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## **Determinants of banks' profitability and performance: an overview**

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The present paper aims to provide an overview of the theoretical and empirical studies and research on banks profitability and performance. Thus, we present the principles of evaluation and modeling of banking performance, we review theories and models related to banking profitability and performance and we present empirical studies of banks profitability.

**Keywords: Profitability, performance, CAMELS, banks.**

## 1. Introduction

Banks are at the center of the global financial system. Thus, banks are required to comply with the international prudential rules set out in the Bale Agreements and to ensure that they maintain positive profitability and performance ratios. Indeed, the financial turmoil of 2007 caused by the subprime crisis has shown the existence of several factors that affect the ability of banks to maintain financial equilibrium stress (Ferrouhi and Lehadiri, 2014).

The bank's performance is the capacity to generate sustainable profitability. The European Central Bank BCE defined three traditional measures of performance: Return on Assets ROA, Return on Equity ROE and Net Interest Margin NIM. In empirical studies, authors generally use ROA, ROE, ROAA (Return on Average Assets), ROAE (Return on Average Equity) and net interest margin NIM as measures of banking performance. These ratios are defined as follows:  $ROA = (Net\ income / Total\ assets) \times 100$ , this ratio measures the profitability relative to bank's assets and therefore the overall bank performance. This ratio is used to measure bank's assets productivity;  $ROAA = (Net\ Income / Average\ of\ Total\ Assets) \times 100$ , this ratio is the most important for comparing profits efficiency and banks performance;  $ROE = (Net\ Income / Equity) \times 100$ , this ratio measures the profitability of the bank by revealing the profit generated using the capital invested by the shareholders;  $ROAE = (Net\ Income / Average\ of\ Equity) \times 100$ , this ratio measures the profitability of the bank and is equal to the ratio of net income after tax to the average of equity during the period under of the study. The higher the value, the greater the effectiveness of the bank; NIM (Net interest margins) =  $(Interest\ income - Total\ interest\ expense / Total\ productive\ assets) \times 100$  and measures the difference between the interest paid by the bank to the investors and the interest it receives from borrowers.

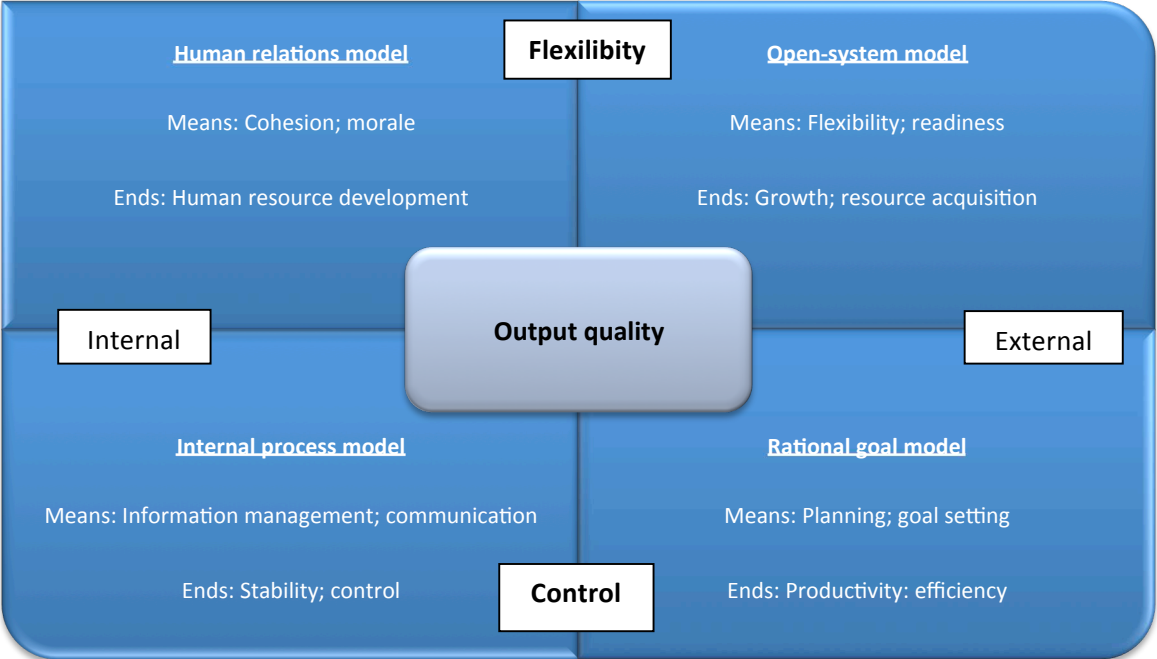
The present paper aims to provide an overview of the theoretical and empirical studies and research on banks profitability and performance. Thus, in section 2, we present the principles of evaluation and modeling of banking performance. In section 3, we review theories and models related to banking profitability and performance. In section 4, we present empirical studies of banks profitability.

## 2. Principles of banking performance evaluation and modeling

Campbell (1977) was one of the first to define the criteria to be considered in the performance assessment, namely: Overall effectiveness, productivity, efficiency, profit,

quality, accidents, growth, absenteeism, turnover, job satisfaction, motivation, morale, control, conflict./cohesion, flexibility/adaptation, planning and goal setting, goal consensus, internalization or organizational goals, role and norm congruence, managerial interpersonal skills, managerial task skills, information management and communication, readiness, utilization of environment, evaluation by external entities, stability, value of human resources, participation and shared influence, training and development emphasis and achievement emphasis. Then, Peters and Waterman (1983) defined eight principles used in assessing the performance of organizations: emphasis on action, proximity to the client, encouragement of innovators, importance of individuals, Mobilization around a key value, respect for the profession, the maintenance of simple structures and the centralization of operations necessary for the smooth running of the organization. As for Quinn and Rohrbaugh (1983), they reviewed the criteria presented by Campbell and defined four theoretical models of performing organizations according to defined objectives. Thus, the human relations model aims human resources development and requires cohesion and morality. The open system model for growth and resource acquisition is based on flexibility and readiness. The model of internal processes aims stability and control and is based on information management and communication while the rational goal model is based on planning and goal setting to achieve productivity and efficiency.

**Figure 1: Quinn and Rohbaugh models**



### **3. Banks performance analysis using Camels model**

Officially known as the Uniform Financial Institutions Rating System (UFIRS), CAMEL is a system of rating for on-site examinations of banks and a supervisory rating system adopted by the Federal Financial Institutions Examination Council (FFIEC) on 1979. CAMEL model stipulates the evaluation of financial institutions on the basis of five critical dimensions, which are: Capital adequacy, Asset quality, Management, Earnings and Liquidity. Sensitivity to market risk, a sixth dimension was added in 1997 and the acronym was changed to CAMELS (Lopez, 1999). These components are used to reflect financial performance, operating soundness and regulatory compliance of financial institutions. They are defined as follows (Ferrouhi, 2014a):

- The Capital adequacy is rated upon different factors inter alia: The level and quality of capital and the overall financial condition of the institution, the ability of management to address emerging needs for additional capital, the nature, trend, and volume of problem assets, and the adequacy of allowances for loan and lease losses and other valuation reserves, balance sheet composition, including the nature and amount of intangible assets, market risk, concentration risk, and risks associated with nontraditional activities, risk exposure represented by off-balance sheet activities, the quality and strength of earnings, and the reasonableness of dividends...
- The ratings of a financial institutions' Asset quality is based upon, but not limited to, an assessment of the following evaluation factors: the adequacy of underwriting standards, soundness of credit administration practices and appropriateness of risk identification practices, the level, distribution, severity, and trend of problem, classified, nonaccrual, restructured, delinquent, and nonperforming assets for both on- and off-balance sheet transactions, the adequacy of the allowance for loan and lease losses and other asset valuation reserves, the credit risk arising from or reduced by off-balance sheet transactions, such as unfunded commitments, credit derivatives, commercial and standby letters of credit, and lines of credit, the diversification and quality of the loan and investment portfolios...
- The Management is rated upon different factors inter alia: the level and quality of oversight and support of all institution activities by the board of directors and management, the ability of the board of directors and management, in their respective roles, to plan for, and respond to, risks that may arise from changing business

conditions or the initiation of new activities or products, the adequacy of, and conformance with, appropriate internal policies and controls addressing the operations and risks of significant activities, the accuracy, timeliness, and effectiveness of management information and risk monitoring systems appropriate for the institution's size, complexity, and risk profile, the adequacy of audits and internal controls to: promote effective operations and reliable financial and regulatory reporting; safeguard assets; and ensure compliance with laws, regulations, and internal policies.

- Financial institution's earnings is rated upon different factors inter alia: the level of earnings, including trends and stability, the ability to provide for adequate capital through retained earnings, the quality and sources of earnings, the level of expenses in relation to operations, the adequacy of the budgeting systems, forecasting processes, and management information systems in general...
- Liquidity is rated based upon inter alia, these factors: the adequacy of liquidity sources compared to present and future needs and the ability of the institution to meet liquidity needs without adversely affecting its operations or condition, the availability of assets readily convertible to cash without undue loss, access to money markets and other sources of funding, the level of diversification of funding sources, both on- and off-balance sheet, the degree of reliance on short-term, volatile sources of funds, including borrowings and brokered deposits, to fund longer term assets, the trend and stability of deposits...
- Sensitivity to market risk is rated based upon, but not limited to, an assessment of the following evaluation factors: the sensitivity of the financial institution's earnings or the economic value of its capital to adverse changes in interest rates, foreign exchange rates, commodity prices, or equity prices, the ability of management to identify, measure, monitor, and control exposure to market risk given the institution's size, complexity, and risk profile, the nature and complexity of interest rate risk exposure arising from nontrading positions.

Each of these six components is rated on a scale of 1 (best) to 5 (worst). A composite rating is considered as the indicator of a bank's current financial condition and is ranges between 1 (best) and 5 (worst). Rating 1 indicates that the financial institution is sound, exhibit strong performance and risk management practices. Rating 2 indicates that the financial institution is fundamentally sound and only moderate weaknesses are present. Rating 3 indicates that the financial institution exhibit a degree of supervisory concern in one or more

component. Rating 4 indicates that the financial institution is unsafe and has unsound practices with serious financial problems while rating 5 means that the financial institution is extremely and critically unsound and inadequate risk management practices. Thus, Banks with ratings of 1 or 2 are considered to present few, if any, supervisory concerns, while banks with ratings of 3, 4, or 5 present moderate to extreme degrees of supervisory concern (PADMALATHA and JUSTIN, 2011).

#### **4. Theoretical analysis of banking profitability and performance**

The main theories that explain banks performance are the Market Power Theory and Efficiency Structure Theory. Thus, the former states that banking performance depends exclusively on the structure of the market. In a concentrated market or with a large market share and defining their products well, banks can exercise market power over prices and earnings and thus increase abnormal profits (Fu and Heffernan, 2009). This theory is split into two models: Structure-Conduct-Performance) model and (Relative Market Power model.

Chamberlin (1933) and Robinson (1969) laid the theoretical foundations of the SCP model which was developed by Mason (1939) in the late 1930s and early 1940s and its empirical applications were carried out mainly by Bain (1956). At that time, the SCP model revolutionized the study of organizations. Mason and Bain developed the structure-driving-performance paradigm based on the neoclassical theory of the firm (Ferguson and Ferguson, 1994).

According to this model, the concentration of the banking market gives rise to potential market power, which increases banks profitability. A market is said to be concentrated if the level of competitiveness within this market is low. Banks can then realize higher profits than those realized in less concentrated markets because they can offer low deposit rates and apply very high loan rates (realization of monopolistic profits); this situation is unfavorable for consumers. This model implies that market performance (the success of an industry in producing benefits to consumers) in certain industries depends on the behavior of sellers and buyers, which in turn is determined by the structure of the market (Number of buyers and sellers, barriers to new business entry and degree of differentiation of products). The structure of an industry depends on the basic conditions of supply (such as raw materials, technology and unionization) and demand (such as price elasticity, growth rate, and purchase method).

Banking performance is thus determined by the behavior of agents on the market which depends on its share of the market structure.

Regarding Relative Market Power model, developed by Shepherd (1983), it postulates that banking performance depends on market shares. Large banks offering differentiated products are able to influence prices and increase profits. By offering well-diversified products, large banks realize non-competitive profits (Berger, 1995) (monopolistic competition). According to this assumption, individual market shares determine precisely the market power and its imperfections. Thus, product differentiation plays an important role in enabling large banks to exercise market power when setting interest rates and prices. The result is an indirect relationship between performance and market concentration. As large banks can realize market power and perform better, there is a positive correlation between market shares and bank performance.

The main difference between the SCP model and the Relative Market Power is that the concentration affects the performance of small banks under the first assumption, which is not the case in the second.

Regarding Efficiency Structure Theory, it postulates that the differences between banks profits are explained by the efficiency of the fact that banks that make more profits are the most effective. The relationship between the market structure and the performance of any bank is thus defined by its efficiency. This theory is also split into two models: X-efficiency model and Scale Efficiency Hypothesis.

In his article published in 1966, Leibensteinen (1966) introduced the concept of efficiency-X, defined as the gap between the ideal efficiency of allocation and the existing efficiency. Thus, in the absence of strong competitive pressure, companies are unlikely to use their resources effectively. The efficiency-X is the degree of inefficiency in the use of the resources of the firm.

Efficiency-X occurs because of the inappropriate allocation of resources. The efficiency-X model postulates that the most efficient firms are more profitable because of their lower costs. These firms tend to take larger market shares, which can manifest themselves in higher levels of market concentration but without any causal relationship between concentration and bank performance.



Under the assumption of scale efficiency, all banks have the same production technology and the only difference in performance is due to the level of economies of scale of each institution. Thus, the scale efficiency hypothesis indicates that banks with similar production and management technologies operate at optimal levels of economies of scale (Goldberg and Rai, 1996).

## **5. Empirical studies on the identification of Banks performance and profitability determinants**

CAMELS approach is considered as one of the most relevant methods of banks profitability and performance evaluation as it evaluates financial institutions on the basis of five critical dimensions (Capital adequacy, Asset quality, Management, Earnings and Liquidity). Barr *et al.* (2002) show that “CAMEL rating criteria has become a concise and indispensable tool for examiners and regulators” and found that there is “a significant relationship between CAMELS ratings and efficiency scores”. Thus, various studies have focused on the application of CAMEL approach to financial institutions. Said and Saucier (2003) used CAMEL rating methodology to evaluate Capital adequacy, Assets and Management quality, Earnings ability and Liquidity position of Japanese Banks. Prasuna (2004) analyzed the performance of 65 Indian banks using CAMEL model and concluded that better service quality, innovative products and better bargains were beneficial because of the prevailing tough competition. Sarker (2005) examined Bengali Islamic banks using CAMEL model. Nurazi and Evans (2005) show that Adequacy ratio, Assets quality, Management, Earnings, Liquidity and bank size are statistically significant in explaining banks’ failures. Siva and Natarjan (2011) tested the applicability of CAMEL norms and its consequential impact on the performance of SBI Groups. The authors found that CAMEL scanning helps banks to diagnose their financial situation and alert the bank to take preventive steps for its sustainability. Olweny and Shipo (2011) analyze the determinants of bank failures in Kenya. They found that Asset quality and liquidity are the main determinants of Kenyan bank failures. Reddy and Prasad (2011) analyzed the performance of rural Indian banks using CAMEL model while Chaudhry and Singh (2012) analyzed the impact of the financial reforms on the soundness of Indian Banking through its impact on the asset quality. The study identified the key players as risk management, NPA levels, effective cost management and financial inclusion. Mishra (2012) analyzed the performance of different Indian public and private sector banks over the decade 2000-2011 using CAMEL approach and found that private sector banks are at the top of the list, with their performances in terms of soundness

being the best. Mishra and Aspal (2013) evaluated the performance and financial soundness of State Bank Group using CAMEL approach and rated different banks using Capital adequacy, Asset quality, Management efficiency, Earning Quality, and Liquidity. Ongore and Kusa (2013) concluded that the financial performance of commercial banks in Kenya is driven mainly by board and management decisions, while macroeconomic factors have insignificant contribution. Gupta (2014) analyzed public banks in India and found that there is a statistically significant difference between the CAMEL ratios and thus the performance of all the public financial institutions. Ferrouhi (2014a) applied CAMEL approach to major Moroccan financial institutions for the period 2001 to 2011. The author used debt equity ratio for the analyze of capital adequacy parameter, loan loss provisions to total loans for the analyze of assets quality parameter, return on equity for analyzing management quality parameter, return on assets to analyze earnings ability and deposits on total assets ratio to analyze liquidity ability. Results obtained allowed to analyze Moroccan banks performance and to evaluate their financial soundness.

Other empirical studies aim to define determinants of banks' performance using banks performance ratios and regression models. Thus, Molyneux and Thornton (1992) examine the determinants of bank performance of eighteen European countries between 1986 and 1989. Results show that "liquid assets to total assets" ratio is negatively related to return on assets ROA. Kosmidou *et al.* (2005) analyze the UK commercial banking industry over the period 1995–2002 and investigate the impact of bank's characteristics, macroeconomic conditions and financial market structure on bank's net interest margin and return on average assets ROAA. Results show that "liquid assets to customer and short term funding" ratio is positively related to return on average assets ROAA and negatively related to net interest margins NIM. Athanasoglou *et al.* (2006) analyze an unbalanced panel dataset of South Eastern European credit institutions over the period 1998–2002 and found that liquidity risk, measured by the ratio of loans on total assets has no effect on return on assets ROA and return on equity ROE. Pasiouras and Kosmidou (2007) study the effects of bank's specific characteristics and banking environment on the profitability of commercial domestic and foreign banks operating in 15 EU countries over the period 1995–2001. Results show that liquidity risk measured by the ratio of net loans to customer and short term funding is positively related to domestic banks' performance and negatively related to foreign banks' performance both measured by return on average assets (ROAA). In his paper, Kosmidou (2008) examines the determinants of performance of 23 Greek banks during the period of EU

financial integration (1990–2002). Results show that liquidity risk measured by the ratio of net loans to customer and short term funding is negatively related to performance measured by return on average assets (ROAA).

In Asia, Chen *et al.* (2001) analyze the banking industry in Taiwan from 1993 to 1999 to identify determinants of net interest margins in Taiwan banking industry. Results show that the ratio of liquid assets to deposits is negatively related to net interest margins NIM. Ariffin (2012) analyze the relationship between liquidity risks and Islamic banks financial performance in Malaysia over the period 2006–2008. Measuring liquidity risk by the ratio of total assets over liabilities, the author found that, in time of crisis, liquidity risk, return on assets ROA and return on equity ROE tend to behave in an opposite way and that liquidity risk may lower ROA and ROE. Naceur and Kandil (2009) analyze a sample of 28 banks over the period 1989–2004. They study the effects of capital regulations on the performance and stability of banks in Egypt. The authors found that liquidity, measured by the ratio of net loans to customer and short term funding, is statistically significant and positively related to domestic banks profitability and banks' liquidity does not determine returns on assets or equity (ROA or ROE) significantly.

In Africa, Ferrouhi (2014b) analyzed the relationship between liquidity risk and financial performance of Moroccan banks and to define the determinants of bank's performance in Morocco during the period 2001–2012. The author used 4 bank's performance ratios (ROA, ROE, ROAA and NIM). Results show that Moroccan bank's performance is mainly determined by 7 determinants namely, liquidity ratio, size of banks, logarithm of the total assets squared, external funding to total liabilities, share of own bank's capital of the bank's total assets, foreign direct investments, unemployment rate and the realization of the financial crisis variable. Ferrouhi (2017) applied Johansen cointegration test to define long-term determinants of Moroccan commercial banks performance for the decade 2005-2015. Results obtained show that long-term performance of Moroccan commercial banks depends on deposits, short-term, long-term and funding liquidity, the size of the bank and its square, internal and external funding, deposits interest rates and foreign direct investments.

Other studies analyze banks from different countries. Thus, Demirgüç-Kunt and Huizinga (1999) study the determinants of bank's interest margins in 80 countries (OECD countries, developing countries and economies in transition). Results obtained show that liquidity risk measured by the ratio of loans to total assets is negatively related to return on assets ROA and

positively related to net interest margins NIM. Bourke (1989) studies the internal and external determinants of profitability of twelve European, North American and Australian banks. Results show that the liquidity ratio measures by liquid assets to total assets is positively related to return on assets (ROA). Barth *et al.* (2003) examine the relationship between the structure, scope, and independence of bank supervision and bank profitability in 2300 banks from 55 countries. The liquidity risk measured by the ratio of liquid assets to total assets is negatively related to return on assets ROA. Demirgüç-Kunt *et al.* (2003) examine the impact of bank regulations, concentration, inflation, and national institutions on bank net interest margins NIM using data from over 1,400 banks across 72 countries. Results obtained show that liquidity risk measured by the ratio of liquid assets to total assets is negatively related to net interest margins NIM. Chen *et al.* (2009) investigate the determinants of bank performance in terms of the perspective of the bank liquidity risk. The authors use an unbalanced panel dataset of 12 advanced economies commercial banks (Australia, Canada, France, Germany, Italy, Japan, Luxembourg, Netherlands, Switzerland, Taiwan, United Kingdom and United States) over the period 1994–2006 to estimate the causes of liquidity risk model. Results obtained show that liquidity risk is the endogenous determinant of bank performance measured by return on assets average, return on equity average and net interest margins and that liquidity risk is negatively related to return on assets average ROAA and return on equity average ROEA and positively related to net interest margins NIM.

## **6. Concluding Remarks**

Bank performance is the pillar and the purpose of any banking activity. First, researchers defined the principles of evaluation and modeling of bank performance, then, theories and models explaining banks performance were developed.

The various studies were focused on countries that rely on the majority of banking banks in the world. The results obtained can be classified among the banks according to the application of the model as being the CAMELS approach, or the definition of the determinants of the banking performance.

However, the results may be in some cases contradictory especially given the difference in the ratios used. Thus, one of the major elements to take into consideration in evaluation of banks is the banking regulations.

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