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The Metrics War in Economic Value Measurement in the Banking Industry: A Comparative Analysis of EVA™ and Its Alternatives

La guerra de las métricas en la medición del valor económico en la industria bancaria: un análisis comparativo de EVA™ y sus alternativas

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Abstract

This article presents a comprehensive analysis of the most widely used value-based performance measures in the context of their association with stock prices and returns, challenging traditional accounting-based metrics. It focuses on Economic Value Added (EVA™), Balanced Scorecard (BSC), Risk Adjusted Return on Capital (RAROC), Tobin's Q, Cash Flow Return on Investment (CFROI), and Market Value Added (MVA), examining their effectiveness in reflecting true economic profit and shareholder wealth creation. EVA™ is highlighted as a prominent measure, often considered superior in approximating shareholder returns and guiding corporate success. However, it also faces criticism for potential data manipulation and not accounting for size disparities. The BSC, while offering a multi-dimensional evaluation, is complex and sometimes ambiguous in its cause-and-effect relationships. RAROC, tailored for the banking sector, has limitations in evaluating comparative business opportunities and emphasizing individual risk management. Tobin's Q, though conceptually appealing, faces practical challenges due to significant measurement errors and data availability issues. CFROI, known for its detailed economic assessment, is complex in calculation and faces the "hurdle rate problem." MVA, straightforward in its approach, can be misleading due to its sensitivity to market sentiments. The article concludes that no single metric can perfectly capture corporate performance and shareholder value, emphasizing the need for a context-specific choice of performance measure that balances the benefits and drawbacks of each.

Keywords: Economic Value Added, Balanced Scorecard (BSC), Risk Adjusted Return on Capital, Tobin's Q, Cash Flow Return on Investment, Market Value Added.

Resumen

Este artículo presenta un análisis exhaustivo de las medidas de desempeño basadas en el valor más utilizadas en el contexto de su asociación con los precios y rendimientos de las acciones, desafiando las métricas tradicionales basadas en la contabilidad. Se centra en el valor económico agregado (EVA™), el cuadro de mando integral (BSC), el rendimiento del capital ajustado al riesgo (RAROC), la Q de Tobin, el retorno de la inversión en flujo de efectivo (CFROI) y el valor agregado de mercado (MVA), examinando su efectividad en reflejando el verdadero beneficio económico y la creación de riqueza para los accionistas. EVA™ se destaca como una medida destacada, a menudo considerada superior para aproximar los retornos para los accionistas y guiar el éxito corporativo. Sin embargo, también enfrenta críticas por posible manipulación de datos y por no tener en cuenta las disparidades de tamaño. El BSC, si bien ofrece una evaluación multidimensional, es complejo y a veces ambiguo en sus relaciones de causa y efecto. RAROC, diseñado para el sector bancario, tiene limitaciones a la hora de evaluar oportunidades comerciales comparativas y enfatizar la gestión de riesgos individuales. La Q de Tobin, aunque conceptualmente atractiva, enfrenta desafíos prácticos debido a importantes errores de medición y problemas de disponibilidad de datos. CFROI, conocida por su evaluación económica detallada, tiene cálculos complejos y enfrenta el “problema de la tasa de rentabilidad”. MVA, de enfoque sencillo, puede resultar engañoso debido a su sensibilidad a los sentimientos del mercado. El artículo concluye que ninguna métrica puede capturar perfectamente el desempeño corporativo y el valor para los accionistas, enfatizando la necesidad de una elección de medida de desempeño específica del contexto que equilibre los beneficios y desventajas de cada uno.

Palabras clave: Valor Económico Agregado, Cuadro de Mando Integral (BSC), Retorno del Capital Ajustado al Riesgo, Q de Tobin, Flujo de Caja, Retorno de la Inversión, Valor Agregado de Mercado.

Introduction

In the last three decades, business analysts, corporate leaders, and academic researchers have been involved in a fierce argument regarding whether value-based performance measurements have a stronger association with stock prices and returns than conventional accounting-based metrics (Pompong, 2015; Grant, 2003; Erasmus and Lambrechts, 2006; Worthington and West, 2001; Mamun and Mansor, 2012; Fayad et al., 2019). Widati and Putri (2023) compared traditional financial ratios like profitability, leverage, liquidity, etc., indicating no significant difference among these indicators. Value based financial performance measures are presented by their proponents as a major improvement over the traditional performance measures. The relationship between various performance indicators and business value has attracted considerable scholarly interest. Numerous theories and predictions have been proposed in the accounting and economic literature on this relationship (Kaplan and Norton, 1992; 1993; 1996; 2001; Ong, 2012; Zanjani, 2010; Madden, 1999; Wood, 2000; Rahmawati and Garad, 2023). Economic Value Added (EVA™) is one of the few performance metrics that has been broadly accepted and is believed to approximate shareholder returns. It is the residual income leaving after all costs, such as the opportunity cost of the equity capital utilized. Thus, proponents of EVATM advocate it as a superior predictor and determinant of company success and shareholder value creation than other conventional and unconventional performance measurements (Stewart, 1991; Ehrbar, 1998; Forker and Powell, 2004; Maditinos et al., 2006; Houle, 2008; Issham, 2010; Sharma and Kumar, 2010). The goal of this article is to conduct a comprehensive evaluation of the most extensively employed value-based performance measures in the banking industry, including Economic Value Added (EVA™), Balanced Scorecard (BSC), Risk Adjusted Return on Capital (RAROC), Tobin's, Cash Flow Return on Investment (CFROI), and Market Value Added (MVA).

Literature review

Economic Value Added (EVA™)

The supporters of EVA™ have argued that EVA™ is the most sound measure indicator of shareholder value (Forker and Powell, 2004; Maditinos et al., 2006; Houle, 2008; Issham, 2010; Sharma and Kumar, 2010). Stewart (1991) claimed that traditional accounting metrics, such as EPS, ROI, and ROE, are “misleading measures of corporate performance”. Stewart (1994) asserted that “EVA™ stands well out from the crowd as the single best measure of wealth creation on a contemporaneous basis ... [it] is almost 50% better than its closest accounting-based competitor in explaining changes in shareholder wealth ... [and] as such, it can be adopted with confidence as a company’s primary internal financial performance metric”. Based on the EVA™ formula, it not only measures the performance of a company, but it also measures how and if a corporate produces shareholder value. “The mandate under an EVA™ management system. . . is to increase EVA™ as much as possible in order to maximize shareholder wealth” (Ehrbar, 1998).

In symbols,
If [NOPAT-WACC×TC]>0, EVA™ creates value for shareholders;
If [NOPAT-WACC×TC]<0, EVA™ destroys value for shareholders;
If [NOPAT-WACC×TC] = 0, EVA™ maintains value for shareholders.

When the net profit after tax of the enterprise exceeds the total cost of capital, the EVA™ is positive, which means the value generated by the business results in an increase in shareholders’ wealth (Sabol and Sverer, 2017). On the contrary, if the EVA™ is negative, the income generated by the company is not enough to cover all the costs of capital (debt capital and equity capital), which brings about a decrease in the shareholders’ wealth (Mamun et al., 2012; Ahmić, 2022).

The Balanced Scorecard (BSC)

Kaplan and Norton (1992; 1993; 1996; 2001) developed and promoted the Balanced Scorecard (BSC), which is a multi-dimensional framework to evaluate corporate performance. BSC helps senior managers to assess their business rapidly and comprehensively by providing both financial and non-financial measures. The financial measures of BSC are often defined as “lagging indicators” as they reflect several accounting metrics that stem from previous financial results. On the other hand, the non-financial measures of BSC are usually described as “leading indicators” since they include learning activities, the organization’s innovation, internal processes, and operational measures on customer satisfaction, which will eventually contribute to companies improving their financial performance in the future.

Since BSC identifies and integrates financial as well as non-financial metrics in a casual relationship, it becomes a performance management mechanism but also a tool for translating strategies into actions. Therefore, BSC has served as a control and strategic system which makes senior managers assess their operations from at least four perspectives by resolving the following four questions (Kaplan and Norton, 1992):

(1) How do we view shareholders? (Financial Perspective);

(2) How do customers see us? (Customer Perspective);

(3) What must we excel in? (Internal Business Perspective);

(4) Can we continue to improve and create value? (Innovation and Learning Perspective)”

Based on the four questions, Hoque and James (2000) indicated that BSC should utilize the following key metrics as indicators.

Financial Perspective: economic value added (EVA™), generation of cash flow, sales growth, return-on-capital employed and operating income;

Customer Perspective: customer profitability, market share, customer response time, new customer acquisition, customer retention and customer satisfaction.

Internal-Business-Perspective: manufacturing efficiency, quality, post-sales service, product development and product design, etc.;
Learning and growth perspective: organisational procedures to manage the business and adapt to change, information system and the ability of employees.

Risk Adjusted Return on Capital (RAROC)

Banks have always employed economic measures of performance to evaluate their contributions towards the creation of shareholders' wealth by making use of assets on a risk-adjusted basis (Feschiyan and Andasarova, 2020). In order to ensure the efficiency of operations, banks have always placed risk management at the highest level of importance. Since risks can give rise to losses that can ultimately damage banks' capital base and viability, they should pay close attention to the possible losses that are related to their business activities. In turn, regulators focus on the potential influence of banks' failures on the economy and, hence, the systemic stability and the power and the economic capital position of banks. Economic capital is classified as the total sum of risk capital possessed by a bank at an originally intended confidence level and the time horizon (Ong, 2012). Economic capital possessed by banks aims to satisfy regulatory requirements as well as maintain creditworthiness (Zanjani, 2010).

RAROC was initially devised by the Bankers Trust in the 1970s, which is described as the rate of the loan's potential profit (or risk-adjusted returns) to the economic capital that could guarantee banks' subsistence when there is a default risk (Matten, 1996). The initial goal of RAROC is to assess the risk of banks' credit portfolios and the amount of equity capital that is essential to limit the bank to a specific probability of loss. How to measure the risk and the time horizon are issues that need specification. The definition of risk has been transferred to a purely firm-specific definition of risk from a market-driven definition of risk, which assumes that changes in risk are compensated for correctly by RAROC. As a consequence, it could be supposed that RAROC can measure the performance of different kinds of corporations, and the decisions based on RAROC are in accordance with the maximization of shareholders' wealth (Zaik et al., 1996).

Banks and other financial institutions are particularly in favor of using RAROC for capital allocation due to their unique capital structure and financial condition, which differentiates them from other non-financial corporations (Křečková, 2017). Unlike non-financial companies, most clients of banks are also their creditors, and thus, the costs of leverage are extremely crucial to banks (Merton and Perold, 1993). Banks will not be able to conduct their business if there is no positive credit rating, and the default could be caused by liberal leverage, so the banking sector is confronted with severe regulation. Consequently, RAROC is used for capital budgeting and allocation as well as performance measurement (Zaik et al., 1996; Froot and Stein, 1998a and 1998b; Crouhy et al., 1999; Culp, 2000; Crouhy et al., 2001; Schroeck, 2002; Stoughton and Zechner, 2004). According to Zaik et al., (1996), Bank of America capitalize each of its business units in accordance with the bank's expected credit rating on the unit's individual risk. If the RAROC of a business unit is higher than the equity cost of the bank, which is the minimum rate of return required by shareholders, the business unit is regarded as creating value for shareholders.

Tobin's Q

Tobin's Q is a value-based indicator named after its creator, Yale University Economics Professor James Tobin (Tobin, 1969). Since its emergence into the field of financial economics, Tobin's Q has acquired widespread recognition as a proxy for corporate performance (Elali, 2007). Tobin's Q is frequently used as a reliable indicator of a company's growth prospects and its ability to build long-term firm value. It is determined as the percentage of the market value of the firm's outstanding financial securities to the current replacement cost of its tangible assets. Its popularity stems from its capacity to calculate the value of a company's intangible assets, involving high-quality management, future investment opportunities, goodwill, and market power; the more valuable these intangibles are, the more valuable Q is (Tobin, 1969; Perfect and Wiles, 1994). As a result, changes in Tobin's Q value are a critical indicator of value creation and corporate performance.

Numerous studies have used Tobin's Q to classify organizations based on their performance. For example, Lindenberg and Ross (1981) classified firms with low Q

ratios as highly regulated, competitive, or operating in declining industries, whereas firms with high Q ratios tend to have specialized products and factors of production. Similarly, organizations with a Q ratio larger than one are seen to be effectively utilizing scarce resources, whilst those with a Q ratio less than one are considered to be inefficiently utilizing scarce resources. To put it another way, if the firm's Return On Investment (ROI) exceeds its cost of capital, then Tobin's Q should be greater than 1.0. In addition, Landsman and Shapiro (1995) investigated the relationship between Tobin's Q, economic return, and Return On Investment (ROI), concluding that Tobin's Q is a more accurate indicator of a firm's economic performance than other accounting-based indicators. Additionally, Tobin's Q is gaining prominence as a technique for determining if a corporation is more susceptible to takeover. Furthermore, according to Lang et al., (1989), enterprises with a low Tobin's Q are more likely to be acquired for the goal of restructuring and boosting value.

Cash Flow Return on Investment (CFROI)

The Cash Flow Return on Investment (CFROI) model is a widely used value-based indicator that corresponds to wealth maximization principles (Madden, 1999). The model is based on the Internal Rate of Return (IRR) and was created by Holt Value Associates, a Chicago-based consulting firm. It is utilized by a number of well-known consulting organizations, such as Deloitte & Touche (DT), Price Waterhouse Coopers (PWC), and the Boston Consulting Group (BCG) (Young and O'Byme, 2001).

Madden (1999) defined CFROI as "an estimate of the real rate of return earned by a firm on all its assets, which can be thought of as a portfolio of projects". It is obtained by calculating the rate of return that equates the present value of the firm's gross future cash flows available to debt and equity holders with the gross investment made by capital owners. These cash flows are presented in real (rather than nominal) terms after compensating for changes in the general price level over time. Indeed, controlling for inflation is one of the key selling points of CFROI, as it enables cross-country and cross-time comparisons.

CFROI is the rate of return earned on existing projects by the firm. In other words, CFROI is an IRR-type indicator that calculates the expected rate of return on a firm's existing assets over their average life. According to Peterson and Peterson (1996), it is “an IRR measure but not in the traditional sense”. CFROI is often assessed on an annual basis and serves as an economic, cash-based assessment of corporate performance. It should then be compared to the inflation-adjusted cost of capital to assess whether a corporation achieved returns that exceeded its cost of capital, thus creating value for its shareholders (Martin and Petty, 2000). If the CFROI exceeds the cost of capital (sometimes referred to as the hurdle rate), wealth is generated; if the CFROI falls below the total cost of debt and equity capital, value is destroyed. In symbols,

If CFROI > Inflation-adjusted cost of capital: value is generated;
If CFROI = Inflation-adjusted cost of capital: value is maintained;
If CFROI < Inflation-adjusted cost of capital: value is destroyed.

Indeed, CFROI is an efficiency indicator that compares future cash flows to the entire investment required to create those cash flows (Keuleneer and Verhoogm, 2005). When it comes to measuring the genuine profitability of the company’s current projects, CFROI is considered an instructive and generally relevant indicator. Its utility stems from its capacity to be used as a factor in resource allocation decisions since, when compared to the cost of capital, it clearly describes which enterprises (projects) are valuable and which are not and also where investment is expected to produce value.

Market Value Added (MVA)

Stem Stewart devised another metric for publicly traded corporations, which evaluates if a firm has made a contribution to the wealth of its shareholders. This cousin of EVA is referred to as Market Value Added (MVA), and it is defined as the absolute dollar difference between the firm’s present market value and the entire capital committed to it by investors since its establishment (Stewart, 1991). To put it another way, MVA is the difference between the cash that investors have put in and the cash that they have taken out since the company was founded.

The meaning of MVA is straightforward. A positive MVA indicates that a business has generated actual value for its shareholders, as the market value of the company exceeds the book value of all capital invested in the business. However, when a firm's MVA is negative, it means that its market value is less than the capital invested by shareholders and bondholders, implying that its managers have destroyed the value of shareholders. When evaluating current management's performance, the change in MVA over a one-year or five-year period may be more meaningful than the absolute amount of MVA. Thus, any corporation concerned with the welfare of its shareholders should prioritize increasing the disparity between invested capital and market value (Stewart, 1991). Furthermore, because MVA is the ultimate measure of wealth creation and the final target in the wealth creation process, it may be employed to compare the performance of enterprises in different sectors or even different nations (Ehrbar, 1998). For example, it is possible to utilize MVA to compare a bank and a store, a steel producer and a software firm, or a toy manufacturer and a food processor. It is undoubtedly that the company with the greater MVA generated more value for its owners (Elali, 2007).

One of the most effective strategies for businesses to develop MVA is to create positive EVA consistently. EVA proponents claim that businesses that consistently generate positive EVA should see their MVA increase, hence increasing shareholder value. Walmart, Microsoft, General Electric, and CocaCola all have positive MVAs since their EVAs are both positive and expanding at a rapid rate. Firms with negative EVA reports, on the other hand, should experience a significant drop in their share prices, as the negative EVA outlook reduces the firm's intrinsic value (Ehrbar, 1998; Elali, 2007; Grant, 2003).

Methodology

This paper adopts a comparative analysis approach to scrutinize the effectiveness of various economic value measurement metrics within the banking industry, with a particular focus on Economic Value Added (EVA™) alongside alternatives such as Balanced Scorecard (BSC), Risk Adjusted Return on Capital (RAROC), Tobin's Q, Cash Flow Return on Investment (CFROI), and Market Value Added (MVA). The

methodology involves a detailed review and synthesis of existing literature, empirical data analysis, and case studies from the banking sector to evaluate each metric's ability to reflect true economic profit and shareholder wealth creation accurately. This research correlates these metrics with stock prices and returns, providing a comprehensive understanding of their predictive power and utility in guiding corporate financial strategies. Through this multi-dimensional analysis, the paper aims to offer insights into the merits and limitations of each metric, contributing to the ongoing debate on the most effective tools for economic value measurement and management in the banking industry.

Findings

Metrics War

There is a significant controversy over the relative value significance of alternative economic value measurements. Consulting businesses compete over the superiority of their economic value metrics, alleging that their rivals' metrics have faults that impair their predictive abilities. For example, Stewart (1991) indicated that EVA™ "stands well out from the crowd as the single best measure of wealth creation on a contemporaneous basis", whereas Dixon and Hedley (1993) of Braxton Associates reported internal research demonstrating that their CFROI indicator accounts for 91% of the variation in market capitalization ratios. CFROI proponents claimed that this indicator is far superior to traditional accounting measurements and EVA™. A HOLT Value Associates partner asserted that "CFROIs are ideally suited to displaying long-term track records, whereas a Stern Stewart-type EVA™ is in millions of dollars, heavily influenced by asset size, and unadjusted for inflation-induced biases" (Myers, 1996). In return, Stern Stewart responded that "CFROI is literally a consultant's concoction. It was quite an imaginative development by a consulting firm, but it is not well grounded in the basic elements of corporate finance theory. CFROI attempts to measure shareholder wealth—which is not clearly related to maximizing shareholder wealth" (Myers, 1996). These types of claims have prompted an increasing number of firms to use various forms of economic value measures.

The following paragraphs will evaluate the drawbacks of BSC, RAROC, Tobin's Q, CFROI, MVA, and EVA™ as well. To begin with, even if the BSC has attracted abundant attention from corporate managers, there is scarcely any existing evidence to support that it can accelerate superior financial performance in comparison with other performance measurement systems (Davis and Albright, 2004; Maltz et al., 2003). In addition, opponents of BSC argue that it is a short-term evaluation metric; the relationship between cause and effect is difficult to distinguish, and the balance between the non-financial and financial measures is also difficult to achieve. For example, Norreklit (2000) suspected the principle of the hypothetical casual relationship of the BSC by arguing that the casual relationship should involve a time lag between satisfying customers' needs, learning and growth, internal business, and finally, leading to improvement in financial performance. Norreklit (2000) also argued that the BSC is a top-down approach, and thus, "it may be difficult to get the scorecard rooted in the employees." Furthermore, even if crucial managerial requirements are fulfilled by the BSC, it does not consider the interests of some key stakeholders, such as the community, regulators, and suppliers (Brignall and Modell, 2000; Neely et al., 1995; Maltz et al., 2003). Meyer (2002) also indicated that it is hard to carry out non-financial performance measures, as there is no instruction on how to integrate different metrics into a general matrix of performance measurement within a company.

Furthermore, there are also criticisms towards RAROC. Firstly, as a no-arbitrage strategy, RAROC does not match loan prices with market-available comparable securities, such as credit derivatives, bonds, and other loans (Aguais et al., 2000). Consequently, it is incapable of evaluating comparative business possibilities and arbitrage-like circumstances that arise as a result of relative pricing mismatches. Secondly, RAROC disregards the stated consistency of a substantial number of loan cash flows (Aguais et al., 2000). Two points are made here: 1) Due to prepayment options, loans have an infinite maturity period; and 2) Calculating the exposure to default is quite challenging. Thirdly, RAROC has devolved into the polar opposite of prudent business risk management (Holton, 2002). RAROC's practical application does not encourage individual responsibility. It implies that management may

operate a business autonomously and delegate decision-making to a computer. It refutes the notion that risk management is about people and instead emphasizes the importance of mathematical formuls.

Moreover, Tobin's Q has a number of proponents in academia as an alternative to traditional performance measurements but has yet to break through into practical use, owing primarily to the unavailability of data. Perfect and Wiles (1994) asserted that while Tobin's Q is a conceptually appealing measure of business success, its estimation is prone to significant measurement error. For example, although the numerator of Tobin's Q theoretically measures the firm's market value, only the common stock's market value is frequently employed. The remaining components are priced at their book values or are determined using sophisticated and contentious techniques. Similarly, the denominator construction is debatable, containing an unknown degree of error and various biases. As a result, combining two imprecise values produces a Q ratio that may contain significant measurement mistakes. In addition, while computing the numerator of Tobin's Q ratio is very straightforward using widely available data from databases, estimating the replacement cost of assets (the denominator) is quite sophisticated and, in many situations, difficult to achieve due to data scarcity (Lewellen and Badrinath, 1997).

In addition, it is critical to recognize CFROI's limitations as a tool for assessing performance and wealth creation (Myers, 1996; Peterson and Peterson,1996; Young and O'Byrne, 2001). CFROI has been criticized in academic research and public press for the following reasons: First of all, in comparison to alternative metrics such as EVA, its calculating process is fairly sophisticated, making it very difficult to demonstrate to managers (Young and O'Byrne, 2001). Second, as a proxy for the internal rate of return (IRR), CFROI alone does not indicate whether a business is creating or destroying shareholder value. Third, it necessitates making current dollar adjustments, resulting in a return on investment that is highly dependent on the accuracy of these adjustments, and numerous accounting adjustments need to be made in practice to estimate a firm's CFROI, which is similar to the adjustments of EVA. Nevertheless, the adjustments to EVA appear to improve its accuracy, making

it more comparable to a cash-based metric, whilst the adjustments to CFROI seem to only improve its understandability (Peterson and Peterson, 1996). Finally, the CFROI has a “hurdle rate problem”. It frequently occurs when corporations determine an acceptable, necessary rate of return, such as the cost of capital, and measure performance against the established rate. As a result, corporations are discouraged from investing in activities that yield a lower rate of return than the currently utilized assets, even if the rate of return exceeds the cost of capital (Venanzi, 2012). Carrying on such a project would provide positive cash flows for the corporation but would reduce the portfolio’s overall rate, which is the performance criterion. Consequently, managers may refuse positive Net Present Value (NPV) projects even if they benefit the organization as a whole.

A significant disadvantage of MVA is that gains and losses from historical activities are amalgamated one-to-one with the previous year’s outcomes plus today's moods as indicated by the market price. It is because of this that even when the present or prospective prospect is dark or unrewarding, a successful organization will continue to display a positive and high MVA rating (Bontis, 2000).

EVA™ also has several drawbacks. Firstly, plant or division size disparities are not taken into consideration by EVA™. Hence, larger plants or divisions are more likely to have a higher EVA™ than their smaller counterparts (Horngren et al., 1997; Hansen and Mowen, 1997). Secondly, EVA™ is a calculated value based on the revenue realization and expense recognition procedures used in financial accounting (Horngren et al., 1997). If managers are driven to change their decision-making processes, they can manipulate these data. Thirdly, since the EVA™ strategy overemphasizes the requirement for instantaneous outcomes, it disincentivizes managers from investing in breakthrough products or process technology (Brewer et al., 1999). This is because no product innovation generates instant revenue, and the benefits of the invention are only appreciated over time. Also, EVA™ is defined as result-oriented financial data that are gathered at the end of an accounting period and does not assist in identifying the underlying causes of operational inefficiencies.

As a result, the EVA™ provides only a limited amount of valuable information to those entrusted with controlling business processes.

Conclusion

The analysis of various value-based performance measures such as EVA™, BSC, RAROC, Tobin's Q, CFROI, and MVA highlights a diverse array of tools, each with specific advantages and limitations. EVA™ stands out for its close connection to shareholder wealth, yet it faces challenges like potential data manipulation and size disparities. BSC offers a comprehensive view but is complex and sometimes ambiguous in its cause-and-effect relationships. RAROC is tailored for the banking sector but struggles with matching loan prices to market securities and promoting individual risk management responsibility. Tobin's Q, while conceptually sound, is hindered by measurement errors and data issues. CFROI provides a detailed economic assessment but is complex in calculation and faces the "hurdle rate problem." MVA is straightforward but can be misleading due to its sensitivity to market sentiments. In summary, no single metric perfectly captures corporate performance and shareholder value. The choice of a performance measure should be context-specific, balancing the benefits and drawbacks of each to suit the organization's unique needs and objectives.

References

1. Aguais, S. D., Forest Jr, L. R., & Rosen, D. (2000). Building a Credit-Risk-Valuation Framework for Loan Instruments. Com. Lending Rev., 16, 12.
2. Ahmić, A. (2022). Business Model for Continuous Enterprise Sustainability. Management and Business Research Quarterly, 22, 33-50. https://doi.org/10.32038/mbrq.2022.22.04
3. Bontis, N. (2001). Assessing knowledge assets: a review of the models used to measure intellectual capital. International journal of management reviews, 3(1), 41-60. https://doi.org/10.1111/1468-2370.00053
4. Brewer, P. C., Chandra, G., & Hock, C. A. (1999). Economic value added (EVA): Its uses and limitations. SAM Advanced Management Journal, 64(2), 4. https://sid.ir/paper/595855/en

5. Brignall, S., & Modell, S. (2000). An institutional perspective on performance measurement and management in the 'new public sector'. Management accounting research, 11(3), 281-306. http://dx.doi.org/10.1006/mare.2000.0136
6. Crouhy, M., Turnbull, S. M., & Wakeman, L. M. (1999). Measuring risk-adjusted performance. Journal of Risk, 2, 5-36. http://dx.doi.org/10.21314/JOR.1999.018
7. Crouhy, M., Galai, D., & Mark, R. (2001). The new capital adequacy framework and the need for consistent risk measures for financial institutions. In Financial Innovations and the Welfare of Nations (pp. 61-85). Springer, Boston, MA. http://dx.doi.org/10.1007/978-1-4615-1623-1_4
8. Dixon, P., & Hedley, B. (1993). Managing for Value. Boston, Braxton Associates.
9. Davis, S., & Albright, T. (2004). An investigation of the effect of balanced scorecard implementation on financial performance. Management accounting research, 15(2), 135-153. http://dx.doi.org/10.1016/j.mar.2003.11.001
10. Ehrbar, A. (1998). EVA: The Real Key to Creating Wealth. New York: Wiley.
11. Elali, W. (2007). EVA and shareholder value creation: an empirical study (Doctoral dissertation). University of Westminster. https://doi.org/10.34737/91xv0
12. Fayad, A. M., Hussein, B., Hajj-Hassan, M., & Haj-Ali, A. (2019). A New Approach for Complementing the Earned Value Method for Project Progress Monitoring and Controlling. New Challenges in Accounting and Finance, 2, 11-18. https://doi.org/10.32038/NCAF.2019.02.02
13. Feschiyan, D., & Andasarova, R. (2020). The New Approach for Risk Regulation in Banks. New Challenges in Accounting and Finance, 3, 1-13. https://doi.org/10.32038/NCAF.2020.03.01
14. Fiordelisi, F., & Molyneux, P. (2004). Measuring Shareholder value in European banking. University of Wales, Bangor Business School, Working Papers.
15. Forker, J., & Powell, R. (2004). Does EVA beat earnings? Evidence on associations with stock returns and firm values–revisited. In Conference paper, presented in EAA Meeting in Prague, 1-3.

16. Froot, K. A., & Stein, J. C. (1998). Risk management, capital budgeting, and capital structure policy for financial institutions: an integrated approach. Journal of financial economics, 47(1), 55-82. https://doi.org/10.1016/S0304-405X(97)00037-8
17. Froot, K. A., & Stein, J. C. (1998). A new approach to capital budgeting for financial institutions. Journal of Applied Corporate Finance, 11(2), 59-69. https://doi.org/10.1111/j.1745-6622.1998.tb00648.x
18. Hansen, D. R., & Mowen, M. M. (1997). Management Accounting 4th Edition. Cmcinnati, OH: South-Westem College Publishing.
19. Holton, G. A. (2002). History of Value-at-Risk: 1922-1988. Contingency Analysis WorkingPaper.https://econwpa.ub.uni-muenchen.de/econwp/mhet/papers/0207/0207001.pdf
20. Hoque, Z., & James, W. (2000). Linking balanced scorecard measures to size and market factors: impact on organizational performance. Journal of management accounting research, 12(1), 1-17. http://dx.doi.org/10.2308/jmar.2000.12.1.1
21. Horngren, C. T., Foster, G., & Datar, S. M. (1997). Cost Accounting. Cost Accounting–A Managerial Emphasis, Upper Saddle River, New Jersey.
22. Issham, I. (2010). Performance of Public-Listed Companies in Malaysia: Using EVA.
23. Kaplan, R. S., & Norton, D. P. (1992). The Balance Scorecard Measures That Drive Performance. Harvard Business Review, 71-79.
24. Kaplan, R. S., & Norton, D. P. (1993). Putting the balanced scorecard to work, Harvard Business Review, 144-147.
25. Kaplan, R. S., & Norton, D. P. (1996). Using the Balanced Scorecard as a Strategic Management System. Harvard Business Review, 75-85.
26. Kaplan, R. S., & Norton, D. P. (2001). The Strategy-focused Organization: How Balanced Scorecard Companies Thrive in the New Business Environment, Harvard Business School Press, Boston, MA.

27. Keuleneer, L., & Verhoog, W. (Eds.). (2005). Recent trends in valuation: from strategy to value. John Wiley & Sons. https://hdl.handle.net/1871.1/8a4fea85-62c1-4f83-9488-9d489d0aca5b
28. Křečková, Š. (2017). Dopad aplikace pravidel basel iii na profitabilitu bankovních klientů. Ekonomické Rozhl'ady/Ecomomic Review, 46(1).
29. Landsman, W. R., & Shapiro, A. C. (1995). Tobin's q and the Relation between Accounting ROI and Economic Return. Journal of Accounting, Auditing & Finance, 10(1), 103-118. https://doi.org/10.1177/0148558X9501000108
30. Lang, L. H. P., Stulz, R M.., & Walking, R. A. (1989). Managerial performance, Tobin's q, and the gains from successful tender offers. Journal of Financial Economics, 24(1), 137-154. https://doi.org/10.1016/0304-405X(89)90075-5
31. Lewellen, W. G., & Badrinath, S. G. (1997). On the measurement of Tobin's q. Journal of financial economics, 44(1), 77-122. https://doi.org/10.1016/S0304-405X(96)00013-X
32. Lindenberg, E. B., & Ross, S. A. (1981). Tobin's Q Ratio and Industrial Organization. Journal of Business, 54(1), 1-32. http://dx.doi.org/10.1086/296120
33. Madden, B. J. (1999). CFROI valuation: A Total System Approach to Valuing the Firm. Elsevier. https://doi.org/10.1016/B978-0-7506-3865-4.X5039-6
34. Maditinos, I. D., Sevic, Z., & Theriou, N. G. (2006). The introduction of economic value added (EVA) in the corporate world (pp. 2-4). International Conference: Innovation, Entrepreneurship, and Competitiveness in Balkan and Black Sea Countries.
35. Myers, R. (1996). Keeping Score: Metric Wars (pp. 41-50). CFO.
36. Mamun, A. A., & Mansor, S. A. (2012). EVA as superior performance measurement tool. Modern Economy, 3(3), 310-318. http://dx.doi.org/10.4236/me.2012.33041
37. Maltz, A. C., Shenhar, A. J., & Reilly, R. R. (2003). Beyond the Balance Scorecard: Refining the Search for Organizational Success Measures. Long Range Planning, 36(2), 187-204. https://doi.org/10.1016/S0024-6301(02)00165-6

38. Meyer, M. W. (2002). Finding performance: The new discipline in management in Business performance measurement: Theory and practice (pp. 51-62). Neely, Andrew, editor. Cambridge University Press. http://dx.doi.org/10.1017/CBO9780511805097.007
39. Neely, A., Gregory, M., & Platts, K. (1995). Performance measurement system design: a literature review and research agenda. International journal of operations & production management, 15(4), 80-116. https://doi.org/10.1108/01443579510083622
40. Norreklit, H. (2000). The Balance on the Balanced Scorecard- a critical analysis of some of its assumption. Management Accounting Research, 11(1), 65-88. https://doi.org/10.1006/mare.1999.0121
41. Ong, L. H. (2012). Fiscal federalism and soft budget constraints: The case of China. International Political Science Review, 33(4), 455-474. https://doi.org/10.1177/0192512111414447
42. Perfect, S. B., & Wiles, K. (1994). Alternative constructions of Tobin's q: An empirical comparison. Journal of Empirical Finance, 1(3), 313-341. http://dx.doi.org/10.1016/0927-5398(94)90007-8
43. Peterson, P. P., & Peterson, D. R. (1996). Company performance and measures of value added. Charlottesville: The Research Foundation of the Institute of Chartered Financial Analysts.
44. Pompong, S. B. (2015). The Influence of Economic Value Added on Liability Management in Commercial Banks of Indonesia. Journal of Nursing and Health Science, 4(3). https://doi.org/10.6084/M9.FIGSHARE.1428506.V1
45. Rahmawati, A., & Garad, A. (2023). Managerial Ownership, Leverage, Dividend Policy, Free Cash Flow, Firm Value: Evidence in Indonesia Stock Exchange. European Journal of Studies in Management & Business, 25, 32-44, https://doi.org/10.32038/mbrq.2023.25.03
46. Sabol, A., & Sverer, F. (2017). A review of the economic value added literature and application. UTMS journal of economics, 8(1), 19-27. http://hdl.handle.net/10419/174163

47. Sharma, A. K., & Kumar, S. (2010). Economic value added (EVA)-literature review and relevant issues. International journal of economics and finance, 2(2), 200-220. http://dx.doi.org/10.5539/ijef.v2n2p200
48. Stewart, G. B. (1991). Quest for Value: A Guide for Senior Managers. New York, NY, Harper Business.
49. Stewart, G. B. (1994). EVA: Fact and Fantasy. Journal of Applied Corporate Finance, 7(2), 71-84. https://doi.org/10.1111/j.1745-6622.1994.tb00406.x
50. Stoughton, N. M., & Zechner, J. (2004). DP4169 Optimal Capital Allocation Using RAROC (tm) and EVA, CEPR Discussion Paper No. 4169. CEPR Press, Paris & London. https://cepr.org/publications/dp4169
51. Tobin, J. (1969). A General Equilibrium Approach to Monetary Theory. Journal of Money, Credit, and Banking, 1(1), 15-29. https://doi.org/10.2307/1991374
52. Venanzi, D. (2012). Concluding Remarks: Strengths and Weaknesses of the Economic Value Measures. In Financial Performance Measures and Value Creation: the State of the Art (pp. 61-70). Springer, Milano. http://dx.doi.org/10.1007/978-88-470-2451-9
53. Walbert, L. (1994). The Stern Stewart performance 1000: using Eva™ to build market value. Journal of Applied Corporate Finance, 6(4), 109-112. http://doi.org/10.1111/j.1745-6622.1994.tb00256.x
54. Walbert, L. (1995). The 1994 Stern Stewart Performance 1000. Journal of Applied Corporate Finance, 7(4), 105-110. http://dx.doi.org/10.1111/j.1745-6622.1995.tb00266.x
55. Widati, S., Purwanto, P., & Putri, V. N. (2023). Financial Performance Analysis Before and After the Rise of Digital Companies (Case Study in the Transportation, Banking and Manufacturing Sector Listed on the Indonesia Stock Exchange). New Challenges in Accounting and Finance, 9, 13-25, https://doi.org/10.32038/NCAF.2023.09.02
56. Wood, N. A. (2000). Economic value added (EVA): uses, benefits and limitations-a South African perspective. Southern African Business Review, 4(1), 46-53.

57. Worthington, A. C., & West, T. (2001). Economic value-added: a review of the theoretical and empirical literature. Asian Review of Accounting, 9(1), 67-86. http://dx.doi.org/10.1108/eb060736

58. Young, D., & O'Byrne, S. (2001). EVA and Value-Based Management. New York: McGraw-Hill.

59. Zaik, E., Walter, J., Retting, G., & James, C. (1996). RAROC at Bank of America: from theory to practice. Journal of Applied Corporate Finance, 9(2), 83-93. https://doi.org/10.1111/j.1745-6622.1996.tb00117.x

60. Zanjani, G. (2010). An economic approach to capital allocation. Journal of Risk and Insurance, 77(3), 523-549. https://doi.org/10.1111/j.1539-6975.2010.01354.x