

Do Determinants of Bank Profitability Change over Time? Evidence from India

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Abstract : Banking stocks have been surging off late. However asset quality issues that have plagued the banking sector over the past five years remain in the back ground. This paper seeks to study the influence of key internal determinants on the profitability of listed banks in India and to see if these determinants change or remain the same over time. The profitability measures chosen were the Return on Assets (ROA) and the Return on Equity (ROE). The internal determinants chosen for the study comprised of key bank metrics such as the deposit/credit ratio and bank size, income measures that include interest income/average working funds and non interest income/average working funds, a measure of fee based income, a key productivity measure in business per employee and risk factors that include the capital adequacy ratio and Net NPA. The influence exerted by the determinants on ROA and ROE was different across years and varied for both ROA and ROE. The risk factors and income measures studied proved to be key determinants of ROA and ROE. Key stake holders of banks should keep these determinants in mind as they seek to evaluate and understand the rapidly growing Indian banking landscape.

Keywords: *Profitability, Determinants, Indian Banking Sector, ROA, ROE, NPA, Capital Adequacy*

Introduction:

Banking stocks in India have been on a tear off late hitting all time highs. However all is not well with the banking sector as asset quality issues still remain in the background. With the Reserve Bank of India (RBI) implementing Basel III norms for the banking sector banking margins could come under pressure yet again. Given that the banking sector is often the life blood of the economy it would be useful to determine what drives profitability of this sector. It would also prove useful to know if the drivers of profit remain the same or have changed over time.

The profitability of a bank is predominantly driven by a series of internal and external factors. The internal determinants of bank profitability include but are not limited to bank size, capital, risk management procedures adopted, expenses, and diversification adopted (Molyneux and Thornton, (1992); Goddard et al., (2004); Bodla and Verma, (2006)). External determinants of bank profitability include both industry structural determinants such as market concentration, industry size

and ownership, and macroeconomic determinants such as inflation, interest rates, money supply and Gross Domestic Product (GDP) (Athanasoglou et al., (2008); Chirwa, (2003)).

In the current study we focus primarily on the relationship of a selected group of internal determinants with the profitability of India's listed banks as measured by the return of assets (ROA) and the return of equity (ROE). The internal factors chosen include key bank metrics, income measures, productivity measures and risk factors over the ten year period from 2006- 2015.

Literature Review:

There are several factors that impact the profitability of banks (Sufian and Habibullah, (2010); Dietrich and Wanzenried, (2011)). These factors can be broadly classified as either internal determinants that originate within the firm such as bank size, capital, risk management, expenses management, and diversification (Molyneux and Thornton, (1992); Goddard et al., (2004); Bodla and Verma, (2006)) or external determinants that are outside the firm like market concentration, industry size and ownership, inflation, interest rates, money supply and Gross Domestic Product (GDP) (Athanasoglou et al., (2008); Chirwa, (2003)).

Several studies have examined the impact of key internal factors on profitability. Growe et al., (2014) examined the profitability and performance measurement of U.S. regional banks during the period from 1994 to 2011. They found that the efficiency ratio and provisions for credit losses negatively impact profitability while equity scaled by assets positively impacts profitability. Additionally the level of nonperforming assets negatively influences profitability while macroeconomic variables did not influence profitability.

Zarrouk et al., 2016 found that bank profitability in the Middle East and North Africa (MENA) region was positively affected by banks' cost-effectiveness, asset quality and level of capitalization. Smirlock & Brown, (1986) studied the impact of demand deposits as a function of total deposits on profitability. Their findings suggest that demand deposits had a significant positive relationship with profits.

Miller and Noulas, (1997) found that loan loss provision and net charge offs had a significant negative effect on the profitability of large banks. These results indicated that net charge offs were further affected by asset and liability composition. Thus, the asset liability portfolio decisions of commercial banks can be expected to affect the profitability of these institutions via net charge offs. It was also observed that higher salaries and benefits per employee were consistently associated with higher net charge offs to total assets. This suggested that banks with higher salaries and benefits would require higher net interest margins to maintain profitability.

Ganesan, (2001) examined the profitability of public sector banks in India and found that interest costs, interest income, other income, deposits per branch, credit to total assets and proportion of priority sector advances were key determinants of profitability of these banks. Holden and El-Bannany, (2004) investigated whether investment in information technology systems affects bank profitability in UK. The results showed that the number of automated teller machines installed by a bank has a positive impact on bank profitability. Bodla and Verma, (2006) made an attempt to identify the key determinants of profitability of public sector banks in India and their study indicated that the variables such as non-interest income, operating expenses, provision and contingencies and spread have significant relationship with net profits.

In a study done on Tunisian banks from 1980-2000, Ben Naceur and Goaid, (2008) found that banks with relatively high amount of capital and overhead expenses tend to exhibit higher net-interest margin and profitability levels. They also find that bank size is negatively related to profitability. Additionally stock market development had a positive impact on bank profitability. Further private banks were found to be relatively more profitable than their state- owned counterparts.

Sufian, (2009) examined the determinants of Malaysian domestic and foreign commercial bank profitability during the period 2000-2004. It was found that Malaysian banks with higher credit risk and loan concentration exhibit lower profitability levels. Additionally banks that have a higher level of capitalization, higher proportion of income from non-interest sources, and high operational expenses proved to be relatively more profitable.

External determinants of bank profitability cover the impact of macroeconomic variables such as concentration, growth and inflation on bank profitability (Rajan and Zingales (1998); Athanasoglou et al., (2008); Chirwa, (2003). Chirwa, (2003) investigated the relationship between market structure and profitability of commercial banks in Malawi using time series data between 1970 and 1994. The analysis shows a long-run relationship between bank performance and concentration. Sufian, (2009) found that economic growth negatively impacts the profitability of Malaysian banks. Higher inflation rates positively impacted the profitability of these banks. While studying a sample of eighteen European countries Molyneux and Thornton, (1992) found a significant positive relationship between the return on equity and the level of interest rates in each country, bank concentration, and government ownership.

Methodology:

This study covers all 40 listed banks in India from the financial year ending March 2006 to the financial year ending March 2015. It used historical data to compare the relationship of a series of independent variables on the profitability of India's listed private and public sector banks. All data used in the study was obtained from the Capitaline (www.capitaline.com) research data base and RBI reports. The following variables were chosen:

Independent Variables:

Key bank metrics - The Deposit/Credit Ratio and Bank Size as measured by market capitalization.

Income Measures - Interest Income/Average Working Funds and Non Interest Income/Average Working Funds which is a measure of fee based income.

Productivity measures - Business per employee.

Risk factors - The capital adequacy ratio, Net Non Performing Assets (NPA)

Dependent Variables:

Bank Profitability as measured by the Return on Assets (ROA) and the Return on Equity (ROE)

The relationship between the above variables was analyzed with the SPSS 18.0 package. Q-Q plots were used to ascertain normality of the data. Correlation coefficients were determined to study the relationship between the respective variables. P values were used to assess the statistical significance of the correlations observed at 95% confidence intervals.

Results:

Table 1: Relationship between Profitability and Key Performance Indicators for Financial Year Ending March 2006

Dependent Variable (Profitability)	Independent Variable (Performance Indicators)	Correlation Coefficient (R)	Relationship	P Value (95% Confidence)
ROA	Deposit – Credit Ratio	0.157	-	0.398
ROA	Bank Size	0.320	+	0.08
ROA	Interest Income / Average Working Funds	0.369	+	0.041
ROA	Non-Interest Income / Average Working Funds	0.126	+	0.500
ROA	Business-per-Employee	0.091	+	0.627
ROA	Capital Adequacy Ratio	0.536	+	0.002
ROA	Net NPA	0.875	-	0.000
ROE	Deposit – Credit Ratio	0.077	-	0.682
ROE	Bank Size	0.247	+	0.181
ROE	Interest Income / Average Working Funds	0.351	+	0.053
ROE	Non-Interest Income / Average Working Funds	0.101	-	0.588
ROE	Business-per-Employee	0.013	+	0.946
ROE	Capital Adequacy Ratio	0.412	+	0.021
ROE	Net NPA	0.776	-	0.000

Table 1 shows the results of correlation analysis between the respective dependent and independent variables. ROA and ROE were positively correlated to Interest Income / Average Working Funds and the Capital Adequacy Ratio and negatively correlated to Net NPA. The highest correlation was observed for both ROA and ROE with Net NPA. The correlation with the other variables was not statistically significant at the 95% confidence level.

Table 2: Relationship between Profitability and Key Performance Indicators for Financial Year Ending March 2007

Dependent Variable (Profitability)	Independent Variable (Performance Indicators)	Correlation Coefficient (R)	Relationship	P Value (95% Confidence)
ROA	Deposit – Credit Ratio	0.023	+	0.896
ROA	Bank Size	0.214	+	0.224
ROA	Interest Income / Average Working Funds	0.343	+	0.047
ROA	Non-Interest Income / Average Working Funds	0.128	+	0.470
ROA	Business-per-Employee	0.028	-	0.877
ROA	Capital Adequacy Ratio	0.513	+	0.002
ROA	Net NPA	0.783	-	0.000
ROE	Deposit – Credit Ratio	0.109	-	0.539
ROE	Bank Size	0.129	+	0.466
ROE	Interest Income / Average Working Funds	0.088	+	0.620
ROE	Non-Interest Income / Average Working Funds	0.327	-	0.059
ROE	Business-per-Employee	0.172	-	0.331
ROE	Capital Adequacy Ratio	0.194	+	0.271
ROE	Net NPA	0.459	-	0.006

Table 2 shows the results of correlation analysis between the respective dependent and independent variables. ROA was positively correlated to Interest Income / Average Working Funds and the Capital Adequacy Ratio and negatively correlated to Net NPA. ROE was negatively correlated to Non-Interest Income / Average Working Funds and Net NPA. The correlation with the other variables was not statistically significant at the 95% confidence level.

Table 3: Relationship between Profitability and Key Performance Indicators for Financial Year Ending March 2008

Dependent Variable (Profitability)	Independent Variable (Performance Indicators)	Correlation Coefficient (R)	Relationship	P Value (95% Confidence)
ROA	Deposit – Credit Ratio	0.023	-	0.894
ROA	Bank Size	0.172	+	0.309
ROA	Interest Income / Average Working Funds	0.525	+	0.001
ROA	Non-Interest Income / Average Working Funds	0.242	+	0.150
ROA	Business-per-Employee	0.086	-	0.615
ROA	Capital Adequacy Ratio	0.301	+	0.07
ROA	Net NPA	0.574	-	0.000
ROE	Deposit – Credit Ratio	0.236	+	0.160
ROE	Bank Size	0.200	-	0.236
ROE	Interest Income / Average Working Funds	0.127	+	0.455
ROE	Non-Interest Income / Average Working Funds	0.433	-	0.007
ROE	Business-per-Employee	0.251	-	0.134
ROE	Capital Adequacy Ratio	0.358	-	0.029
ROE	Net NPA	0.395	-	0.015

Table 3 shows the results of correlation analysis between the respective dependent and independent variables. ROA was positively correlated to Interest Income / Average Working Funds and the Capital Adequacy Ratio and negatively correlated to Net NPA. ROE was negatively correlated to the Capital Adequacy Ratio, Non-Interest Income / Average Working Funds and Net NPA. The correlation with the other variables was not statistically significant at the 95% confidence level.

Table 4: Relationship between Profitability and Key Performance Indicators for Financial Year Ending March 2009

Dependent Variable (Profitability)	Independent Variable (Performance Indicators)	Correlation Coefficient (R)	Relationship	P Value (95% Confidence)
ROA	Deposit – Credit Ratio	0.009	-	0.956
ROA	Bank Size	0.164	+	0.326
ROA	Interest Income / Average Working Funds	0.136	+	0.414
ROA	Non-Interest Income / Average Working Funds	0.166	+	0.321
ROA	Business-per-Employee	0.084	+	0.617
ROA	Capital Adequacy Ratio	0.217	+	0.192
ROA	Net NPA	0.720	-	0.000
ROE	Deposit – Credit Ratio	0.067	+	0.690
ROE	Bank Size	0.001	-	0.994
ROE	Interest Income / Average Working Funds	0.176	-	0.291
ROE	Non-Interest Income / Average Working Funds	0.213	-	0.200
ROE	Business-per-Employee	0.070	-	0.675
ROE	Capital Adequacy Ratio	0.066	-	0.696
ROE	Net NPA	0.758	-	0.015

Table 4 shows the results of correlation analysis between the respective dependent and independent variables. Both ROA and ROE were negatively correlated to Net NPA. The correlation with the other variables was not statistically significant at the 95% confidence level.

Table 5: Relationship between Profitability and Key Performance Indicators for Financial Year Ending March 2010

Dependent Variable (Profitability)	Independent Variable (Performance Indicators)	Correlation Coefficient (R)	Relationship	P Value (95% Confidence)
ROA	Deposit – Credit Ratio	0.204	-	0.206
ROA	Bank Size	0.234	+	0.146
ROA	Interest Income / Average Working Funds	0.321	+	0.043
ROA	Non-Interest Income / Average Working Funds	0.262	+	0.103
ROA	Business-per-Employee	0.153	+	0.347
ROA	Capital Adequacy Ratio	0.212	+	0.190
ROA	Net NPA	0.692	-	0.000
ROE	Deposit – Credit Ratio	0.141	+	0.384
ROE	Bank Size	0.089	-	0.584
ROE	Interest Income / Average Working Funds	0.008	+	0.959
ROE	Non-Interest Income / Average Working Funds	0.309	-	0.052
ROE	Business-per-Employee	0.176	+	0.278
ROE	Capital Adequacy Ratio	0.201	-	0.213
ROE	Net NPA	0.619	-	0.000

Table 5 shows the results of correlation analysis between the respective dependent and independent variables. ROA was positively correlated to Interest Income / Average Working Funds and negatively correlated to Net NPA. ROE was negatively correlated to Non-Interest Income / Average Working Funds and Net NPA. The correlation with the other variables was not statistically significant at the 95% confidence level.

Table 6: Relationship between Profitability and Key Performance Indicators for Financial Year Ending March 2011

Dependent Variable (Profitability)	Independent Variable (Performance Indicators)	Correlation Coefficient (R)	Relationship	P Value (95% Confidence)
ROA	Deposit – Credit Ratio	0.225	-	0.162
ROA	Bank Size	0.256	+	0.110
ROA	Interest Income / Average Working Funds	0.281	+	0.079
ROA	Non-Interest Income / Average Working Funds	0.368	+	0.020
ROA	Business-per-Employee	0.162	+	0.318
ROA	Capital Adequacy Ratio	0.529	+	0.000
ROA	Net NPA	0.552	-	0.000
ROE	Deposit – Credit Ratio	0.146	+	0.369
ROE	Bank Size	0.076	-	0.639
ROE	Interest Income / Average Working Funds	0.176	+	0.278
ROE	Non-Interest Income / Average Working Funds	0.246	-	0.126
ROE	Business-per-Employee	0.338	+	0.033
ROE	Capital Adequacy Ratio	0.134	-	0.409
ROE	Net NPA	0.263	-	0.101

Table 6 shows the results of correlation analysis between the respective dependent and independent variables. ROA was positively correlated to Non Interest Income / Average Working Funds and the Capital Adequacy Ratio and negatively correlated to Net NPA. ROE was positively correlated to Business-per-Employee. The correlation with the other variables was not statistically significant at the 95% confidence level.

Table 7: Relationship between Profitability and Key Performance Indicators for Financial Year Ending March 2012

Dependent Variable (Profitability)	Independent Variable (Performance Indicators)	Correlation Coefficient (R)	Relationship	P Value (95% Confidence)
ROA	Deposit – Credit Ratio	0.251	-	0.118
ROA	Bank Size	0.366	+	0.020
ROA	Interest Income / Average Working Funds	0.293	+	0.067
ROA	Non-Interest Income / Average Working Funds	0.570	+	0.000
ROA	Business-per-Employee	0.023	+	0.890
ROA	Capital Adequacy Ratio	0.652	+	0.000
ROA	Net NPA	0.564	-	0.000
ROE	Deposit – Credit Ratio	0.073	+	0.655
ROE	Bank Size	0.114	+	0.483
ROE	Interest Income / Average Working Funds	0.148	+	0.363
ROE	Non-Interest Income / Average Working Funds	0.127	+	0.434
ROE	Business-per-Employee	0.271	+	0.091
ROE	Capital Adequacy Ratio	0.284	-	0.076
ROE	Net NPA	0.272	-	0.09

Table 7 shows the results of correlation analysis between the respective dependent and independent variables. ROA was positively correlated to Bank size, Interest Income / Average Working Funds, Non Interest Income / Average Working Funds and the Capital Adequacy Ratio and negatively correlated to Net NPA. The correlation with the other variables was not statistically significant at the 95% confidence level. ROE was not correlated to any of the variables.

Table 8: Relationship between Profitability and Key Performance Indicators for Financial Year Ending March 2013

Dependent Variable (Profitability)	Independent Variable (Performance Indicators)	Correlation Coefficient (R)	Relationship	P Value (95% Confidence)
ROA	Deposit – Credit Ratio	0.268	-	0.094
ROA	Bank Size	0.484	+	0.002
ROA	Interest Income / Average Working Funds	0.267	+	0.096
ROA	Non-Interest Income / Average Working Funds	0.708	+	0.000
ROA	Business-per-Employee	0.253	-	0.115
ROA	Capital Adequacy Ratio	0.772	+	0.000
ROA	Net NPA	0.817	-	0.000
ROE	Deposit – Credit Ratio	0.041	+	0.801
ROE	Bank Size	0.206	+	0.203
ROE	Interest Income / Average Working Funds	0.127	+	0.435
ROE	Non-Interest Income / Average Working Funds	0.249	+	0.122
ROE	Business-per-Employee	0.041	+	0.802
ROE	Capital Adequacy Ratio	0.420	+	0.007
ROE	Net NPA	0.693	-	0.000

Table 8 shows the results of correlation analysis between the respective dependent and independent variables. ROA was positively correlated to Bank Size, Non Interest Income / Average Working Funds and the Capital Adequacy Ratio and negatively correlated to Net NPA. ROE was positively correlated to the Capital Adequacy Ratio and negatively correlated to Net NPA. The correlation with the other variables was not statistically significant at the 95% confidence level.

Table 9: Relationship between Profitability and Key Performance Indicators for Financial Year Ending March 2014

Dependent Variable (Profitability)	Independent Variable (Performance Indicators)	Correlation Coefficient (R)	Relationship	P Value (95% Confidence)
ROA	Deposit – Credit Ratio	0.587	-	0.000
ROA	Bank Size	0.422	+	0.007
ROA	Interest Income / Average Working Funds	0.239	+	0.137
ROA	Non-Interest Income / Average Working Funds	0.649	+	0.000
ROA	Business-per-Employee	0.203	-	0.209
ROA	Capital Adequacy Ratio	0.740	+	0.000
ROA	Net NPA	0.813	-	0.000
ROE	Deposit – Credit Ratio	0.332	-	0.036
ROE	Bank Size	0.295	+	0.064
ROE	Interest Income / Average Working Funds	0.182	+	0.260
ROE	Non-Interest Income / Average Working Funds	0.443	+	0.004
ROE	Business-per-Employee	0.112	-	0.492
ROE	Capital Adequacy Ratio	0.533	+	0.000
ROE	Net NPA	0.741	-	0.000

Table 9 shows the results of correlation analysis between the respective dependent and independent variables. ROA was positively correlated to Bank Size, Non Interest Income / Average Working Funds and the Capital Adequacy Ratio and negatively correlated to the Deposit – Credit Ratio and Net NPA. ROE was positively correlated to Non Interest Income / Average Working Funds, Bank Size and the Capital Adequacy Ratio and negatively correlated to the Deposit – Credit Ratio and Net NPA. The correlation with the other variables was not statistically significant at the 95% confidence level.

Table 10: Relationship between Profitability and Key Performance Indicators for Financial Year Ending March 2015

Dependent Variable (Profitability)	Independent Variable (Performance Indicators)	Correlation Coefficient (R)	Relationship	P Value (95% Confidence)
ROA	Deposit – Credit Ratio	0.701	-	0.000
ROA	Bank Size	0.485	+	0.002
ROA	Interest Income / Average Working Funds	0.212	+	0.188
ROA	Non-Interest Income / Average Working Funds	0.766	+	0.000
ROA	Business-per-Employee	0.186	-	0.250
ROA	Capital Adequacy Ratio	0.796	+	0.000
ROA	Net NPA	0.674	-	0.000
ROE	Deposit – Credit Ratio	0.619	-	0.000
ROE	Bank Size	0.456	+	0.003
ROE	Interest Income / Average Working Funds	0.220	+	0.173
ROE	Non-Interest Income / Average Working Funds	0.728	+	0.004
ROE	Business-per-Employee	0.317	-	0.046
ROE	Capital Adequacy Ratio	0.724	+	0.000
ROE	Net NPA	0.792	-	0.000

Table 10 shows the results of correlation analysis between the respective dependent and independent variables. ROA was positively correlated to Bank Size, Non Interest Income / Average Working Funds and the Capital Adequacy Ratio and negatively correlated to the Deposit – Credit Ratio and Net NPA. ROE was positively correlated to Bank Size, Non Interest Income / Average Working Funds and the Capital Adequacy Ratio and negatively correlated to Business per employee, the Deposit – Credit Ratio and Net NPA. The correlation with the other variables was not statistically significant at the 95% confidence level.

Table 11: Determinants of ROA in the Order of Influence

Financial Year Ending March	Determinants of ROA
2006	1) Net NPA 2) Capital Adequacy Ratio 3) %Interest Income / Average Working Funds
2007	1) Net NPA 2) Capital Adequacy Ratio 3) %Interest Income / Average Working Funds
2008	1) Net NPA 2) Interest Income / Average Working Funds 3) Capital Adequacy Ratio
2009	Net NPA
2010	1) Net NPA 2) Interest Income / Average Working Funds
2011	1) Net NPA 2) Capital Adequacy Ratio 3) Non Interest Income / Average Working Funds
2012	1) Capital Adequacy Ratio 2) Non Interest Income / Average Working Funds 3) Net NPA 4) Bank Size 5) %Interest Income / Average Working Funds
2013	1) Net NPA 2) Capital Adequacy Ratio 3) Non Interest Income / Average Working Funds 4) Bank Size
2014	1) Net NPA 2) Capital Adequacy Ratio 3) %Non Interest Income / Average Working Funds 4) %Deposit – Credit Ratio 5) Bank Size
2015	1) Capital Adequacy Ratio 2) Non Interest Income / Average Working Funds 3) Deposit – Credit Ratio 4) Net NPA 5) Bank Size

Table 11 shows a summary of the results obtained for ROA from tables 1-10. The single most important influencer of ROA was the Net NPA. This was followed by the Capital Adequacy Ratio. Interest Income / Average Working Funds was relevant prior to 2013. Non Interest Income / Average Working Funds, the Deposit – Credit Ratio and Bank Size were important influencers of ROA from 2011 onwards.

Table 12: Determinants of ROE in the Order of Influence

Financial Year Ending March	Determinants of ROE
2006	1) Net NPA 2) Capital Adequacy Ratio 3) %Interest Income / Average Working Funds
2007	1) Net NPA 2) Non Interest Income / Average Working Funds
2008	1) Non Interest Income / Average Working Funds 2) Net NPA 3) Capital Adequacy Ratio
2009	Net NPA
2010	1) Net NPA 2) Non Interest Income / Average Working Funds
2011	Business per Employee
2012	None
2013	1) Net NPA 2) Capital Adequacy Ratio
2014	1) Net NPA 2) Capital Adequacy Ratio 3) Non Interest Income / Average Working Funds 4) Deposit – Credit Ratio 5) Bank Size
2015	1) Net NPA 2) Capital Adequacy Ratio 3) Non Interest Income / Average Working Funds 4) Deposit – Credit Ratio 5) Bank Size

Table 12 shows a summary of the results obtained for ROE from tables 1-10. The single most important influencer of ROE was the Net NPA. This was followed by the Capital Adequacy Ratio. Non Interest Income / Average Working Funds influenced ROE negatively before 2010 but positively in the last two years. Interest Income / Average Working Funds, Business per Employee, the Deposit – Credit Ratio and Bank Size were relatively minor influencers of ROE.

Discussion and Analysis:

This study examined the influence of a few selected internal determinants on the profitability of all 40 listed banks in India over a 10 year period spanning from 2006-2015. This includes 24 public and 16 private sector banks. The profitability measures chosen were the Return on Assets (ROA) and the Return on Equity (ROE). While ROA looks at how effectively banks deploy their asset base, ROE looks at how effective banks are in generating returns on share holder's funds. Based on a review of the body of existing literature the internal determinants chosen for the study comprised of key bank metrics such as the deposit/credit Ratio and bank size as measured by market capitalization, income measures covering interest income/average working funds and non interest income/average working funds which is a measure of fee based income, a key productivity measure in business per employee and risk factors that include the capital adequacy ratio and Net NPA.

The influence exerted by the determinants on ROA and ROE varied across years and was different for ROA and ROE (Table 1-10). The single most important determinant of both ROA and ROE was % Net Non Performing Assets (NPA) (Table 11, 12). In fact asset quality issues have been plaguing the Indian banking sector over the last five years and it is no surprise that it is the most influential determinant of profitability. In a recent study that involved U.S. regional banks during the period from 1994 to 2011 Growe et al., (2014) found that provisions for credit losses negatively impact profitability. Miller and Noulas, (1997) found that loan loss provision and net charge offs had a significant negative effect on the profitability of large commercial banks in the US.

The second most influential determinant of ROA and ROE was the capital adequacy ratio (Table 11, 12). Following the gradual implementation of Basel III norms by the Reserve Bank of India (RBI) for the Indian banking sector capital adequacy has taken centre stage with well capitalized banks often out performing their weaker counterparts. In a recent study Zarrouk et al., 2016 found that bank profitability in the Middle East and North Africa (MENA) region was positively affected by the level of capitalization. In a study done on Tunisian banks from 1980- 2000, Ben Naceur and Goaied, (2008) found that banks with relatively high amount of capital exhibited higher net-interest margin and profitability levels.

Interest income / Average working funds a traditional measure of income generation for banks from their lending operations was an important determinant of ROA prior to 2013 but not that significantly of ROE (Table 11, 12). In an earlier study Ganesan, (2001) found that interest income was a key determinant of profitability of public sector banks in India.

A measure of fee based income, non interest income / average working funds was an important determinant of ROA from 2011 onwards (Table 11). However non-interest income / average working funds impacted ROE initially negatively prior to 2010 but positively in the last two years (Table 12). This possibly could be due to the initial reluctance of the customer to accept fee based products primarily offered by private banks that established themselves as dominant players between 2000 and 2010. Later however when customers sensed the value behind these products fee based income could have become an important determinant of ROE. Sufian, (2009) found Malaysian banks with a higher proportion of income from non-interest sources proved to be relatively more profitable.

Bank size influenced ROA positively in the last three years of the study (Table 11) and influenced ROE positively in the last year of the study period (Table 12). Thus larger the bank better the profitability in the last few years of the study period. Sufian & Habibullah, 2010 found that bank size impacted profitability negatively for a sample of Indonesian banks between 1990 and 2005.

The deposit – credit ratio a measure of bank lending influenced both ROA and ROE negatively in the last two years of the study (Table 11, 12). While reducing the deposit credit ratio can help in improving ROA and ROE reducing it too much can possibly result in higher NPA's and lower asset quality. Sufian, (2009) found Malaysian banks with a higher loan concentration proved to be relatively less profitable.

Business per employee a measure of productivity of the work force had a minor influence on both ROA and ROE (Table 11, 12), influencing ROE positively in 2011. Ben Naceur and Goaied, (2001) found that the best performing Tunisian banks are those that improve labor and capital productivity.

There are some interesting implications in this study for different stake holders of banks. Bank managers keen on improving ROA and ROE versus their peers must focus on improving their asset quality and capital adequacy. In addition they must augment their traditional interest income with fee based income. Investors who tend to focus more on the ROE must identify banks with improving asset quality profiles and capital adequacy. In addition banks with diversified sources of income such as fee based income could also deliver superior returns over time. Finally our banking regulator the RBI must focus on strict asset quality norms for the banking sector as they seek to implement Basel III norms for the Indian banking space.

Conclusion:

This study examined the influence of a few selected internal determinants on the profitability of all listed banks in India over a 10 year period. The influence exerted

by the determinants on ROA and ROE was different across years and varied for ROA and ROE. The profitability measures chosen were the Return on Assets (ROA) and the Return on Equity (ROE). The internal determinants chosen for the study comprised of key bank metrics such as the deposit/credit ratio and bank size as measured by market capitalization, income measures such as interest income/average working funds and non interest income/average working funds, a measure of fee based income, a key productivity measure in business per employee and risk factors that include the capital adequacy ratio and Net NPA. The risk factors and income measures studied proved to be key determinants of ROA and ROE. Key stake holders of banks should keep these determinants in mind as they seek to understand and evaluate the ever changing Indian banking landscape.

Limitations:

The study is done only over a period of 10 years. The study only considered a select group of internal determinants. External determinants like macro-economic factors and exchange rates are not considered. Additionally qualitative factors such as customer preferences and customer service are not considered. The impact of technology is also not considered. The study only considered listed banks in India.

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