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Metrics and Performance Measurement of Banks

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Abstract: *The growth of banks is not possible unless there is customer's satisfaction or maybe the net assets held by these banks, efficiency of their management or the networks of each bank both in private as well as the public sector bank. This paper is designed to outline and discuss the most performance, and efficiency-related metrics for measuring the performance of the banks. Magretta and Stone (2002) suggests that metrics and performance measurement are the critical elements in translating an organization's mission, or strategy, into reality Rajan (2005) argues, evaluating the true nature of bank performance is a very complicated task, since it requires disentangling the part of the performance which is the result of a genuine value creation from the part which is the result of higher (and not easily observable) risks. Indeed, higher returns can always be obtained by taking more risks, and if risks are hidden or underestimated, risk-taking may seem value-enhancing as long as risks have not materialised. However, the financial crisis revealed the real risks taken by the banks through the huge losses borne by their shareholders.*

Key words: *Financial performance, Banking, Ratio analysis, Metrics*

I. Introduction

According Gran Josh "Banking is a business of accepting deposit and lending money. It is carried out by financial intermediaries, which performs the functions of safe guarding the deposits providing loans to the public. Banks have control over the circulation of money which is important in the economic development of nation. (Spathis and Doumpos 2002) The report used multi criteria methodology for classifying Greek banks and to know the profit efficiency in large and small banks. (Duncan and Elliott 2004) They showed the financial performance is related to the relationship between the output of the system and input of the production. (Sura 2006) used dividend as a notable device by the banks. (Chaudhary and Sharma 2011) They have made the comparative analysis of public and private banks and have come to the conclusions that the cost has been reduced due to modern technology. (Das and Drine 2011) (Michael Aldrich 20th august 1941- 19th may 2014) was responsible for Telebanking and Teleworking. The banking sectors have promoted online transactions on a large scale. All online transactions can be done with a debit or credit cards. The outcome of the economic reforms which is visible now in India started in early nineties. Banking industry in India is constantly growing at a faster rate .There has been noticeable changes in transactions through ATMs, internet, mobile banking etc. After the passing of banking law bills by the Indian parliament in 2012(Amendment) the banking industry has changed significantly. The Reserve Bank of India is allowed to issue new licenses for bigger number of banking in the country. The reserve Bank of India has right to spot bad loans and take actions or check the borrowers.

II. Financial performance

Financial performance is a process of generating revenue with the help of the assets that is available in the bank at the preliminary stage. It can also be stated as the level of performance of the banks in a particular period which is being stated as the profit incurred by the bank. Financial performance applies to all the work performed by the banks within the period of time and exhibit the success or profit. It is the financial activity that is being performed in the institution. This can also be used to compare with other bank performances. With the help of the financial position that is being exhibited the customers are the managers can find out the performance of the banks over a period of time or for a given period.

III. Review of literature

(Avkiran, 1995) says financial performance of banks and other financial institution is the combination of financial ratio analysis, benchmarking, measuring performance against budget or mix of these methodologies Avkiran (1995) and Dietrich (1996) Different aspect of the DuPont financial ratios appears to be applicable to the banks and other financial institutions. Financial Markets Department (2000) affirmed that ratio analysis is a reflection of the true state of affairs of the performance of any business. Notwithstanding the usefulness of financial ratio analysis in providing useful insight to an entities performance it does have some important limitations as an analytical tool in bank performance analysis. Aarma et al (2003) indicated that banks

performance analysis is an important issue in the conditions of transition economies due to the key role played by the financial sector in a successful transition. An array of performance indicators is necessary to expose the different aspects of the performance of a bank as in Gibson and Cassar (2005). The concept of prudent banking is normally built around these indicators. Financial analysis is crucial in estimating the effect of any sector reforms or institutional restructuring. Using data for Taiwan Province of China, Lin, Penm, Garg, and Chang (2005) study the direct effects of capital regulations and capital requirements. More specifically, they study three areas: (i) the relation between capital adequacy and the bank insolvency risk index, (ii) the relation between capital adequacy and financial performance, and (iii) the interaction and relationship between the insolvency risk of banks and financial performance.

Chawla, A.S.(2006) analysed the trends in the profitability of public sector and private sector banks. The performance of new sectors banks was made by Sanjay J. Bhayani (2006) on a comparative study by using the CAMEL model. (CAMEL stands for capital adequacy, asset quality management efficiency, earnings performance and liquidity). The study covered 4 leading private sector banks- ICICI, HDFC, UTI and IDBI for a period of 5 years from 2000-01 to 2004-05. It was found that the aggregate performance of IDBI Bank was best among all the banks, followed by UTI. (Nimalathasan, 2008) compares financial performance of banking sector by using CAMELS rating system. The performance of Malaysian Islamic bank carried out by using financial ratios (Samad and Hassan). EVA (Economic Value Added) is a modern financial measurement tool that determines if a business is earning more than its true cost of capital (Gabriela et al, 2009). The performance of Malaysian Islamic bank carried out by using financial ratios (Samad and Hassan). The south African commercial banks performance measured by financial ratios analysis (kumbiari and Webb, 2010).

Performance of selected Indian commercial banks has done by growth in asset, profit, revenue, investment and deposit (Jaladhar, Anchula and Achari, 2011). While analyzing performance of AXIS bank in terms of capital adequacy ratios and correlation analysis is used (Shrivastava et al, 2011). The analysis includes CAMELS rating and multivariate regression analysis for comparing financial performance commercial banks (Jha and Hui, 2012). Khravish (2011) explained that ROE is the ratio of Net Income after Taxes divided by Total Equity Capital. It represents the rate of return earned on the funds invested in the bank by its stockholders. ROE reflects how effectively a bank management is using shareholders' funds. Thus, it can be deduced from the above statement that the better the ROE the more effective the management in utilizing the shareholders capital. Total assets or total net assets are used to describe a funds size. If the assets rise, the number of appropriate new stock prospects shrinks and transaction costs increases. If the assets size is high there is high scope for more investment and low the assets size which indicates otherwise.

The financial performance of commercial bank measured in terms of capital adequacy and methodology used as ordinary least square method (Onaolopo and olufemi 2012) Jamal and Shariff (2012) attempted on dividend policy and to pay cash dividend implemented by US commercial banks as a possible alternative choice for dividend seeking investors. Most of the banks paid dividend at increasing rate and few banks have stopped. The study also indicated that the main predictor variables in predicting cash dividend are total assets, return on equity and equity to liability. ROE is a financial ratio that refers to how much profit a company earned compared to the total amount of shareholder equity invested or found on the balance sheet. ROE is what the shareholders look in return for their investment. A business that has a high return on equity is more likely to be one that is capable of generating cash internally. Thus, the higher the ROE the better the company is in terms of profit generation.

IV. Metrics of bank in financial performance

Capital adequacy ratio:

A measure of a bank's capital. It is expressed as a percentage of a bank's risk weighted credit exposures.

$$\text{Capital Adequacy ratio} = \frac{\text{Tier1 capital} + \text{Tier2 capital}}{\text{Risk - weighted Exposures}}$$

Also known as "Capital to Risk Weighted Assets Ratio (CRAR)."

Capital Adequacy Ratio – CAR: This ratio is used to protect depositors and promote the stability and efficiency of financial systems around the world. Two types of capital are measured: tier one capital, which can absorb losses without a bank being required to cease trading, and tier two capital, which can absorb losses in the event of a winding-up and so provides a lesser degree of protection to depositors.

(Sat and Venkatesh) (2010) highlighting the importance of CAR for Islamic bank as a measures of capital (as defined by Basel) the banks have to maintain in relation to their total risk weighted assets (RWA), including off-balance sheet exposure. This is considered as the most important ratio for banks and the buffer against heavy losses that could question the very existence of a bank. As banks are heavily leveraged institutions, they must maintain sufficient capital to cover their RWA. This ratio is more meaningful during an economic crisis as this ratio acts as a predictor of bank failure. To reduce this probability, a bank may strengthen its capital over time.

Further as per (Santmero and Watson) (1977), the lower the capital the higher the probability of failure. This ratio gauges the safety and soundness of a bank (Estrella, Park and Persitiani, 2000) and as such a comfortable CAR, especially during a crisis, adds confidence to the stability and soundness of a bank.

Economic value added:

A measure of a company's financial performance based on the residual wealth calculated by deducting cost of capital from its operating profit (adjusted for taxes on a cash basis). (Also referred to as "economic profit".)

The formula for calculating EVA is as follows:

Net Operating Profit after Taxes (NOPAT) - (Capital * Cost of Capital)

This measure was devised by Stern Stewart & Co. Economic value added attempts to capture the true economic profit of a company. Bank is said to run in profit if its gets profit that is greater than cost of capital otherwise it operates at loss. EVA is related to a performance metrics offered by the other consultants. (Stern Stewart) calculates MVA(Market Value-Added) by adding the capital taken in by a company during its lifetime through securities offerings, loans, and retained earnings, [making] some EVA-like adjustments (such as capitalising and amortising R&D expenditures), and subtracting the total from the current value of the stock and debt (Meyers, 1996,)

Return on equity:

Return on Equity (ROE) = Net Profit / Owners Equity

ROE measures the rate of return on shareholders' equity. It measures a firm's efficiency in generating profit from every unit of shareholders' equity. ROE is the return that the shareholders get for their investment. (Khrawish 2011) says that the ROE is the ratio of Net Income after Taxes divided by Total Equity Capital. It represents the rate of return earned on the funds invested in the bank by its stockholders. ROE reflects how effectively a bank management is using shareholders 'funds. Thus, it can be deduced from the above statement that the better the ROE the more effective the management in utilizing the shareholders capital.

Return on asset:

(Khrawish, 2011) ROA is also another major ratio that indicates the profitability of a bank. It is a ratio of Income to its total asset. It measures the ability of the bank management to generate income by utilizing company assets at their disposal. In other words, it shows how efficiently the resources of the company are used to generate the income. It further indicates the efficiency of the management of a company in generating net income from all the resources of the institution (Khrawish, 2011),(Wen 2010), state that a higher ROA shows that the company is more efficient in using its resources.

Return on Assets (ROA) = Net Profit / Total Assets

ROA gives an idea as how efficiently management uses its assets to generate earnings. Higher return on assets reflects good utilization of available assets and lower return indicates otherwise.

DuPont Analysis:

A method of performance measurement that was started by the DuPont Corporation in the 1920s. With this method, assets are measured at their gross book value rather than at net book value in order to produce a higher return on equity (ROE). It is also known as "DuPont identity". DuPont analysis tells us that ROE is affected by three things: (1) Operating efficiency, which is measured by profit margin (2) Asset use efficiency, which is measured by total asset turnover(3) Financial leverage, which is measured by the equity multiplier

ROE = Profit Margin (Profit/Sales) * Total Asset Turnover (Sales/Assets) * EquityMultiplier (Assets/Equity)

It is believed that measuring assets at gross book value removes the incentive to avoid investing in new assets. New asset avoidance can occur as financial accounting depreciation methods artificially produce lower ROEs in the initial years that an asset is placed into service. If ROE is unsatisfactory, the DuPont analysis helps locate the part of the business that is underperforming. (Saunders 2000) is a model of financial analysis for financial institutions based on the DuPont system of financial analysis return on equity model. The return on equity model disaggregates performance into three components: net profit margin, total asset turnover, and the equity multiplier. The profit margin allows the financial analyst to evaluate the income statement and the components of the income statement. Total asset turnover allows the financial analyst to evaluate the left-hand side of the balance sheet: assets. The equity multiplier allows the financial analyst to evaluate the right-hand side of the balance sheet: liabilities and owners equity. The financial analysis of Arab bank which was based on the DuPont system and was presented in (Saunders 2000).The bank return on equity is decomposed into net profit margin, total asset turnover and the equity multiplier. This model is applied to Arab Bank of Jordan which is one of the largest banks in Jordan. The DuPont system of financial analysis shows the performance of The Arab Bank over the years from 2000-2009 and the impact of the world financial crisis that hit the region in the recent years. Though there was a negative impact of the recent financial crisis on most banks of the world but this impact hit slightly the performance of Arab Bank of Jordan.

Risk-Adjusted Return on Capital – RAROC

RAROC was popularized by Bankers Trust in the 1980s as an adjustment to simple return on capital (ROC). Risk-adjusted return on capital (RAROC) gives decision makers the ability to compare the returns on several different projects with varying risk levels. (Smithson, Brannan, Mengle & Zmiewski., 2003,) Return in risk-adjusted performance is measured either by absolute returns or by relative returns (i.e. excess returns), This has given rise to the development of a considerable number of alternative risk-adjusted performance measures.

(Weisman, 2002). As investment funds is an important investment category investors needed an effective tool to evaluate the respective performance of the various funds compared to the risk taken by the fund managers to choose the right option for capital allocation. (Zimmermann & Wegmann, 2003,) Financial institutions requires to hold a certain amount of equity as a cushion against unexpected losses for each risky position taken. As a result financial institutions have a great interest in efficiently allocating capital not only according to the resulting return but also to the risk shouldered and therefore, banks more and more turn to concepts based on risk-adjusted performance measures like Risk-adjusted Return on Capital (RAROC) when evaluating their business activities.

$$\text{Net Interest Margin} = \frac{(\text{Investment Returns} - \text{Interest Expenses})}{\text{Average Earning Assets}}$$

A performance metric that examines how successful a firm's investment decisions are compared to its debt situations. A negative value denotes that the firm did not make an optimal decision, because interest expenses were greater than the amount of returns generated by investments. (Gul *et al.*, 2011) The NIM variable is defined as the net interest income divided by total earnings assets. It is a measure of the difference between the interest income generated by banks and the amount of interest paid out to their lenders (for example, deposits), relative to the amount of their (interest earning) assets. It is usually expressed as a percentage of what the financial institution earns on loans in a specific time period and other assets minus the interest paid on borrowed funds divided by the average amount of the assets on which it earned income in that time period (the average earning assets). Net interest margin measures the gap between the interest income the bank receives on loans and securities and interest cost of its borrowed funds. (Khravish, 2011) The higher the net interest margin, the higher the bank's profit and the more stable the bank is. Thus, it is one of the key measures of bank profitability.

CAMEL (Capital Adequacy, Asset Quality, Management Efficiency, Earnings Ability and Liquidity)

(Dang, 2011) Says the internal factors which influenced the profitability of the banks include capital size, size of deposit liabilities, size and composition of credit portfolio, interest rate policy, labour productivity, and state of information technology, risk level, management quality, bank size, ownership.

Capital Adequacy:

(Athanasoglou *et al.* 2005) said that capital is one of the own fund that is available to support the bank business and act as a buffer at the time of adverse situation. (Diamond, 2000) The greater the bank capital the chances are brighter to reduce the distress Capital adequacy is the level of capital required by the banks to enable them withstand the risks such as credit, market and operational risks they are exposed to in order to absorb the potential losses and protect the bank's debtors. (Dang (2011), the adequacy of capital is judged on the basis of capital adequacy ratio (CAR). Capital adequacy ratio shows the internal strength of the bank to withstand losses during crisis. Capital adequacy ratio is directly proportional to the resilience of the bank to crisis situations. It has also a direct effect on the profitability of banks by determining its expansion to risky but profitable ventures or areas (Sangmi and Nazir, 2010).

Asset Quality:

(Athanasoglou *et al.*, 2005) The bank's asset is another bank specific variable that affects the profitability of a bank. The bank asset includes among others current asset, credit portfolio, fixed asset, and other investments. Loan is the major asset of commercial banks from which they generate income. (Dang, 2011) The quality of loan portfolio determines the profitability of banks. The loan portfolio quality has a direct bearing on bank profitability. The highest risk facing a bank is the losses derived from delinquent loans. (Sangmi and Nazir, 2010) Thus, nonperforming loan ratios are the best proxies for asset quality. It is the major concern of all commercial banks to keep the amount of nonperforming loans to low level. This is so because high nonperforming loan affects the profitability of the bank. Thus, low nonperforming loans to total loans shows that the good health of the portfolio a bank. The lower the ratio the better the bank performing.

Management Efficiency:

(Athanasoglou *et al.* 2005) Management Efficiency is one of the key internal factors that determine the bank profitability. It is represented by different financial ratios like total asset growth, loan growth rate and earnings growth rate. Operational efficiency in managing the operating expenses is another dimension for management quality. The capability of the management to deploy its resources efficiently, income maximization, reducing operating costs can be measured by financial ratios. One of this ratios used to measure management quality is higher the operating profits to total income (revenue) the more the efficient management is in terms of operational efficiency and income generation. The ratio of operating expenses to total asset is expected to be negatively associated with profitability. Management quality in this regard, determines the level of operating expenses and in turn affects profitability.

Liquidity Management:

Dang (2011) Adequate level of liquidity is positively related with bank profitability. It is another factor that determines the level of bank performance. Mainly liquidity has to fulfil obligation of the depositors. The most common financial ratios that reflect the liquidity position of a bank according to the above author are customer deposit to total asset and total loan to customer deposits. Ilhomovich (2009) used cash to deposit ratio to

measure the liquidity level of banks in Malaysia. (Said and Tumin, 2011) The study conducted in China and Malaysia found that liquidity level of banks has no relationship with the performances of banks

V. CONCLUSION

Banks are taking effective steps to improve their performance measurement and capabilities in the current competitive environment but measuring the performance of banks is hard and that metrics differ strongly in quality. This paper discussed various performance metrics but these measures are subjected to a predictive validity test. Though the various reforms have produced favourable effects on the banks which has taken place due to the various transformation taking place in all the banks. The profitability in the banks is measured by using these various model and metrics such as Camel, Risk-Adjusted Return on Capital, Net Interest Margin (NIM), Capital adequacy ratio and Economic value added, to perform in banks..

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