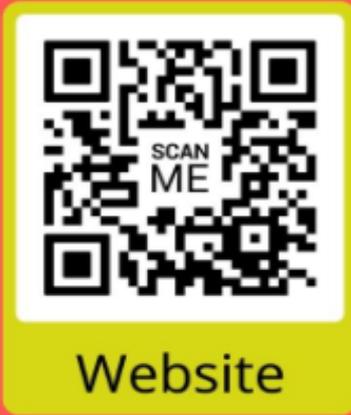


ISSN (ONLINE) 2598 9928



INDONESIAN JOURNAL OF LAW AND ECONOMIC
PUBLISHED BY
UNIVERSITAS MUHAMMADIYAH SIDOARJO

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Indonesian Journal of Law and Economics Review

Vol. 21 No. 2 (2026): May
DOI: 10.21070/ijler.v21i2.1519

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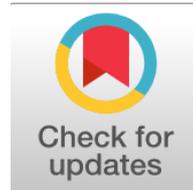
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The Impact of Financial Recession on the Efficiency of Invested Capital

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Abstract

General Background: Financial management in the banking sector focuses on profitability, liquidity, and risk control to evaluate financial performance and capital utilization. **Specific Background:** Financial recession represents a condition that can influence how banks allocate and manage invested capital. **Knowledge Gap:** Prior studies rarely distinguish between different types of financial recession when examining capital efficiency in banking institutions. **Aims:** This study analyzes the relationship between financial recession and invested capital efficiency in commercial banks listed on the Iraq Stock Exchange. **Results:** Using panel data from 2012–2023 and statistical analysis with Eviews v13, the findings show that available financial recession is negatively related to return on invested capital and return on working capital, while potential financial recession shows a positive relationship with these indicators. **Novelty:** The study differentiates recession conditions into available and potential categories when assessing capital efficiency in banks. **Implications:** The findings provide insights for stakeholders in evaluating how recession conditions relate to the utilization of capital resources in the banking sector.

Highlights:

- Available Recession Conditions Correspond With Lower Profitability Ratios Derived From Capital Utilization.
- Potential Recession Conditions Correspond With Higher Profitability Ratios Derived From Working Resources.
- Empirical Evaluation Employs Panel Observations From Publicly Traded Banking Institutions During 2012–2023.

Keywords: Financial Recession, Invested Capital, Capital Efficiency, Banking Sector, Iraq Stock Exchange.

Published date: 2026-03-16

1. INTRODUCTION

Specialists and those interested in financial management and banking know that banks have three main objectives: profitability, liquidity, and risk management. These objectives are sometimes regarded contradictory, with some arguing that one must be sacrificed for the sake of the others. For example, profitability should be sacrificed for liquidity and risk reduction, and vice versa. Though, this is not the case. Regulatory bodies, such as central banks and supervisory bodies like the Basel Committee, have established standard and benchmark ratios. Therefore, it is possible to achieve these three objectives in a balanced way by achieving profit levels close to industry benchmarks (reference values) and maintaining liquidity ratios as determined by regulators, with an acceptable level of risk commensurate with the achieved return. Nevertheless, some empirical studies have revealed an accumulation of funds in some banks, which represents financial recession for these institutions. Financial recessions, in their various forms, have become a well-known topic and a major concern for both specialists and financial publications. This has been responsible for a significant amount of underutilized capital, as indicated by several financial recession indicators, such as the available financial recession index. This index can impact the efficiency of invested capital, as measured by capital utilization efficiency indicators like Return on Invested Capital (ROI), clarifying possibility of measuring a bank's ability to generate profits per unit of capital; a higher ROI indicates more efficient capital utilization. Similarly, the Working Capital Utilization Efficiency Index (ROWC) measures a bank's ability to generate profits from its working capital, providing insight into the efficiency of capital utilization for profit generation.

On that ground, this study was based on a sample of ten commercial banks listed on the Iraq Stock Exchange for the period from 2012-2023 with a number of (120) observations. The study was divided into a group of sections. The first section included, as shown, an introduction to the study. The second section shed light on literature reviews. The third section hinted to the development of hypotheses. The fourth section stands for the methodology followed in the study. The fifth one was dedicated to estimating the models and testing the study hypotheses. The study concluded in its sixth section with discussions.

2. LITERATURE REVIEW

2.1 FINANCIAL RECESSION

Prior to discussing financial recession, it is mandatory to cover recession in general and organizational recession, as financial recession is one of the main types of recession that will be discussed later. Recession has been defined as a set of resources in a bank that exceeds the minimum required to produce or provide a certain level of goods or services, or the existence of surplus resources for certain outputs [1]. Even though the general concept of recession is widespread, a specific definition of recession was not formulated until March and Simon published their book in 1963. The concept of recession deals with the bank as an entity similar to a living organism striving for survival, as this is the goal of all banks. Therefore, the concept of recession is defined as a cushion of actual or potential resources that allows the bank to successfully adapt to internal and external pressures [2]. Recession is also defined as resources that can be applied, transferred or redistributed to attain the goals of banks [3]. Recession, particularly organizational recession, has been classified into several types based on specific criteria, including absorbing recession and non-absorbing recession. Absorbing recession refers to resources that can be identified within the bank's procedures and are difficult to reallocate or allocate elsewhere. Examples include salaries and other general and administrative expenses [4]. Non-absorbing recession, on the other hand, refers to resources that are not intentionally committed and can be easily reallocated elsewhere within the bank. It is used to indicate the company's ability to meet current obligations with readily available resources [5]. Another classification of recessions categorizes them into available, recoverable, and potential recessions. Available recessions represent financial resources that the bank has not yet consumed and can be easily reallocated [6]. Recoverable recessions include resources that have already been used and are consumed to some extent but can be recovered for allocation to other tasks. Potential recessions include what the bank might be able to generate from its environment, for example, by raising additional debt or capital through the issuance of new shares. Unlike the other types, potential recessions are merely possibilities and therefore cannot be guaranteed or easily extracted [7]. In addition to the types mentioned above, another prominent classification of recessions categorizes them into human resource recessions and financial recessions. Human resource recessions represent the ratio of human resources in the bank to the industry. Human resource recessions are used to symbolize the potential capacity that may exist within the bank, as well as the knowledge and skills within the bank [8]. The term "financial recession" was first proposed by Myers & Majluf as a resource that gives the green light to a bank to avoid external financing and separate investment decisions from conflicts of interest between managers and shareholders [9]. Recession is thus defined as the sum of financial resources available to a bank, giving it the freedom to invest these resources in other areas, particularly research and development or new projects [10]. Recession is also defined as a phenomenon where a bank enjoys a surplus of funds, or the amount of cash it holds above its minimum normal operating requirements [11]. Ashwin defined recession as unused cash and securities held by a bank, in which case the bank does not issue debt or risky securities to finance its investments [12]. Financial recession also encompasses banks' surplus resources that exceed their current needs, aimed at enhancing service delivery and fulfilling the bank's obligations. Financial recession plays a crucial role in fostering innovation within the bank by allowing it to experiment with new strategies, thus enabling the addition of innovative services [13]. It also serves as the level of current assets, which are typically cash resources within the bank [14]. As such, financial recession is not separate from available recession, but rather a specific representation of the most liquid financial resources within the bank.

2.1.1 TYPES OF FINANCIAL RECESSION

The most of note literature in this field has identified three main types of financial recession: available, recoverable, and potential. These are as follows:

Accordingly, available capital is internal and flexible, providing banks with a buffer against the natural ebb and flow of their operations. From a behavioral perspective, available capital protects banks from uncertainty regarding resource availability. Among the most important measures used to assess available capital are liquidity metrics such as the current ratio, calculated as follows [19].

1. Available Financial Recession: This refers to the financial resources that a bank possesses and can easily reallocate [6]. Examples include cash and cash equivalents, which banks can reuse quickly [15]. This type of recession may ultimately bring about sustainable and superior bank performance because managers take initiative and act optimistically to enhance the bank's performance [16]. In contrast, agency theory views this recession in financial resources as a result of inefficiency and inefficiency within the bank. This theory considers managers' behavior from different perspectives, viewing them as agents acting on behalf of shareholders. Therefore, managers must be monitored to prevent them from allocating excess resources to activities that serve their own self-interest [17]. Furthermore, available capital is a crucial strategic variable, reflecting management's ability to allocate resources to non-operational activities and serving as an indicator of optimal resource utilization [18].
2. Potential Financial Recession : This involves what a bank might be able to generate from its environment, for example, by raising additional debt or deposits, or capital through issuing new shares. Unlike other types of recession , potential recession is merely a possibility and therefore cannot be easily guaranteed or determined [7]. In addition to reflecting a lower tax burden and risk sharing, measuring potential financial recession reflects the bank's ability to access available resources from the environment and is thus linked to the bank's capacity to finance its activities through credit lines or resources from potential shareholders [20]. It also incorporates all resources that have not yet been mobilized to achieve the bank's objectives, thus reflecting the bank's ability to attract short-term and long-term external financial resources [21]. Potential financial recession is measured using leverage ratios (debt-to-assets ratio) according to the following formula: [19].
3. Recoverable Financial Recession: This stands for resources that have already been used and are consumed to some extent, but can be recovered for allocation to other tasks. Thus, it reflects the bank's ability to reallocate financial resources or increase the efficiency of resources used, such as securities and receivables [22]. It also represents amounts receivable that are absorbed by a number of activities within the bank and can be recovered when needed [23]. Therefore, it characterizes a long-term reserve that gives the bank additional financial leverage [24]. It is measured by the ratio of general, administrative, and marketing expenses to total revenues according to the following formula [25]:

There are also some studies that have classified financial recession into other types such as absorbed financial recession and non-absorbed financial recession, somewhat similar to their concepts of absorbed organizational recession and non-absorbed organizational recession. Nonetheless, from a financial perspective, absorbed financial recession consists of resources that are already tied up in ongoing operations, but can then be recovered with additional managerial determination and time, whereas non-absorbed financial recession often is composed of widely available and uncommitted resources such as cash flows [26].

2.2 EFFICIENCY OF INVESTED CAPITAL

The primary objective employed by companies is to achieve long-term growth. The means by which most companies achieve this goal is investment. Investment is the allocation of funds in the hope of generating future returns, or it is the expenditure of money or resources in the hope that these resources will yield future returns. The financial effects of investment continue for several years. The success of any investment project requires achieving its objectives. Investment objectives are numerous, including increasing profits. The profits generated from the assets used play a significant role in evaluating management performance [27]. From a financial perspective, the term "capital" is often used to represent the financial resources invested in or available to a company. The financial investment perspective persists central to financial viewpoints. Financial capital often refers to the monetary value of owned assets or the book value of a share at the end of a period. Capital is also defined as encompassing both financial and non-financial assets that are readily available for transfer into cash. Some forms of capital are accessible and convertible into liquid assets, but not all capital is readily convertible into cash [28]. Measuring the return on invested capital can bring about many questions. However, return on investment (ROI) remains one of the most frequently used indicators by investors in decision-making. Numerous empirical findings indicate that ROI is not entirely controllable by company management. Return on Investment (ROI) can be put into other indicators derived from the company's financial data [27].

Return on investment is also an indicator of management efficiency. Therefore, the efficiency measure is defined as the return on invested capital (ROIC) that exceeds the weighted average cost of capital (WACC). Therefore, invested capital is the sum of long-term debt, preferred stock, common stock, and any other equity.

Return on capital (ROIC) is calculated by deducting after-tax interest expenses from invested capital, rather than using projected future cash flows after deducting initial investment costs. This approach avoids biases in earnings and cash flow forecasts, making it a more reliable way to assess a company's capital utilization efficiency. Net ROIC, also defined as the return on equity and debt, which exceeds the weighted average cost of capital (WACC) in many areas, is used to evaluate capital utilization efficiency [29]. The following formula is used to calculate it:

For accurate calculation of return on investment, a significant role is assigned to the accountant. The accountant's role is to

provide accurate, timely, and useful information. To achieve this, the accountant must collect the appropriate information, reformulate it when needed, and present it in a suitable manner to managers and investors. Within the accounting return calculation in the field of finance, the book value is used. The reason is simple: it is through this value that the return earned on the capital invested in existing assets is calculated. Since most of the information we work with in the field of valuation and corporate finance comes from accounting data, it is not surprising that the most commonly used return measures are based on accounting profits [30].

Though, the financial landscape, and especially financial management, has witnessed a significant shift in the adopted metrics for capital efficiency, including Economic Value Added (EVA). Companies have shifted in their adoption of these metrics to avoid short-term bias and to provide a clearer picture of the company's ability to create value over the long term. In recent years, the financial sector has played a role in the emergence of some of these metrics, which in turn attract management teams to improve these capital efficiency figures without considering the inherent risks and long-term benefits for company stakeholders [31]. Another metric is the return on working capital (ROC), which reflects management efficiency in terms of return on working capital. The following formula is used to calculate it:

1. DEVELOPING HYPOTHESES

Companies strive to maintain financial capacity to meet their short-term requirements, as reflected in the available financial recession, as well as financial capacity in the long term, as reflected in the potential financial recession. These two types of financial recession affect the efficiency of invested capital, whether in the efficiency of capital utilization or the efficiency of working capital utilization. Hence, the study brought about a main hypothesis: Is there a statistically significant relationship of financial recession on capital efficiency, through financial recession indicators and capital utilization efficiency indicators?

4. METHODOLOGY

4.1 SAMPLE SIZE AND MEASUREMENT

In this study, there was a reliance on two types of financial recession for the independent variable: available financial recession and potential financial recession. Two indicators were chosen for the dependent variable, which are among the most formal and reliable indicators for measuring the efficiency of invested capital: the bank's ability to generate profits per unit of invested capital (ROIC) and the bank's ability to generate profits from operations to working capital (ROWC). The sample consisted of ten banks over a twelve-year period, from 2012 to 2023, with a total of one hundred and twenty observations. The aim was to obtain results that would either confirm or refute the main hypothesis of the study. Tables 1 - 4 render the descriptive statistics for these indicators, as well as their analytical aspects. A simple linear regression model was exercised to confirm or refute the main study hypothesis, taking advantage of the statistical software *Eviews.v13* and the data sheets.

4.2 DESCRIPTIVE STATISTICS OF STUDY VARIABLE INDICATORS

As to table (1), it sheds light on the descriptive statistics for the available financial recession. The data in the table shows that the highest available financial recession achieved by the banks in the study sample was recorded by BSUC Bank, reaching 45.310 in 2023 with a standard deviation of 11.990. The lowest available financial recession was recorded by BBOB Bank, reaching 1.150 with a standard deviation of 0.564. The highest average achieved by the banks in the study sample was registered by BSUC Bank, reaching 11.990. This is accounted for the large outliers in the available financial recession achieved during 2023 and the large size of the deviation. The lowest average achieved by the banks in the study sample was recorded by BIME Bank, approaching 1.485 with a suitable standard deviation, mirroring the degree of stability in this recession indicator for the bank, when compared to the overall sample average of 2.785.

Table (1) *discloses the descriptive statistics of the financial recession available to the banks in the study sample for the period from 2012 - 2023*

Source: Prepared by the two researchers using financial data from the banks in the study sample and using Excel.

As far as table (2) is concerned, it uncovers the descriptive statistics of the potential financial recession for the banks in the study sample for the period 2012-2023. It became clear that BNOI Bank achieved the highest potential financial recession rate of 0.874 in 2023 with a standard deviation of 0.162, making clear the extent of the bank's reliance on third-party funds to finance assets. The lowest financial recession achieved by the banks was for BBAY Bank, which reached 0.182 in 2017. The highest average was only for BBOB Bank, approaching 0.800, which states the extent to which the banks in the study sample adopted the directives and instructions of both the regulatory and supervisory authorities regarding the specified ratios compared to the overall sample average of 0.597. The lowest average was only for BSUC Bank, at 0.286.

Table (2) *reveals the descriptive statistics of the potential financial recession for the banks in the study sample for the period from 2012 to 2023*

Source: *Prepared by the two researchers using financial data from the banks in the study sample and using Excel.*

As for table (3), it deals with the descriptive data relating to the ROIC (Return on Capital) indicator. It was come upon that BUND Bank achieved the highest rate of return in 2016, reaching 0.305 with a standard deviation of 0.101. The lowest rate

was for the same bank, attaining - 0.047 in 2018. The highest average for the banks in the study sample as a whole was for BBOB Bank, attaining 0.077 with a standard deviation of 0.054, compared to the overall sample average of 0.019. The lowest average was for BSUC Bank, attaining 0.016.

Table (3) brings to light the descriptive statistics of the ROIC (Resource Efficiency Index) for the banks in the study sample for the period from 2012 to 2023

Source: Prepared by the two researchers using financial data from the banks in the study sample and using Excel.

Table (4) makes known the descriptive statistics for the Working Capital Efficiency Index (ROIC). It was unearthed that BUND Bank achieved the highest rate of 0.359 in 2016, with a standard deviation of 0.118, compared to the lowest rate achieved by all banks during the study period, which was also achieved by the same bank in 2018, amounting to -0.055. This is consistent with the same bank's ROIC results regarding the highest and lowest values. The highest average was attained by BBOB Bank, at 0.090, compared to the overall sample average of 0.071. The lowest average was acquired by BSUC Bank, at 0.018.

Table (4) hints at the descriptive statistics for the ROCE (Resource Efficiency Index) for the banks in the study sample for the period from 2012 to 2023

Source: Prepared by the two researchers using financial data from the banks in the study sample and using Excel.

4.3 DATA PREPARATION AND HYPOTHESIS TESTING

Prior to tests commencement for validating the main study hypothesis, it was mandatory to apply some data preparation tests, including the following:

4.3.1 STATIONARY TESTS

Stability is a fundamental concept in time series analysis. It means that the behavior of the series does not change over time, i.e., that statistical properties such as the mean and variance remain constant. The stationability of a time series is a prerequisite for the correct analysis of time series data. Using non-stationary series leads to misleading and inaccurate estimations. To determine whether a series is stationary, a set of statistical tests known as unit root tests can be used. These tests aim to examine the stability of the series before proceeding with any analysis or building predictive models.

Table (5) discloses the stationary test results for both the Phillips-Perron Test and the Dickey-Fuller Test Augmented for the data and for the three cases: in the case of a breaker and general trend, the case of a breaker, and the case of no breaker.

Table (5) Stability Test Results PP, ADF for Panel data

Source: Prepared by the two researchers using the statistical programme Eviews.v 13 .

The results of the stability test for the study variables, instructed in Table (5), disclosing the following:

1. The results brought to light that the ROIC and ROWC series are stable when the first difference (d(1)) is taken into account in all three cases: with a breaker and a general trend, with a breaker only, and without a breaker or trend.
2. As to the AFS and PFS indicators, the results revealed that they achieve stability after taking the second difference, in the same three cases (with a breaker and a trend, with a breaker, and without a breaker). These results reflect the importance of verifying the characteristics of the time series before embarking on any financial analysis or statistical modeling to ensure the accuracy and validity of the results obtained.

The following figures point out the graphs of the AFS, PFS, ROIC, and ROWC indicators during the study period.

Source: Prepared by the two researchers using financial data from the banks in the study sample and using Excel.

Figure (1) stands for the graph of the indicators for the (4) study variables.

5. MODEL ESTIMATION AND HYPOTHESIS TESTING

The study counted on Panel Data, necessitating the consideration of three potential models to describe this data, as follows:

1. Pooled Model
2. Fixed Effects Model
3. Random Effects Model

These three models were estimated for comparison among them and selecting the most suitable model for the study data. This was done using appropriate statistical tests to determine the best model in terms of efficiency and statistical interpretation. As to table (6), it elaborates on the results of estimating the parameters of these four regression models,

which illustrate the connection between the indicators of the study variables. This relationship structures the basis for selecting the final model used in the study analysis.

Table (6) stands for *Regression Analysis Results for Three Models of Study Variable Indicators*

Source: Prepared by the two researchers using the statistical programme Eviews.v 13 .

The table displays the results of the regression analysis of the relationships between the four variable indices for the three models, unfolding the following:

1. The relationship between available financial Recession and capital utilization efficiency: The data in Table (6) for the three models makes known a statistically significant inverse relationship between the available financial Recession index and capital utilization efficiency. This means that a decrease in available financial Recession of 0.002, 0.0006, and -0.002, respectively, according to the model shown in the table above, will lead to an increase in capital utilization efficiency. Furthermore, the available financial Recession index was able to explain 37%, 34%, and 27%, respectively, of the changes in the capital utilization efficiency index. The remaining percentages are attributed to other indicators not included in the model.
2. The Relationship Between Available Financial Recession and Working Capital Efficiency: The data in Table (6) for the three models shows a statistically significant inverse relationship between the two indicators. This means that a decrease in the Available Financial Recession Index leads to an increase in the Working Capital Efficiency Index by 0.002, 0.008, and 0.002, respectively, depending on the model shown in the table above. Furthermore, the Available Financial Recession Index explained 38%, 33%, and 28% of the changes in the Working Capital Efficiency Index, respectively. The remaining percentages are attributed to other indicators not included in the model.
3. The Relationship Between Potential Financial Recession and Capital Use Efficiency: The data in Table (6) for the three models shows a statistically significant positive relationship between the two indicators. This means that an increase in the value of the Potential Financial Recession Index will lead to an increase in capital use efficiency of 0.108, 0.150, and 0.108, respectively, according to the three models shown in the table above. Furthermore, the Potential Financial Recession Index was able to explain 44%, 49%, and 52% of the changes in the capital use efficiency index, respectively, according to the three models. The remaining percentages are attributed to indicators not included in the models.
4. The relationship between potential financial recession and working capital utilization efficiency: The data in Table (6) for the three models unveils a statistically significant positive relationship between the two indicators. An increase in the potential financial recession index will lead to an increase in the working capital utilization efficiency index by 0.128, 0.180, and 0.128, respectively, according to the model shown in the table above. Furthermore, the potential financial recession index was able to exhibit 54%, 47%, and 34% of the changes in the working capital utilization efficiency index, respectively, according to the three models. The remaining percentages are attributed to other indicators not referred to in the model.

To select the appropriate model, the following criteria were adopted to compare the models:

1. Comparison between the cumulative and random models. The F-test and the Chi-square test were exploited to test the hypothesis that there is no statistically significant difference between banks, against the alternative hypothesis that there is a statistically significant difference between banks. Table (7) stands for the test results and the relationship between the four indicators of the study variables.

Table (7) : *Comparison between the cumulative and random models*

Source: Prepared by the two researchers using the statistical programme Eviews.v 13 .

Through the results of the F-test and Chi-Square test applied to compare the pooled OLS regression model with the fixed effects model, in order to determine whether there are significant differences between cross-sections, i.e., whether there are significant fixed effects between the banks, for the four relationships of the study variables, we note from the results that both tests have a probability value of ($p > 0.05$) for all relationships, and this indicates that there are no significant differences between the banks, and hence the pooled effects model is the best model.

6. DISCUSSION

Based on the results of table (6) and the comparison between the pooled and random models, reflecting the superiority of the pooled model in terms of the relationships between the study variables, the followings have been wrapped up:

1. The available capital Recession index, which reflects the accumulation of cash liquidity in the banks included in the study sample, had a negative impact, leading to a decrease in the return on capital employed by the banks. This return is an indicator of management efficiency in capital utilization and is consistent with financial theory, which explains the inverse relationship between liquidity and profitability.
2. The available capital recession index also had a negative impact on the working capital utilization efficiency index, which reveals the efficiency of bank management in achieving a suitable and satisfactory return on working capital in the banks included in the study sample. This is consistent with the findings of the first indicator and the interpretation of financial theory.

3. The potential financial recession index, which discloses the debt ratio (representing bank deposits in the study sample), had a positive impact on the capital utilization efficiency index. This indicates that bank management was able to achieve a positive return on capital utilization, which aligns with financial theory that deposits are a portion of funds reinvested through lending or investment alongside other capital components.
4. The potential financial recession index's positive impact on the working capital utilization efficiency index was not significantly different from that achieved in the capital utilization efficiency index. This serves as an indicator of the efficiency of working capital utilization and the impact of the potential financial recession index.

In line with these findings, the study's main hypothesis is ascertained. There is a statistically prominent association between financial recession and capital utilization efficiency. However, the effect is reversed for available financial recession and direct for potential financial recession. Therefore, the alternative hypothesis is uncared for.

7. CONCLUSION

This study finds that the financial recession has a heterogeneous and significant impact on the efficiency of invested capital in light of an empirical analysis covering a panel dataset of ten Iraqi commercial banks for the period 2012–2023. We find that in the presence of excess idle liquidity, the availability of financial recession impairs both return on invested capital, ROIC, and return on working capital, ROWC, suggesting inefficiencies in capital allocation when liquid resources start to accumulate above optimal operational levels. On the other hand, proxying for potential financial recession as measured by leverage and the ability to leverage external resources, an increase in financial recession is positively and significantly related to the capital use measures, indicating that banks with access to external resources and utilization of productive activities tend to increase profitability and working capital utilization. We confirm these results in line with the main hypothesis of the study and the financial theory on the trade-off nature of liquidity versus profitability and on the productive role of leverage, when used prudently. The consequence of this study is especially appealing for bank management, regulators, and investors, since the findings suggest distinguishing among forms of financial recession is critical for performance assessments and specific capital structure and liquidity management decisions. It is suggested in future study that in order to augment this analysis, the recoverable or absorbed recession may be included as an additional dimension of financial recession, the banking sectors of various emerging economies compared, and that the non-linear effects be examined in a more comprehensive manner which would contribute to the generalizability of the results.

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