

**IMPACT OF MACROECONOMIC AND FINANCIAL MARKET  
INDICATORS ON THE BANKING SECTOR: SOME EVIDENCE  
FROM INDIA**

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**ABSTRACT**

**Purpose:** *The purpose of the study is to measure the impact of macroeconomic and financial market indicators on the performance of the Indian banks.*

**Research Methodology:** *Study is based on the secondary data related to the commercial banks of India and Indian economy, collected from the database of Reserve Bank of India for the year 2006-07 to 2010-11. Correlation and linear regression analysis has been used to measure the relationship between the variables.*

**Findings:** *It has been found from the study that interest income of the bank get affected by the economic and financial cycles. Deposits and Advances get affected by the macroeconomic indicators, showing a greater degree of cause and effect relationship between variables. It is also found during the study that Banks' variables are less affected by the financial market indicators showing a lesser degree of cause and effect relationship between variables.*

**Practical Implications:** *The study is important to see how the macroeconomic environment and financial markets of a country can affect the performance of the banking sector. Up to which extent the development/decline in the economy can affect the performance of the banks, and managers can make strategy to protect from these effects in advance.*

**Keywords:** *Macroeconomic Indicators, Financial Markets, Performance, Banks, Economic Cycle.*

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**INTRODUCTION:**

McKinsey & Company (2010) published in their annual report about the performance of the Indian banks as ‘Indian banking sector has emerged as one of the strongest drivers of India’s economic growth. Positive changes witnessed in the last two decades have impacted every aspect of banking, ranging from regulatory standards to customer management. Indian banks adapting to the changing landscape along with the vision of the regulator and the Government in shaping the future growth of banking were two of the noteworthy features of this transition. Banks have evolved their strategies in response to increasing competition and changing customer requirements.’”

It is generally accepted that performance measurement is the means by which an institution can assess whether its operations are aimed at achieving the desired goals or not. The performance of banks has become a major concern for economic planners and policy makers due to the fact that the gains of the real sector of the economy depend on how efficiently the banks are performing the function of financial intermediation.

The economic downturn due to global crisis, with numerous insolvencies of big business houses and collapse of the stock market have made the macroeconomic environment, an important factor to consider while measuring the performance of the banks. The banks are not only affected by the internal environment but also affected by the macroeconomic conditions of the country. Thus it is of worth importance to measure the impact of the macroeconomic and financial markets on the performance of the banks.

Banks have two type of income namely, interest income and noninterest income. The interest income is that income of the bank which is earned by way of doing traditional banking activities of lending and borrowing funds. While the non interest income of the bank is earned by providing fee based services like, credit cards, demand draft etc. it is the interest income of the bank that get affected by the macroeconomic environment. Because the economy at large, affect the demand and supply of funds of the banks only, and a very few affect on the fee based services of the banks has been reported.

The interest income which is affected by the macroeconomic determinants is related with the lending and borrowing of funds means that related with the deposits and advances of the banks. This is the reason; the efforts have been made to measure the impact of the macroeconomic indicators on the deposits, advances and operating profit of the banks, in this study. Among the macroeconomic indicators of a country, the main variables which can

directly affect the banks have been taken in the study namely, GDP, Inflation, Export and Import.

The financial market of the country has an interrelationship with the banks. The banks are affected by the financial market developments and financial markets are affected by the banking sector developments of a country. Thus it is vital to see the impact of the financial market indicators of the country on the banking sector performance. Thus the study has been made to measure the impact of the financial market indicators on the performance measures of the banks i.e. return on assets and net interest margin.

**Objective:** The purpose of the study is to measure the impact of macroeconomic and financial markets indicators on the performance of the Indian banks.

**Research Methodology:** The study is based on the secondary data of all the scheduled commercial banks (private, public and foreign banks), collected from the database of Reserve Bank of India for the period 2006-07 to 2010-11. The study uses correlation and regression method for the data analysis. The variables used in the study are as follows:

**Dependent Variables:** The dependent variables used in the study are Deposits, Advances, Interest Income, Operating Profit, Return on Assets (ROA), and Net Interest Margin (NIM).

**Independent Variables:** Below are the macroeconomic and financial indicators, which are used as independent variables by various researchers to measure the performance of the banks and their relationship with the profitability of the banks.

### **MACROECONOMIC & FINANCIAL INDICATORS:**

**Gross Domestic Product:** GDP is most commonly used macroeconomic indicator to measure total economic activity within an economy. The growth rate of GDP reflects the state of the economic cycle and is expected to have an impact on the demand for bank loans. The economic conditions and the specific market environment would affect the bank's mixture of assets and liabilities. Sufian and Habibullah (2010) point out that the GDP is expected to influence numerous factors related to the supply and demand for loans and deposits. Favourable economic conditions will affect the demand and supply of banking services positively. Bank's growth and profitability is limited by the growth rate of the economy. If the economy is growing at a good rate, a soundly managed bank would profit from loans and securities sales. Economic growth can enhance bank's profitability by increasing the demand for financial transactions, i.e., the household and business demand for loans. Strong economic conditions also characterized by the high demand for financial services, thereby increasing the bank's cash flows, profits and non interest earnings. Thus

there is a positive relationship between the growth rates of Gross domestic product and the profitability of the bank.

**Inflation Rate:** Inflation can affect in the way of Changes in interest rates and asset prices on the profitability of banks. Bashir (2003) stated that the anticipated Inflation affects positively while unanticipated inflation affects negatively the profitability of the banks. There is a positive association between the anticipated inflation and performance of the bank as it gives banks the opportunity to adjust interest rates accordingly, resulting in revenues that increased faster than costs, thus implying higher profits and reverse with the unanticipated inflation. Bourke (1989) revealed a positive relationship between inflation and bank profitability. Higher inflation rate lead to higher loan rates, and hence higher revenues will be generated by the bank. Inflation has a negative effect on bank profitability if wages and other costs (overhead) are growing faster than the rate of inflation.

**Reserves Requirements:** The reserve is a taxation indicator computed as the ratio of aggregate reserves to deposit multiplied by ratio of customer and short term funding to total assets. Kunt and Huizinga (1998) examined that reserve requirements are an implicit tax on banks. Banks have to face implicit taxation due to reserve and liquidity requirements and other restrictions on lending through directed/subsidized credit policies. Banks are subject to indirect taxation through reserve requirements because the higher reserve requirement prevents the banks from passing their higher reserve cost on to their customers. Banks need to keep more liquid in the form of reserve requirement and remains with less cash to lend to their customers thus banks earns low interest income. Reserve requirement negatively affects the performance of the banks. The reserves reduce interest margins and profits especially in developing countries, since there the opportunity cost of holding reserves tends to be higher and remuneration rates are lower.

**Bank Size to GDP:** The ratio is measured as total assets of the bank divided by GDP. This ratio reflects the overall level of development of the banking sector. Kunt and Huizinga (1997) found that higher Bank/GDP ratio is a sign of developed banking system which contributes higher to the GDP. Thus banks have to face intense competition because of well developed financial system and this ratio has a significantly negative impact on margins and profits. This effect is smaller in richer countries which already have relatively developed banking sectors.

**Market Capitalization to GDP:** The ratio is measured as stock market capitalization divided by GDP. Berger (1995) stated that Market Capitalization to GDP ratio is a measure of

the extent of stock market development. A larger stock market capitalization to GDP increases bank margins, reflecting possible complementarities between debt and equity financing. As stock market develops, improved information availability increases the potential pool of borrowers, making it easier for banks to identify and monitor them. Thus by the increased information about the potential borrowers, the bank can increase its customer data base and that increase the business of the banks, which ultimately turned into higher profit for the banks, thus higher net interest margin possible. Thus there is a positive relationship between the market capitalizations to GDP ratio and the profitability of the banks. A higher ratio indicates that the banks are able to obtain higher interest margins and higher profitability. In the emerging economies the market capitalization to GDP is high.

**Market Capitalization to Bank Size:** The ratio is measured as the stock market capitalization divided by the total assets of the banks. Kunt and Huizinga (1997), Bashir (2003) stated that larger stock market relative to the banking sector lowers bank margins, reflecting substitution possibilities between debt and equity. A larger stock market relative to the banks provides more substitutes to the investors in the stock market rather than investing their money in the banks, or borrowing money from the banks. Thus the business of the banks will get suffered by the development in the stock market in comparison to banking sector and thus affects the profitability of the bank negatively.

From the above list, the variables which will be used in the study are: GDP, Inflation rate (INF), Export, Import, Bank Size/GDP (BS\_GDP), Market capitalization to Bank Size (MCAP\_BS) and Market Capitalization to GDP (MCAP\_GDP).

#### **Regression Model:**

Deposits =  $\alpha + \beta$  (GDP) +  $\mu$ ..... (1), Deposits =  $\alpha + \beta$  (EXPORT) +  $\mu$ ..... (2), Deposits =  $\alpha + \beta$  (IMPORT) +  $\mu$ ..... (3), Deposits =  $\alpha + \beta$  (INF) +  $\mu$ ..... (4).

Advances =  $\alpha + \beta$  (GDP) +  $\mu$ ..... (1), Advances =  $\alpha + \beta$  (EXPORT) +  $\mu$ ..... (2), Advances =  $\alpha + \beta$  (IMPORT) +  $\mu$ ..... (3), Advances =  $\alpha + \beta$  (INF) +  $\mu$ ..... (4).

Interest Income =  $\alpha + \beta$  (GDP) +  $\mu$ ..... (1), Interest Income =  $\alpha + \beta$  (EXPORT) +  $\mu$ ..... (2), Interest Income =  $\alpha + \beta$  (IMPORT) +  $\mu$ .... (3), Interest Income =  $\alpha + \beta$  (INF) +  $\mu$ .... (4).

Operating Profit =  $\alpha + \beta$  (GDP) +  $\mu$ ..... (1), Operating Profit =  $\alpha + \beta$  (EXPORT) +  $\mu$ ..... (2), Operating Profit =  $\alpha + \beta$  (IMPORT) +  $\mu$ .... (3), Operating Profit =  $\alpha + \beta$  (INF) +  $\mu$ .... (4).

ROA =  $\alpha + \beta$  (BS\_GDP) +  $\mu$ ..... (1), ROA =  $\alpha + \beta$  (MCAP\_GDP) +  $\mu$ ..... (2), ROA =  $\alpha + \beta$  (MCAP\_BS) +  $\mu$ ..... (3).

$NIM = \alpha + \beta (BS\_GDP) + \mu \dots \dots (1)$ ,  $NIM = \alpha + \beta (MCAP\_GDP) + \mu \dots \dots (2)$ ,  $NIM = \alpha + \beta (MCAP\_BS) + \mu \dots \dots (3)$ .

Where  $\alpha$ = constant term (Intercept),  $\beta$ = regression coefficient and  $\mu$ = error term.

### DATA ANALYSIS AND INTERPRETATION:

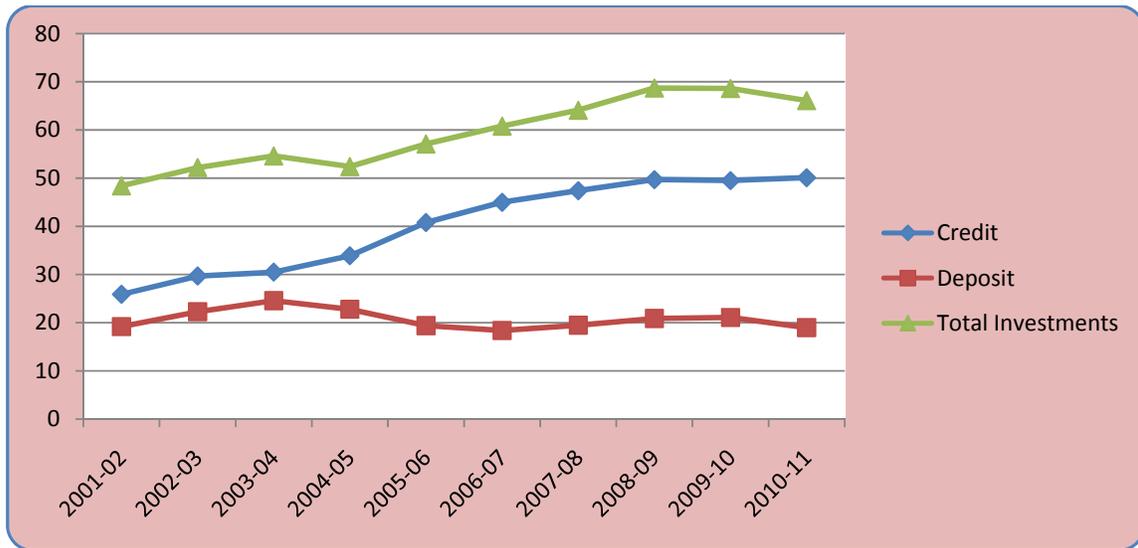
Table 1 depicts the contribution of aggregate credit, aggregate deposits, and total investments of all the scheduled commercial banks of India, to the GDP of the country for last ten years. It can be clearly seen from the figure1 that total investment to GDP ratio is highest, while Aggregate deposits to GDP ratio is lowest for the studied period. Total investment and the credits which are the assets of the banking sector are showing an increasing trend, while the deposits which are the liabilities of the banking sector are showing decreasing trend. According to the Annual Report of RBI for 2010-11, Indian banks need to focus on the liquidity, in order to migrate to BASEL III. Current Account & Saving Account to Total Deposits ratio (CASA) should be increased by the Indian banks to improve the performance of the banks. Deposits are the cheaper sources of the funds for a bank because the bank pays a mere 3.5 to 4% interest rate on the saving deposits and some banks pay zero or no interest on current deposits. Thus CASA ratio should be increased to improve performance of the banks.

**Table 1: Scheduled Commercial Banks (Growth rate of Credit, Deposits and Total Investment as a percent to GDP for the year 2001-2010)**

Year	Credit	Deposit	Total Investments
2001-02	25.9	19.2	48.4
2002-03	29.7	22.3	52.2
2003-04	30.5	24.6	54.6
2004-05	33.9	22.8	52.4
2005-06	40.8	19.4	57.1
2006-07	45.0	18.4	60.8
2007-08	47.4	19.5	64.1
2008-09	49.7	20.9	68.7
2009-10	49.5	21.1	68.6
2010-11	50.1	19.0	66.1

(Source: [www.rbi.org.in](http://www.rbi.org.in))

**Figure 1: Scheduled Commercial Banks (Growth rate of Credit, Deposits and Total Investment as a percent to GDP for the year 2001-2010)**



It can be interpreted from the regression analysis results in the table 2 that the dependent variable (Total deposits of all the scheduled commercial banks operating in India), is effected by the macroeconomic indicators namely, GDP, Export and Import. A significant relationship can be seen from the table 2 between the Deposits and GDP, Export and Import at 1 % level of significance. While in case of inflation it is not showing any significant relationship with the deposits of the banks.

**Table 2**

<b>Regression Analysis where Dependent Variable: Deposits</b>					
Macroeconomic Indicators	R <sup>2</sup>	Adjusted R <sup>2</sup>	Coefficient	t-value	p-value
GDP	0.991	0.989	1.854	19.176	0.000*
INF	0.098	-0.201	0.015	0.573	0.606 (NS)
Export	0.922	0.897	4.373	5.989	0.009*
Import	0.928	0.904	3.216	6.249	0.008*

**\*Significant at 1% level, NS=Not significant.**

Table 3 shows the relationship between the Advances of all the scheduled commercial banks operating in India and the macroeconomic indicators using regression analysis. It can be interpreted from the regression analysis results that, GDP has highest impact over the advances with the highest value of R<sup>2</sup> at a significant level of 1%, subsequently by export and then import at 1% level of significance. Inflation again showing insignificant relationship with the

advances of the banks, which shows that inflation, has a low or mere impact on the banks' deposits and advances.

**Table 3**

<b>Regression Analysis where Dependent Variable: Advances</b>					
Macroeconomic Indicators	R <sup>2</sup>	Adjusted R <sup>2</sup>	Coefficient	t-value	p-value
GDP	0.994	0.992	1.411	23.736	0.000*
INF	0.122	-0.169	0.017	0.647	0.563 (NS)
Export	0.947	0.930	3.369	7.381	0.005*
Import	0.910	0.880	2.421	5.519	0.011*

**\*Significant at 1% level, NS=Not significant.**

Table 4 shows the relationship between the interest income of all the scheduled commercial banks operating in India and the macroeconomic indicators using regression analysis. It can be interpreted from the regression analysis results that, GDP has highest impact over the interest income with the highest value of R<sup>2</sup> at a significant level of 1%, subsequently by import at same level of significance and then Export at 5% level of significance. Inflation again showing insignificant relationship with the interest income of the banks, which shows that inflation, has a low or mere impact on the banks' interest income.

**Table 4**

<b>Regression Analysis where Dependent Variable: Interest Income</b>					
Macroeconomic Indicators	R <sup>2</sup>	Adjusted R <sup>2</sup>	Coefficient	t-value	p-value
GDP	0.954	0.938	0.172	7.902	0.004*
INF	0.052	-0.263	0.014	0.407	0.711 (NS)
Export	0.834	0.779	0.395	3.893	0.030**
Import	0.908	0.878	0.302	5.464	0.012*

**\*Significant at 1% level, \*\* Significant at 5% level and NS=Not significant.**

Table 5 shows the relationship between the operating profits of all the scheduled commercial banks operating in India and the macroeconomic indicators using regression analysis. It can be interpreted from the regression analysis results that, Import has highest impact over the advances with the highest value of R<sup>2</sup> at a significant level of 1%, subsequently by GDP and then Export at 1% level of significance. Inflation again showing insignificant relationship

with the operating profits of the banks, which shows that inflation, has a low or mere impact on the banks' operating profits.

**Table 5**

<b>Regression Analysis where Dependent Variable: Operating Profit</b>					
Macroeconomic Indicators	R <sup>2</sup>	Adjusted R <sup>2</sup>	Coefficient	t-value	p-value
GDP	0.969	0.959	0.058	9.762	0.002*
INF	0.136	-0.151	0.021	0.688	0.540 (NS)
Export	0.951	0.935	0.141	7.685	0.004*
Import	0.970	0.961	0.104	9.980	0.002*

**\*Significant at 1% level, NS=Not significant.**

Table 6 shows the correlation between the deposits, advances, interest income, operating profits and GDP, Inflation, Export and Import. Except the inflation all other macroeconomic indicators are showing the significant and strong relationship. Correlation matrix and regression analysis clearly shows that except inflation, banks' deposits, advances, interest income and operating profits are affected by the macroeconomic indicators.

**Table 6**

<b>Correlation Matrix</b>				
Variables	Deposits	Advances	Interest Income	Operating Profit
GDP	0.996*	0.997*	0.976*	0.985*
INF	0.344 (NS)	0.218 (NS)	0.250 (NS)	0.831 (NS)
EXPORT	0.961*	0.974*	0.913**	0.985*
IMPORT	0.964*	0.954*	0.953*	0.976*

**\*Significant at 1% level, \*\*Significant at 5% level and NS=Not significant.**

Table 7 shows the relationship between the financial market indicators and the banks' profitability determinants namely, return on asset (ROA), net interest margin (NIM). It can be seen from the table 7 and table 8 that banks' profitability in terms of ROA and NIM does not get affected by the financial market indicators. Except the relationship between the NIM and Market Capitalization to Bank Size ratio, all other relationships are proved insignificant, showing no affect or a very few affect on the profitability of the banks.

Table 7

Regression Analysis where Dependent Variable: ROA					
Financial Market Indicators	R <sup>2</sup>	Adjusted R <sup>2</sup>	Coefficient	t-value	p-value
BS_GDP	0.040	-0.270	0.041	0.368	0.737 (NS)
MCAP_GDP	0.141	-0.281	-0.084	-0.575	0.623 (NS)
MCAP_BS	0.110	-0.332	-0.122	-0.499	0.666 (NS)

Table 8

Regression Analysis where Dependent Variable: NIM					
Financial Market Indicators	R <sup>2</sup>	Adjusted R <sup>2</sup>	Coefficient	t-value	p-value
BS_GDP	0.659	0.489	-1.081	-1.967	0.187 (NS)
MCAP_GDP	0.643	0.464	1.398	1.898	0.198 (NS)
MCAP_BS	0.992	0.988	1.055	16.002	0.003*

\*Significant at 1% level, NS=Not significant.

Table 9 shows the correlation between the ROA, NIM and BS\_GDP, MCAP\_GDP, MCAP\_BS. The correlation matrix clearly shows that only NIM has a strong and significant relationship with the MCAP\_BS at 5% level. All other variables do not have a significant relationship with ROA and NIM. Though the correlation of NIM with MCAP\_GDP and BS\_GDP is strong but it is not significant.

Table 9

Correlation Matrix		
Variables	NIM	ROA
BS_GDP	-0.812 (NS)	0.149 (NS)
MCAP_GDP	0.802 (NS)	-0.333 (NS)
MCAP_BS	0.996**	-0.377 (NS)

\*\*Significant at 5% level, NS=Not significant.

### Major Findings:

It has been found during the study that dependent variables namely, deposits, advances, interest income and operating profit has a positive and significant relationship with GDP. The growth in the economy leads to increase in financial transactions, growth in demand for loans by the household sectors like home loans, car loans etc, growth in the opportunities before the

entrepreneurs and that will result into increase in demand for funds from the banks. Thus overall it can be interpreted that growth in the economy will lead to growth in the demand and supply of the funds and the banking business (deposits and advances) get positively affected. Growth in banking business will result into higher interest income and increase in the operating profits of the bank. In case, if there is a downturn in the economy, the banking business also gets affected by the downturn in the economy. The demand for funds will decline and less business for the banking leads to decrease in the interest income and banks will have lower operating profits.

The inflation which is a major indicator of macroeconomic, has a lower and insignificant relationship with the dependent variables namely, deposits, advances, interest income and operating profits. Due to the inflation the bank charges higher interest rates on the loans, in this way the banks try to earn higher interest income, but that benefit gets equalized by the increase in the cost of operating the banking business due to inflation. The wages or salaries and other expenses get increased due to inflation and the profits earned by the bank by charging higher interest rates get nullified. Thus banks have a very few or no impact from the inflation.

The banking business (deposits and advances) get affected by the export and import of a country. The foreign trade (export and import) are mostly done through the banks. The financial transactions related to the payments for export or imports are getting settled through the banks. Even the companies which manufacture exported products get loans in bulk from the banks and they provide a large segment of the market for the banks. Thus the banks get affected by the export and import of the country. The growth in foreign trade leads to more banking activities and banks can earn more interest income and operating profits.

The financial market indicators have been defined in terms of the three ratios in the study namely, bank size to GDP, market capitalization to GDP, market capitalization to bank size. Here the bank size has been taken in terms of the total assets of all the scheduled commercial banks operating in India and market capitalization has been taken in terms of the annual capitalization of BSE (Bombay Stock Exchange). The regression analysis has been done by taking last ten years data to have more significant results. The study shows that there is no significant relationship between the financial market indicators and the performance of the banking sector. The financial market indicators and the banking performance shows significant relationship in those countries where either the banking sector is well developed

or market is well developed or both are well developed, as seen in the various researches conducted by the researchers.

But in India both the banking sector and the financial markets are at their developing stage. They are not well developed and that is the reason that there is a less or no impact of financial market indicators on the performance of the banks. The only significant relationship during regression analysis has been found between the Net interest margin and the Market capitalization to bank size. Market capitalization to bank size shows that the financial market developments in comparison to the banking sector development. As stock market develops, improved information availability increases the potential pool of borrowers, making it easier for banks to identify and monitor them. Thus by the increased information about the potential borrowers, the bank can increase its customer data base and that increase the business of the banks, which ultimately turned into higher profit for the banks, thus higher net interest margin possible.

### **CONCLUSION:**

Thus it can be concluded from the study that the banking business, lending and borrowing funds get affected by the macroeconomic indicators of the country. While the non interest income of the banks is largely unaffected by economic and financial market cycles and is usually not controlled by law or regulation. Indian banks have stressed on non interest income being one of the key parameters to their overall profitability and moving in the direction to be universal banks.

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