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THEORETICAL REVIEW ON EFFICIENCY OF COMMERCIAL BANKS

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Abstract
This article aims to present an in-depth background of theories that relate to the efficiency of commercial banks. Several theories have been applied by scholars to assess the determinants of efficiency for banks and the banking sector (Poczter, 2017). The theories include the economic theory of demand and supply, which considers the impact of interest rates on credit demand (Athanasoglou et al., 2006); the modern production theory, which assesses how effectively firms such as banks use inputs to produce outputs using concepts such as cost, scale, price and technical efficiency, the modern portfolio theory proposed by Markowitz in 1952, which seeks to find the optimum portfolio for investors concerned with distribution of returns over a single time horizon (Osifo and Ighodaro, 2020); the dynamic efficiency theory, which considers the ability of firms or markets to innovate and optimise over time in response to changing conditions and new information (Frantz, 1988); the market power theory, which assumes that the market structure of the industry influences the financial performance of a firm (Khana and Hanif, 2019), the stakeholder theory,which considers the broader impact of firms such as banks on their environment; and the agency theory, which looks at the role of management and the concept of corporate governance (Mwenda and Mutoti, 2011).
Keywords: Bank Efficiency, Dynamic Efficiency Theory, Market Power.

1. MARKET POWER THEORY

The market power theory propounded by Joan Robinson in 1933 refers to the ability of firms to increase and maintain prices above levels that should prevail in a competitive environment. A number of theories have been used to describe the financial performance of organisations and their behaviour (Poczter, 2017). Market power theory is one of the theories that describes the financial performance of companies, it assumes that the market structure of the industry influences the performance of an organisation (Athanasoglou et al, 2006).

Two critical market power models were developed to analyse banking sector competition and profitability, the efficient structure (ES) hypothesis and structure conduct performance (SCP) paradigm (Khana and Hanif, 2019).

While structure conduct performance states that as market intensity increases, the profitability of banks reduces, the efficient structure hypothesis shows that higher market concentration and intensity results in increased efficiency and subsequently higher profitability. A key limitation of the market power theory is its consideration of market concentration as the primary driver of profitability of firms (Mwenda and Mutoti, 2011).

2. STRUCTURE CONDUCT PERFORMANCE (SCP) PARADIGM

The SCP paradigm stipulates that as market intensity increases the profitability of banks reduces in the absence of collusive behaviour among companies in the sector (Khana and Hanif 2019). The SCP also shows that the level of concentration in the banking sector results in potential market power for banks that can improve their financial performance (Poczter, 2017). Commercial banks operating in markets that are more concentrated are in a position to make abnormal profits. This is due to their ability to reduce the interest rates on deposits while increasing the interest rates on loans, given their monopolistic or oligopolistic positioning when compared to banks operating in markets that are less concentrated (Mwenda and Mutoti, 2011).

Alihodžić (2021) applied the SCP in the study of the oligopolistic position of banks in Bosnia and Herzegovina and the impact of variables such as bank size, concentration of credit, credit growth and foreign ownership on ROE, ROA and net interest margins (NIMs). Overall, the study showed a negative correlation between bank size and performance.

In contrast to the Structure Conduct Performance, the Market Power hypothesis suggests that banks' financial performance is influenced by market share. It posits that only large firms that have differentiated products are able to sway prices and thereby increase profits (Khana and Hanif, 2019). Such firms are in a position to earn profits that are non-competitive by exerting market power (Mwenda and Mutoti, 2011).

3. EFFICIENT STRUCTURE HYPOTHESIS

The efficient-structure (ES) hypothesis is another variation of market power theory which asserts that higher market concentration can occur when efficient firms produce high profits because of a rise in size and market share (Khana and Hanif 2019). The ES hypothesis suggests that the efficiency of a company defines the relationship between the performance of that firm and market structure. Companies that have better technologies for production or management will typically have a lower cost which will lead to higher profits (Athanasoglou et al., 2006). The ES hypothesis sees market concentration as a source of superior efficiency for firms.

The ES hypothesis developed from criticism of the SCP hypothesis, given its focus on the market as an external element that influences the profitability of firms irrespective of the other factors that should be considered (Athanasoglou et al., 2006).

The ES hypothesis has two different approaches, which include the x-efficiency and scale-efficiency hypothesis (Sufian and Habibullah. 2010). Based on the x-efficiency approach, low cost is a key driver of efficiency of firms which drives profitability (Athanasoglou et al, 2006). In such cases, the firms are able to increase their market share which results in higher market concentration that has no link to profitability concentration (Khana and Hanif 2019). On the other hand, the scale approach underscores and gives prominence to economies of scale and not differences in technology or management as large firms have access to lower unit costs, which results in higher profits due to economies of scale (Sufian and Habibullah. 2010). Allowing large companies to gain market shares, which may reflect in higher concentration and subsequently profitability (Sufian and Habibullah 2010). A key focus of this hypothesis is the internal efficiency of firms and its impact on profitability and market share. It is the primary part of the internal determinants that influences the efficiency and performance of banks (Khana and Hanif, 2019).

4. MODERN PORTFOLIO THEORY

Modern portfolio theory was propounded by Markowitz in 1952 and is an extension of traditional investment models such as the mean variance portfolio theory that was developed by Elton, Gruber and Blake in 1997, which seeks to find the optimum portfolio for investors concerned with distribution of returns over a single time horizon (Osifo and Ighodaro, 2020). The theory is relevant to studies on deposit money banks, given the systemic risks banks face and the need for diversification. Osifo and Ighodaro's (2020) study of the deposit money banks in Kenya between 2007 and 2017 shows a positive and significant relationship between performance indicators of banks such as return on assets (ROA) and income diversification.

Within the theory, the focus of asset diversification asserts that the optimum holding is a function of policy choices driven by a number of factors which include the direction of rates of return on total assets held in the portfolio, a direction of risks linked with the ownership of every financial asset and the portfolio size (Neely, 2002). This means that the diversification of bank portfolios and the desired portfolio composition are driven by the decisions made by management. It can also be implied that the level of profitability is a result of a practical combination of assets and liabilities, which the management team determines, and the costs incurred by the banks to produce the asset (Olson and Zoubi, 2011). Another approach of this theory is the impact of decisions made by policy makers on the rates of return of companies listed on the stock exchange.

5. DYNAMIC EFFICIENCY THEORY

Dynamic efficiency refers to the ability of firms or markets to innovate in response to changing conditions and new information (Frantz, 1988). This involves technological advancement, the development of new products, improvements in production processes, and efficient allocation of resources for future growth and adaptation (Frantz, 1988). Dynamic efficiency is important for long-term growth and competitiveness as it reflects how effectively an industry or economy can adapt and evolve to meet future challenges and opportunities (Banker and Maindiratta, 1988).

In banking, dynamic efficiency pertains to a bank's capacity to adjust its operations, policies, and strategies in response to changing economic conditions and market demands (García-Herrero, Gavilá, and Santabárbara, 2009). It includes how efficiently a bank manages its resources, innovates and responds to external shocks over time. Dynamic efficiency necessitates that banks continuously innovate and adapt to new technologies, changing customer needs and evolving regulatory environments. According to Rezvanian, Ariss, and Mehdian, (2011), banks must allocate and use their resources effectively (capital, staff, technology) to enhance their performance and profitability. Dynamic efficiency involves managing various risks, including credit risk, market risk and operational risk (Fu and Hefferman, 2009). Banks need to optimize internal processes, such as loan processing, customer service, and financial reporting, to reduce costs and improve productivity (Fu and Hefferman, 2009). Dynamic efficiency also requires banks to respond promptly and effectively to changes in interest rates, economic cycles and competitive pressures.

Malmquist DEA is a method used to analyse a bank's productivity growth and assess its dynamic efficiency by comparing its performance over time (Matthews and Zhang, 2010). Various data envelopment analysis (DEA) methods can evaluate the efficiency of banks in different aspects, such as technical efficiency, scale efficiency and allocative efficiency (Matthews and Zhang, 2010).

Research has indicated several implications of dynamic efficiency, including improved profitability, enhanced resilience, better competitive advantage and identification of struggling institutions for early intervention (Fu and Hefferman, 2009). Dynamically efficient banks are potentially better equipped to withstand economic downturns and market shocks (Fu and Hefferman, 2009). Efficient banks might gain a competitive edge by offering better services, lower costs and more innovative products (Rezvanian, Ariss, and Mehdian, 2011). Dynamic efficiency analysis can help to identify banks that are at risk of failure, facilitating timely intervention and regulatory action.

6. THE MODERN PRODUCTION THEORY

The theory of production is a fundamental concept in economics that explains how goods and services are created using inputs such as labour, capital and raw materials. The development of this theory has evolved over centuries through various economic schools of thought (Leibenstein, 1978).

The contribution of classical economists such as Adam Smith, David Ricardo and Thomas Malthus on the theory of production includes division of labour which emphasises the increase in productivity through specialisation, labour theory of value where Ricardo argued that labour was the source of all value and diminishing returns and Malthus argued that the increase in one input, while holding others constant leads to smaller increases in output (Leibenstein, 1978).

Modern production theory and bank efficiency studies assess how effectively banks use inputs to produce outputs using concepts such as cost, scale, price and technical efficiency (Majumdar,1995). Methods like Data Envelopment Analysis (DEA) measure technical efficiency, while Stochastic Frontier Analysis (SFA) and Total Factor Productivity (TFP) offer additional insights. Key concepts such as cost efficiency, scale efficiency, price efficiency and technical efficiency are typically evaluated in modern production theory (Peristiani, 1997). Cost efficiency considers the minimising of costs to drive output levels. Scale efficiency evaluates optimal production levels for business to operate efficiently with economies of scale with factors such as size being a major consideration (Monczka, Handfield, Giunipero, Patterson and Waters, 2010). The concept of price efficiency considers how firms can apply competitive pricing of services to maintain profitability. Technical efficiency considers the maximisation of output driven by inputs. Primary inputs typically include labour, capital, customer deposits and technology. Previous studies used methods such as DEA, SFA and TPA to measure efficiency (Li, Feng, and Tang, 2022). Determinants are typically classified into internal and external, internal determinants include variables such as capital, liquidity, credit quality while external factors consider market structure, competition, regulations and economic conditions. The scope of this study is limited to internal determinants in line with studies conducted by (Kapelko, Oude Lansink, and Stefanou, 2023)

Modern production theory considers developments such as technological change, with the endogenous growth theory incorporating research and development and innovation (Majumdar,1995). Studies such as those conducted by Li, Feng, and Tang, 2022 and Vidyarthi (2019) examined the implication of intellectual capital and its components on the efficiency of 38 listed banks in India. The DEA approach was used to estimate technical, pure and scale efficiency in the first stage. The results were then regressed with components of intellectual capital as a moderating variable and bank efficiency and size considered as independent variables. Tshukudu et al. (2022) examined the top five banks in South Africa, investigating the relationship between their financial performance and mobile subscriptions for internet banking. They found that while there was a positive trend between ROE and mobile subscriptions, the correlation analysis showed a modest but negative correlation, except for one bank noted for its rapid adoption of technology.

In essence, modern production theory offers a framework for understanding how banks, as production entities, can optimise resource allocation and maximise their performance. This framework aids in measuring and analysing bank efficiency, thereby contributing to the overall stability and competitiveness of the banking sector.

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Modern production theory, market power theory and modern portfolio theory will underpin this study on the moderating impact of fintech development on the efficiency of commercial banks in Kenya, Nigeria and South Africa. Modern production theory considers developments such as technological change, with the endogenous growth theory incorporating research and development and innovation. Key concepts such as efficiency, size and the implication of technology such as fintech development will be evaluated. Dynamic efficiency theory demands that banks continuously innovate and adapt to new technologies, changing customer needs, and evolving regulatory environments. According to Rezvanian, Ariss, and Mehdian, (2011), banks must effectively allocate and use their resources such as capital, labour and technology to enhance their performance and profitability. Dynamic efficiency involves managing various risks, including credit risk, market risk, and operational risk (Fu and Hefferman, 2009). Banks need to optimise internal processes, such as loan processing, customer service, and financial reporting, to reduce costs and improve productivity (Fu and Hefferman, 2009). Market power theory considers the influence of market structure and concentration on banks' performance, with the SCP paradigm stipulating that as market intensity increases the profitability of banks reduces in the absence of collusive behaviour among companies in the sector (Khana and Hanif 2019). This considers the impact of both external and sector factors on the performance of banks. Even though modern portfolio theory also considers external factors such as monetary policy on bank performance, this influences management's allocation of assets and liabilities to driver profitability (Olson and Zoubi, 2011).

REFERENCES

[1] Aduda, J. and Kingoo, N. (2012). The relationship between electronic banking and financial performance among commercial banks in Kenya. Journal of Finance and Investment Analysis, 1(3), 99-118.

[2] Alihodžić, A. (2021). Does the oligopolistic position of banks affect the performance of the banking sector in the Federation of Bosnia and Herzegovina?.BH Ekonomski forum, 13(2), pp. 113–131. Availableat: https://doi.org/10.5937/bhekofor2102113A.

[3] Athanasoglou, P., Delis, M. andStaikouras, C. (2006). Determinants of bank profitability in the South Eastern European region. https://mpra.ub.uni-muenchen.de/10274/.

[4] Banker, R.D. and A.Maindiratta (1988) Nonparametric Analysis of Technical and Allocative Inefficiencies in Data Envelopment Analysis Econometrica 56 (6): 1315–32

[5] DeYoung, R., Lang, W. and Nolle, D. (2007). How the internet affects output and performance at community banks. Journal of Banking and Finance, 31(4), 1033-1060

[6] Frantz, R. S. (1988). X-Efficiency: Theory, Evidence and Applications. Springer US, 9,35.

[7] Fu, X. M., and S. Hefferman. (2009). The Effects of Reform on China's Bank Structure and Performance. *Journal of Banking & Finance* 33 (1): 39–52.

[8] García-Herrero, A., Gavilá, S., andSantabárbara, D. (2009). What explains the low profitability of Chinese banks?. *Journal of Banking & Finance*, *33*(11), 2080-2092.

[9] Itah, A. J., and Emmanuel, E. E. (2014). Impact of cashlessbanking on bank's profitability: Evidence from Nigeria. Asian Journal of Finance and Accounting, 6(2), 362-376.

[10] Kapelko, M., Oude Lansink, A., and Stefanou, S. E. (2023). Multidirectional Dynamic Inefficiency Analysis: An Extension to Include Corporate Social Responsibility. In Advanced Mathematical Methods for Economic Efficiency Analysis: Theory and Empirical Applications (pp. 113-129).

[11] Khana, M. H. and Hanif, M. N. (2019) Empirical evaluation of ‘structure-conduct-performance’ and ‘efficient-structure’ paradigms in banking sector of Pakistan”, International Review of Applied Economics, Vol. 33 No. 5, pp. 682–696.

[12] Leibenstein, H. (1978). On the Basic Proposition of XEfficiency Theory. American Economic Association, 328-332.

[13] Li, Z., Feng, C. & Tang, Y. (2022). Bank efficiency and failure prediction: a nonparametric and dynamic model based on data envelopment analysis. Ann Oper Res 315, 279–315

[14] Matthews, K., and Zhang, N. X. (2010). Bank productivity in China 1997–2007: Measurement and convergence. *China Economic Review*, *21*(4), 617-628.

[15] Ming-Pey, L. (2022). Cashless Payments and Banking Performances: A Study of Local Commercial Banks in Malaysia. International Journal of Business and Society, 23(2), pp. 855–876. Available at: https://doi.org/10.33736/ijbs.4842.2022.

[16] Monczka, R. M., Handfield, R. B., Giunipero, L. C., Patterson, J. L. and Waters, D. (2010). Purchasing & Supply Chain Management. Hampshire, UK: South-Western Cengage Learning EMEA.

[17] Mwenda, A. and Mutoti, N. (2011). Bank Performance and Economic Growth: Evidence from Zambia. African Development Review, Vol. 23 No. 1, pp. 60–74.

[18] Olson, D. and Zoubi, T.A.(2011). Efficiency and bank profitability in MENA countries. Emerging Markets Review, 12, 94–110.

[19] Osifo, O. and Ighodaro, C. (2020). Corporate diversification, macroeconomic factors and performance of quoted deposit money banks in Kenya: An Empirical Assessment’, 16(3), p. 16.

[20] Peristiani, S. (1997). Do Mergers Improve the X-Efficiency and Scale Efficiency of U.S. Banks? Evidence from the 1980s. Journal of Money, Credit and Banking. Vol. 29, No 3 , 326-337.

[21] Poczter, S. (2017). Democratization and the depoliticization of the banking sector: Are all banks affected equally? Journal of Economic Policy Reform, Vol. 20 No. 1, pp. 26–45.

[22] Rezvanian, R., Ariss, R. T., andMehdian, S. M. (2011). Cost efficiency, technological progress and productivity growth of Chinese banking pre-and post-WTO accession. *Applied Financial Economics*, *21*(7), 437-454.

[23] Sufian, F. and Habibullah, M.S. (2010). Assessing the impact of financial crisis on bank performance: Empirical evidence from Indonesia. Asian Economic Bulletin, 27(3), 245–262.

[24] Tshukudu, D. K., Mokatsanyane, D., Ferreira-Schenk, S., van Rensburg, J. G. J., andSgammini, R. (2022). Analysing the Relationship between Financial Technology and Commercial Banks' Financial Performance in South Africa. *Acta Universitatis Danubius. Œconomica*, *18*(6).

[25] Yang, J., Cheng, L., and Luo, X. (2009). A comparative study on e-banking services between China and USA. International Journal of electronic Finance, 3(3), 235-252.