-38.

Srivastava, V. and Gupta, S.K. (2013), "Non-performing assets of foreign banks in India", *Asia Pacific Journal of Management and Entrepreneurship Research*, Vol. 2 No. 2, pp. 172-181.

Sufian, F. (2011), "Profitability of the Korean banking sector: panel evidence on bank-specific and macroeconomic determinants", *Journal of Economics and Management*, Vol. 7 No. 1, pp. 43-72.

Sufian, F. and Chong, R.R. (2008), "Determinants of bank profitability in a developing economy: empirical evidence from the Philippines", *Asian Academy of Management Journal of Accounting and Finance*, Vol. 4 No. 2.

Supplementary material
The supplementary material for this article can be found online.

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