# The Effect of Default Risk on Cash Flow Profitability Indicators: Analytical Research for a Sample of Iraqi Private Banks[1]

**Hanadi Seqar Makttoof**

*University of Baghdad, College of Administration and Economics, Baghdad-Iraq*

## ABSTRACT

Focusing on the negative role of default risk on banks, as it is one of the most important risks facing banks, which are difficult to determine accurately, and its reflection on the indicators of profitability of cash flows. The increasing competition between banks led to an increase in the credit facilities granted by banks, and was accompanied by an increase in exposure to the risks of default, which led to an impact on the level of performance of banks in terms of achieving the required return according to the levels of high competition. Therefore, the problem of this study focused on the extent to which the risk indicators of default affect the profitability indicators of the cash flows of the banks research sample in the profitability indicators of cash flow on the sample banks. The research sample included (10) private Iraqi banks listed on the Iraq Stock Exchange for the period (2005-2015). A set of statistical methods were used to analyze, test and measure the data by statistical programs (Ordinary Least Squares) and (Static Panel Data Analysis). As for the results of the analysis, it showed that the default of lenders exposes banks to an important credit risk that may lead to bankruptcy in the event of inability to confront it.

*Keyword: Default risk; profitability indicators; cash flow; Static Panel Data Analysis; Cross-Sectional Units.*

## INTRODUCTION

The banking sector is one of the most important financial sectors in the countries of the world, especially what it grants of credit facilities and banking services that have a direct impact on the economies of countries, which increased the fierce competition between banks in this field, and thus increased exposure to the risk of inability to pay due to the increase in credit facilities granted by them. This may affect the profitability indicators of the banks' cash flows and their financial position by depleting these flows, which can contribute to strengthening the bank's position in front of the variables and shareholders if they are exposed to instability in light of the unsuccessful credit policy that it adopts for many reasons. which necessitates the necessity of efficient management of banking risks in general and credit risk in particular by the management of banks.

The available literature referred to the concept of default risk as the possibility of the borrower defaulting on the payment of principal, interest, or both, according to the agreed contract. Low bond rates reflect a high default risk (Gitman & Zutter, 2012). (Ross, et.al, 2013) showed that the default risk is the possibility that the borrower will not pay the interest and the principal value on the due dates or will not be paid at all, as it was noted that many financial reporting agencies such as (Moody and Standard & Poor compiles and publishes the ratings of different companies, and these ratings are linked to the risk of inability to pay, and some of these securities have a very low default risk or

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[1] *How to cite the article:*

Makttoof H.S., (April, 2023); The Effect of Default Risk on Cash Flow Profitability Indicators: Analytical Research for a Sample of Iraqi Private Banks, *International Journal of Research in Social Sciences and Humanities*, Apr-Jun 2023, Vol 13, Issue 2, 63-74, DOI: http://doi.org/10.37648/ijrssh.v13i02.005

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may not have any risk, such as US Treasury bonds, as these securities are guaranteed by the government. So the default premium refers to the difference between the yield on corporate bonds and the yield on similar government bonds that do not carry a default risk. If the company remains able to pay the investor all the promised cash flows, the investor will achieve a higher return at maturity than can be achieved from government bonds. However, if the company goes bankrupt, corporate bonds are likely to provide lower returns than government bonds. Therefore, corporate bonds have the ability to Better and worse performance than government bonds, in other words, it is more risky (Bodie, et.al, 2011).

(Woods & Dowd, 2008) see the default risk as a financial risk associated with the possibility of default on the part of the counterparty, It usually arises due to the failure of customers to pay the value of the loan that was granted, the exposure to this risk increases significantly when the bank relies heavily on a small number of customers who have been granted access to large amounts of credit and the importance of default risk varies between sectors, It is high in the area of financial services, where short-term and long-term lending is essential for business. Banks benefit from the difference between the interest rate they pay to depositors and the interest rate they receive from borrowers. That is, the return on assets exceeds the cost of liabilities. To ensure the profit-making process, borrowers must repay their loans However, there is some risk represented by borrowers not paying their loans, and this is called the default risk (Cecchetti, 2008). The failure to pay a few customers leads to very large losses for the bank (Gestal & Baesens, 2009).

Therefore, the research aimed to examine and analyze indicators of default risk, and to analyze indicators of profitability of cash flows on the research sample, and the effect between default risk indicators and cash flow profitability indicators at the level of sample banks according to statistical method. Because the default risk is one of the most important risks that banks face, and it is difficult to determine it accurately in the absence of an accurate study of the credit position of borrowers, and because of its repercussions on the cash flows of banks, especially since the conditions of customers are changing, which leads to the importance of studying this risk and its impact on flows Operating cash for banks.

This research presents many contributions to the literature about default risks in the Iraqi banking sector and the moral impact of those risks on profitability indicators of bank cash flows as an important indicator of the success of the financial performance of Iraqi banks. By collecting data, represented by the Iraqi private banks listed in the Iraq Stock Exchange, which number (22) banks as a research community, (10) banks were chosen to be an intended sample, which are (Bank of Baghdad, Iraqi Commercial, Middle East, Iraqi Investment, United Investment, Al-Ahly Al-Iraqi, Babel, Sumer, Commercial gulf, and Al-Mosul for Development and Investment) and for the period from (2005-2015) in order to distinguish the sample banks with the transparency and scientific disclosure required in their final accounts. A set of statistical methods were used to analyze, test and measure the data using statistical software (SPSS V.24, Excel 2010) as the analysis represented by testing the impact hypotheses between the research variables of the research sample banks to find out the effect of each indicator of the independent variable (default risk) on Each indicator of the dependent variable (cash flow), testing it through the use of panel data analysis, which is referred to as cross-sectional units, because it deals with multiple observations or phenomena for more than a period of time and will provide an expansion of the size of the sample used, an increase in the degrees of freedom, and a reduction in the interdependence between the explanatory variable, to helps in improving the efficiency of statistical estimates through the statistical program (E-Views V.9).

The rest of this research is ordered as follows: Section 2 concisely argues the prior literature on Effect of Default Risk on Cash Flow Profitability Indicators. Section3 contain the statistics compilation and methodology. Sections 4 demonstrate practical findings followed by argument and conclusions in Section 5.

## LITERATURE REVIEW

The risk of default is often based on a miscalculation of the borrower's capabilities, because the process of granting credit requires careful study and analysis of the borrower's situation, Which includes the following elements (SAUNDERS & ALLEN, 2010): (1) Non-financial elements, including: the factor of trust between the borrower and the lender, the variables of the surrounding environment (economic, social and political), the study of the market, commodities, and the industry. (2) General financial diagnosis, which includes: examining documents, budget, Business output statement, investment plan, studying the risks of liquidity loss, low returns, and inability to fulfill financial obligations. (3) A special diagnosis: in which the appropriate ratios are calculated, which will reveal the financial reality of the borrower, which gives the greatest attention of bank.

Many researchers have discussed the impact of credit risk management on the profitability of corporate financial performance, as we find a study by (Sun & Chang, 2018) entitled "The Impact of Credit Risk on Profitability of the Commercial Banks"     Which aimed at analyzing the credit risk on the profitability of some banks in Britain, where the study concluded that there is a positive relationship between the credit risk index and the profitability of banks. While the study of the two researchers (Muriithi & Waweru, 2017) which was entitled "Liquidity Risk and Financial Performance of Commercial Banks in Kenya" The study examined the impact of liquidity risks on the financial performance of commercial banks in Kenya during the period (2000-2015), where the study concluded that there is a clear impact of liquidity risks on the profitability of banks. As for the study "Credit risk of low income mortgages" by the researcher (Fout et. al, 2018), which examined the relative credit performance of home buyers with low and medium incomes, the study found that borrowers with low and medium incomes borrow more than borrowers with high incomes, although The application of more stringent insurance standards reduces the default risk. The researcher (Atieh, 2014) examined the liquidity situation in the pharmaceutical sector in Jordan using the traditional ratios compared with the cash flow ratios over a period of six years, and concluded that there is a difference between the traditional ratios that relied heavily on the values derived from the balance sheet and the cash flow ratios that relied heavily The values derived from the cash flow statement, and there should be a comparison of the analysis between them before reaching any conclusion about the financial liquidity situation. As for the study of (Barua & Saha, 2015), it aimed to compare net income on the basis of accruals and cash flows to predict future cash flows for listed companies in Bangladesh, the research  entitled "Tradition ration VS. Cash flow based ration: which one is better performance in dictator?" The study was examined by analyzing the balance sheet, income statement and cash flow statement, cash flow ratios and income ratios based on accruals are calculated and comparison procedures between them. The research concluded that the cash flow ratios give good information about the company's financial condition, which serves as an early warning in the event of financial hardship or bankruptcy.

We note that the current research is distinguished from previous studies in that it specializes in the Iraqi banking sector, and the difference in the time period for data analysis and the study of the influence relationships between two important variables, namely indicators of default risk and indicators of profitability of cash flows.

In order to find out the extent of the impact of the default risk on cash flows, it is necessary to conduct a credit ratio analysis or default analysis with specific indicators, as credit analysts determine the ratios from the financial statements (Penman, 2013). Default risk decisions require expectations of future cash flows available to achieve the required interest and principal payments, as managers' decisions about the financial institution's strategy, customer or supplier relationships, mergers and acquisitions, and even if the financial institution offers a good business opportunity all depend on flows related to future payments. And the risks of those payments as mentioned (Wahlen et.al, 2015). The default risk measured by certain financial ratios and indicators that will be mentioned later in the applied side because they are the most indicators that help to identify the extent to which banks bear the risk of non-payment and their relationship to cash flow indicators.

The statement of cash flows occupies a great importance in the banking sector because it is the input and output of the banking Process, and this requires providing information on the movement of cash, sources of obtaining it, and changes that occur in the cash balance between the beginning and end of the period, As this statement reveals strengths and weaknesses in the bank's activity through the information it provides, as the bank's activities are classified through this list into three main activities (operational, investment and financing), which provides information to users of the financial statements in order to determine the impact of each activity on the financial position and adjusted cash and cash amounts (Bragg, 2002). The cash flow statement is a summary showing how the cash was generated and how it was spent during a certain period, and once the profit and loss account and the balance sheet are at hand, the entire cash flow statement can be issued (Howard, 2008).As (Webster, 2004) stated that the statement of cash flows is the only report that uses flow information, and changes in cash flows can explain the reason for a change in the balance sheet accounts. Therefore, the cash flow statement is important because it helps managers, investors, and creditors to perform the following functions (Hoggett, 2015) and (Harrison et. al. 2019): (1) Predict future cash flows. (2) Determine the ability to pay dividends and interest, and thus study the relationship between profitability and net cash flows.(3) It helps users develop models to estimate and compare the present value of future cash flows for different projects.(4) Evaluate the relationship of net income to cash flows.(5) Compare the operating performance of different companies. In order to know the impact of the cash flow statement on financial performance, it can be considered as a summary of cash flow in a period of time, and the cash statement shows how it was created during this period and how it was used. On the other hand, the cash flow statement provides details about how to change cash account during

a specific period. It also presents cash flow statement on a cash basis, not accruals, as in the income statement and the balance sheet. Thus, it provides a more complete picture of the company's operations and financial position. One of the important notes is that the cash flow statement it does not include any transactions or accounts that are not already recorded in balance sheet or income statement (Albrecht, et.al, 2011).

The researchers (Barua & Saha, 2015) added that cash flow statements are indicators or measures for evaluating performance because of their importance in determining the usefulness of cash flow statement ratios in the competitive business world, because the benefit of cash flow information helps to generate cash flows from internal sources, and to suggest a list of cash flow ratios for inclusion in financial analysis.

The debate revolves around profitability indicators, one of the components of cash flow indicators in addition to liquidity indicators. The profitability indicator refers to the ability of the company or financial institution to generate profits as a return on invested money, as profitability rates reflect the competitive position of the company as well as the quality of management (Rahman, 2017). Profitability ratios are an important factor in determining the importance of the rise in cash for operating activities, as the higher the net cash flows, the higher the quality and quality of the profits, because they depend on a cash basis and not on an accrual basis. Profitability ratios are determined to measure the management's efficiency in using its resources to achieve the highest returns from its operational activities compared to expenses and other costs during a certain period of time (Amuzu, 2010). Profitability indicators can be determined by the operating activity ratio, which measures the ability of the bank's operational activities to generate operating cash flows. As the higher this ratio increases, the quality of profits for the bank increases, and it decreases with a decrease in this ratio. The researchers mentioned (Stice & Stice, 2012) that the ratio of operating cash flows to net income is one of the most important dialectical relationships between operating cash flows and net income, because this ratio reflects the extent to which accrual-based accounting assumptions and adjustments are included in the calculation of net income. In general, the ratio of operating cash flow to net income has a value greater than (1) due to the presence of large non-cash expenses such as depreciation that reduce the recorded net income but does not have an impact on cash flows.

While the ratio of return on assets from operating cash flows indicates the extent of the ability of the financial institution's assets to generate operating cash flows (Robinson, et.al., 2009), While (Chotkunakitti, 2005) sees that the cash flow ratio per share refers to the operating cash flow attributed to each share, as this ratio is defined as the cash available to ordinary shareholders divided by the weighted average number of outstanding ordinary shares and its impact on cash flows as an indicator for generating profits.

## Research Problem

According to what was stated in the literature mentioned above, about the impact of default risks on financial performance and corporate profitability at the level of different countries, in addition to the different economic factors, but to the best of the researcher's knowledge, there is no study that included the impact of default risks on profitability indicators of cash flows at the level of Iraqi banks, Because the goal of banks in conducting their business and granting credit is to achieve profits and returns, but the failure of a customer or their inability to pay their obligations incurred by them on the due dates is one of the most severe and important credit risks and problems that the bank is exposed to, so the research problem centers around the impact of the risk of default Debts and financial obligations at their due date are based on the bank's cash flow profitability indicators, represented by net and operating cash flows. In the framework of the current reality of the economic and political conditions that the reality of the banking sector in Iraq is going through, banks must identify indicators that measure the risks of their customers' failure to pay their financial obligations, because this has a significant impact on profitability indicators of net and operational cash flows, and trying to avoid depleting its cash flows and putting the bank in an embarrassing position in front of the shareholders. Therefore, the research questions were the following:

1- Do default risk indicators affect the ratio of cash flows to net income?
2- Do indicators of default risk affect the ratio of cash flows to operating income?

## Research Hypothesis

Therefore, to solve the above research problem after reviewing the literature, the following hypotheses will be proposed for the relationship between default risk indicators and cash flow profitability indicators.

*$H_1$: (There is no effect between default risk indicators and the ratio of cash flows to net income) (CF/NI). from which the following hypotheses were derived:*
*$H_a$: There is no statistically significant effect of risk default indicators (ratio of total loans to total assets) on the ratio of (CF/NI).*
*$H_b$: There is no statistically significant effect of default risk indicators (ratio of total loans to total deposits) on the ratio of (CF/NI).*
*$H_C$: There is no statistically significant effect of default risk indicators (ratio of provision for doubtful debts to total equity capital) on the ratio of (CF/NI).*
*$H_d$: There is no statistically significant effect of default risk indicators (ratio of provision for doubtful debts to total loans) on the ratio of (CF/NI).*
*$H_2$: (There is no effect between default risk indicators and the ratio of cash flows to operating income) (CF/OI). from which the following hypotheses were derived:*
*$H_a$: There is no statistically significant effect of default risk indicators (ratio of total loans to total assets) on the ratio of (CF/OI).*
*$H_b$: There is no statistically significant effect of default risk indicators (ratio of total loans to total deposits) on the ratio of (CF/OI).*
*$H_c$: There is no statistically significant effect of default risk indicators (ratio of provision for doubtful debts to total equity capital) on the ratio of (CF/OI).*
*$H_d$: There is no statistically significant effect of default risk indicators (ratio of provision for doubtful debts to total loans) on the ratio of (CF/OI).*

## STATISTICS AND METHODOLOGY

To measure the research hypotheses and the correlations between the variables, the independent indicators ($X_S$) and the dependent variables ($Y_S$) were coded for the ten banks, and a number was given to them according to the sequence in the practical and statistical analysis, as shown in Table (1).

**Table1.** Variables Details

| Variables | Ratios | code | Sources |
|---|---|---|---|
| Indicators of default risk ($X_S$) | Total Loans / Total Assets Ratio | X1 | Wahlen,et.al,2015 |
| | Total Loans / total deposits | X2 | Rose,1999 |
| | Doubtful debt provision / total equity capital | X3 | Ross,et.al,2008 |
| | Provision for doubtful debt / total loans | X4 | Casu,et.al.,2006 |
| cash flow profitability indicators ($Y_S$) | CF/NI | Y1 | Kajananthan. R,2014 |
| | CF/OI | Y2 | Stice&Stice,2012 |

And it was relied on the allowance for doubtful debts in the practical aspect instead of non-performing loans because there are no non-performing loans in many of the financial statements of the banks research sample and that the allowance for doubtful debts was mentioned in the financial statements.

To examine the relationship between the research variables, the model was estimated by the three panel data methods (OLS), (LSDV), (EGLS), To reach the goal, the F-test will be used in order to compare the models to prove the research hypotheses. So in order to choose the appropriate model, the restrictive F test and Hausman must be used to indicate the extent of the impact of default risk indicators on cash flow management indicators in banks and the time period of the research sample. The restricted F is calculated through the following equation:

*$F (\alpha, N\text{-}1, NT\text{-}N\text{-}T) = (( R^2_{FEM} – R^2_{PM}) / (N\text{-}1)) / ((1\text{-}R^2_{FEM}) / (NT\text{-}N\text{-}T))$*

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So in the above equation: F Restricted F test, α level of significance (5% -10%), N cross-sectional views for banks, T time periods, $R^2_{FEM}$ coefficient of determination for a fixed effects model, $R^2_{PM}$ coefficient of determination of the synthesis model.

## FINDINGS AND DISCUSSION

The first part of the practical side of the research includes the analysis of the research indicators for the independent variables $(X_S)$ and the dependent variables $(Y_S)$ during the period (2005-2015), and according to the equations mentioned in Table (1), as it is clear from Table (2) the following:

**Table 2.** Analysis the average ratios of default risk indicators and the average ratios of cash flow profitability indicators

| banks | Average research time period (2005-2015) for the independent and dependent variables | | | | | |
|---|---|---|---|---|---|---|
| | X1 | X2 | X3 | X4 | Y1 | Y2 |
| Baghdad | 0.107 | 0.141 | 0.103 | 0.183 | 6.401 | 1.315 |
| Iraqi Commercial | 0.018 | 0.044 | 0.104 | 38.364 | -10.408 | -5.299 |
| Middle East | 0.109 | 0.159 | 0.091 | 0.311 | 2.520 | 0.786 |
| Iraqi Investment | 0.205 | 0.369 | 0.108 | 0.385 | - 4.517 | -1.704 |
| United Investment | 0.062 | 0.152 | 0.148 | 4.020 | 1.522 | 1.566 |
| Al-Ahly Al-Iraqi | 0.148 | 0.310 | 0.047 | 0.193 | 0.182 | - 0.288 |
| Babel | 0.224 | 0.546 | 0.026 | 0.095 | 0.787 | 0.284 |
| Sumer | 0.178 | 0.571 | 0.037 | 0.721 | 2.018 | - 0,071 |
| Commercial gulf | 0.093 | 0.044 | 0.066 | 0.253 | - 0.578 | - 0.339 |
| Al-Mosul | 0.153 | 0.375 | 0.037 | 0.111 | 0.342 | -1.070 |
| average | 0.129 | 0.283 | 0.076 | 4.463 | - 0.173 | - 0.482 |

Source: prepared by the researcher

Variable (X1) refers to the ratio of total loans / total assets which loans granted by banks contribute to investment of their assets. Banks can reduce the risk of default by lowering this ratio, the general average of the Iraqi private banks, research sample, was (0.129), and that the Bank of Babel is the most average bank according to this ratio, as its average was (0.224). This indicates that it is one of the most dependent banks on loans in investing its assets. As for the variable (X2), it refers to the ratio of total loans / total deposits, as it measures the amount of loans that the bank can grant to borrowers based on deposits. It aims to show the extent which bank exploits this type of financing sources and is an important measure of default risk. An increase in this ratio leads bank's Facing crises, the general average of the Iraqi private banks, research sample, was (0.283), and the Sumer Bank is the most average bank according to the ratio (0.571), this indicates that the Bank of Sumer is more dependent on deposits to be invested in loans.

The ratio of the allowance for doubtful debts / total capital owned is indicated by the variable (X3). Shows the extent to which the bank is able to cover its losses resulting from its inability to collect its loans with the balance it owns, represented by its owned capital (Reserves, paid capital and retained earnings). It appears from table (2) that the general average of the Iraqi private banks, research sample, and throughout the years of the research was (0.076), It was found that the United Bank for Investment is the most average bank according to this ratio, with an average of (0.148). This indicates that The United Bank is the most dependent bank on shareholders' rights in financing the provision for doubtful debts. The Bank of Babel is the lowest of the banks achieving this average, as it averaged (0.026). As for the variable (X4), the ratio of the allowance for doubtful debts / total loans shows the amount of the allowance for doubtful debts. which is likely not to be repaid by the borrowers on their due dates with the amounts of loans or advances borrowed from the bank, The higher the ratio, the negatively affects the bank on the one hand, and its reputation towards depositors and shareholders on the other hand, It leads to a higher default risk. Table (2) shows the results of (X4) analysis the general average of the banks in the research sample was (4.463), and the Commercial Bank of Iraq is the most average bank for the ratio, amounting to (38.364).

As for the analysis of the variables dependent on the search indicators, Table (2) showed that the results of the variable (Y1) analysis  which is the cash flow/net income ratio, Which shows the extent to which the bank's profits

are able to generate operating cash flows, as it does not take into account interest and taxes. The average for each bank and for each year of research and the general average, which amounts to (-0.173), It was found that the Bank of Baghdad is the most average bank for this ratio, amounting to (6.401). From the results of the analysis, the variable (Y2) showed the ratio of operating cash flows / net operating income, the extent to which the bank's operating activities are able to generate operating cash flows. As this ratio reflects the results of operating activities according to the accrual basis, this ratio differs from the variable (Y1) by taking into account interest and taxes. The general average for this indicator was (-0.482). The United Bank is the most average bank according to the ratio, with an average of (1.566). This indicates the ability of the bank's operational activities to generate operating cash flows, the higher the ratio, the higher the profit quality of the bank and vice versa.

As for the second part of the practical analysis, the impact hypotheses will be tested according to the panel data analysis of the research sample and its variables. Table (3) shows the results of testing the first main hypothesis (there is no effect between default risk indicators and the ratio of cash flows to net income). The effect of default risk indicators on the profitability indicators of cash flows to net income is shown in (10) banks for the period (2005-2015), with (110) observations using the P-R (Panel Regression) model. After the model was estimated by the three panel data methods (OLS), (LSDV), (EGLS), the following was observed:

It appears from Table (3), and according to the estimated (OLS) model, it was not significant according to the probability value of the test F (Prob. F -statistic) the value of which is (0.310), It is greater than the moral level (5%). And that all the indicators of the independent variable had a non-significant value, with the exception of the provision for doubtful debts / equity capital, as its function was at a significant level (10%).

**Table 3.** The effect of default risk indicators on the ratio of cash flows to net income for the research sample

| Sample: 2005 – 2015 (balanced) observations: 110 | | | | Cross-sections included: 10 | | | | | | Total panel | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **cash flow/net income** | **Random Effects Model** | | | | **Fixed Effects Model** | | | | **Pooled Regression Model** | | | |
| | **Coefficient** | **Std. Error** | **t-Statistic** | **Prob.** | **Coefficient** | **Std. Error** | **t-Statistic** | **Prob.** | **Coefficient** | **Std. Error** | **t-Statistic** | **Prob.** |
| **Constant** | 2.830 | 3.483 | 0.794 | 0.435 | 4.614 | 3.801 | 1.218 | 0.229 | 2.752 | 3.427 | 0.807 | 0.428 |
| **loans/assets** | -10.629 | 30.503 | 0.357 | 0.740 | -35.981 | 34.265 | 0.988 | 0.339 | -10.629 | 30.242 | 0.352 | 0.730 |
| **Loans / Deposits** | 5.981 | 10.350 | 0.580 | 0.570 | 14.460 | 12.201 | 1.198 | 0.238 | 5.981 | 10.150 | 0.590 | 0.570 |
| **Allowance for doubtful debts/equity capital** | - 44.728 | 25.362 | 1.833 | 0.072 | - 62.338 | 28.120 | 2.230 | 0.032 | - 43.730 | 24.015 | 1.860 | 0.068 |
| **Allowance for doubtful debts/loans** | 0.020 | 0.058 | 0.338 | 0.740 | 0.080 | 0.061 | 1.270 | 0.222 | 0.020 | 0.058 | 0.347 | 0.740 |
| **R-square** | 0.046 | | | | 0.158 | | | | 0.046 | | | |

| R-squared Adj. | 0.008 | 0.038 | 0.008 |
|---|---|---|---|
| F-statistic | 1.220 | 1.330 | 1.220 |
| Prob. (F-statistic) | 0.310 | 0.219 | 0.310 |

Source: Output of STATA software

according to Prob. And its effect is negative with the dependent variable according to the value of the regression coefficient while we find that the value of the coefficient of determination ($R^2$) is weak, amounting to (0.046).

As for the statistical interpretation according to the (LSDV) model, it appears from Table (3) that the estimated model was not significant according to the probability value of the test F (Prob. F-statistic) which is equal to (0.219), which is greater than the significant level (5%). And that all the indicators of the independent variable had a non-significant value, except for the allowance for doubtful debts/equity capital, as its function was at the level of (10%) according to the value of Prob. And its effect is negative with the dependent variable according to the value of the regression coefficient. While we find that the value of the coefficient of determination ($R^2$) is weak, amounting to (0.158).

As for the (EGLS) model, it appears from Table (3) that it was not significant according to the probability value of the F (Prob. F-statistic) test, which is equal to (0.310), which is greater than the significant level (5%). And that all the indicators of the independent variable had a non-significant value, except for the allowance for doubtful debts/equity capital, as its function was at the level of (10%) according to the value of Prob. And its effect is negative with the dependent variable according to the value of the regression coefficient. While we find that the value of the coefficient of determination ($R^2$) is weak, amounting to (0.046).

We conclude from this, the acceptance of the first main hypothesis (the null hypothesis) according to the three models because it is not significant at the level of significance (5%, 10%), meaning the acceptance of the alternative hypothesis at a rate of (0%).

Despite the insignificance of the three models, appropriate selection methods must be used to indicate the most suitable for the variables and the research sample, through the restricted F test and the Hausman test. After using the restricted F test equation and based on Table (3), it was found that the restricted F value was (1.358), which is less than the tabular F (9.96) of (1.979) at a significant level (5%) and (1.698) at a significant level (10%). Which means that the (OLS) model is more appropriate than the (LSDV) according to this test, and in estimating the impact of default risk indicators on the profitability indicators of cash flows to net income.

For the results extracted according to the Hausman test, it is clear that the statistical value Chi-Sq. Statistic amounted to (9.906) greater than tabular (9.488), so it is significant at a level less than (5%) and with a degree of freedom (4), which depends on the number of indicators of the independent variable, meaning that the (LSDV) model is the appropriate model when compared to the (EGLS) model and as shown in Table (4). It can be said that the most suitable model is the (OLS) model, although the (LSDV) model is superior according to the Hausman test.

**Table. 4** Hausman Test results

| test type | test value | Prob. | d.f. |
|---|---|---|---|
| Hausman | 9.904 | 0.042 | 4 |

Source: Output of STATA software

Table (5) shows the results of the effect of default risk indicators on profitability indicators of cash flows to operating income in (10) banks and for the period (2005-2015), as the number of observations reached (110) using the P-R (Panel Regression) model, and after If the model was estimated by the three panel data methods (OLS) (LSDV), (EGLS). The results of testing the second main hypothesis (there is no effect between indicators of default risk and the ratio of cash flows to operating income) appear as follows:

**Table 5.** The effect of default risk indicators on the ratio of cash flows to operating income for the research sample

| Sample: 2005 – 2015 observations: 110 | | | | Cross-sections included: 10 | | | | Total panel (balanced) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| cash flow/operating income | **Random Effects Model** | | | | **Fixed Effects Model** | | | | **Pooled Regression Model** | | | |
| | Coefficient | Std. Error | t-Statistic | Prob. | Coefficient | Std. Error | t-Statistic | Prob. | Coefficient | Std. Error | t-Statistic | Prob. |
| Constant | - 0.105 | 1.298 | 0.081 | 0.940 | 0.712 | 1.380 | 0.521 | 0.609 | - 0.105 | 1.244 | 0.085 | 0.938 |
| loans/assets | 4.275 | 11.361 | 0.378 | 0.709 | - 4.330 | 13.125 | 0.336 | 0.751 | 4.275 | 10.899 | 0.397 | 0.698 |
| Loans / Deposits | - 0.722 | 3.859 | 0.191 | 0.852 | 1.602 | 4.401 | 0.368 | 0.722 | - 0.722 | 3.701 | 0.195 | 0.847 |
| Allowance for doubtful debts/equity capital | -10.512 | 8.700 | 1.211 | 0.235 | -16.698 | 9.840 | 1.704 | 0.093 | -10.514 | 8.351 | 1.261 | 0.216 |
| Allowance for doubtful debts/loans | 0.018 | 0.025 | 0.868 | 0.389 | 0.048 | 0.025 | 2.158 | 0.038 | 0.018 | 0.023 | 0.9074 | 0.370 |
| R-square | 0.028 | | | | 0.186 | | | | 0.028 | | | |
| R-squared Adj. | -0.016 | | | | 0.070 | | | | -0.016 | | | |
| F-statistic | 0.709 | | | | 1.699 | | | | 0.709 | | | |
| Prob. (F-statistic) | 0.589 | | | | 0.096 | | | | 0.589 | | | |

Source: Output of STATA software

It appears from Table (5) and according to the model (OLS) that the estimated model was not significant according to the probability value of the F (Prob. F -statistic) test, which is equal to (0.589), which is greater than the level of significance (5%), and that all indicators of the variable The independent value was insignificant according to the value of (Prob.) In addition, the value of the determination coefficient ($R^2$) was weak, amounting to (0.028). t appears from the results of Table (5) that the (LSDV) model was significant according to the probability value of the F (Prob. F -statistic) test, which is equal to (0.096) at a significant level (10%), while the first two indicators were not significant, while the two indicators were The others are significant at the level of (5%) and (10%), respectively, according to the value of (Prob.), and it is noted that there is a negative effect of the third indicator (provision for doubtful debts / equity capital), and a positive effect of the fourth indicator (provision for doubtful debts In their collection of loans) with the dependent variable. In addition, it is noted that the value of the coefficient of determination ($R^2$) was weak, amounting to (0.186).

As for the (EGLS) model, it appears from Table (5) that the estimated model was not significant according to the probability value of the F (Prob. F-statistic) test, which is equal to (0.589), which is greater than the significant level

(5%), and that all indicators of the independent variable Its value was insignificant according to the value of (Prob.), and the value of the coefficient of determination ($R^2$) was weak, amounting to (0.028).

We conclude from this, accepting the second main hypothesis (null hypothesis) according to the (OLS) model and (LSDV) model because they were not significant at levels (5%, 10%), while this hypothesis was rejected in the (EGLS) model because it was significant at the level of significance ( 10%), meaning that the alternative hypothesis was accepted by (33.3%).

Despite the results achieved in Table (5), selection methods must be used between these models to indicate the most suitable for the variables of the research sample. 5) and (1.698) at a significant level (10%), which means that the (EGLS) model is more appropriate than the (OLS) model according to this test, and in estimating the impact of non-payment risk indicators on profitability indicators of cash flows to operating income.

As for the results extracted according to the Hausman test, it is clear that the statistical value Chi-Sq. Statistic was (15.999), which is greater than tabular (9.488), so it is significant at a level less than (5%) and with a degree of freedom (4), which depends on the number of indicators for the independent variable, meaning that the (LSDV) model is the appropriate model when compared to the (EGLS) and as shown in Table (6).

**Table.6** Hausman Test results

| test type | test value | Prob. | d.f. |
|-----------|-----------|-------|------|
| Hausman   | 15.999    | 0.003 | 4    |

Source: Output of STATA software

According to the results in Table (6), we find that a more suitable model is the (LSDV) model, according to the restricted F-test and the Hausman test.

**CONCLUSIONS**

The main objective of the research is to measure the effect of default risk on cash flow profitability indicators at the level of Iraqi private banks therefore; the research concluded that the failure of the lenders to pay exposes the banks to an important credit risk that may lead to bankruptcy in the event of inability to face it.

The results of the research showed that the default risk indicators do not affect the profitability indicators of cash flows to the net income of the banks as a sample when applying the three panel data analysis models (OLS) (LSDV), (EGLS) and for the research period (2005-2015). The (OLS) model is more appropriate than the (LSDV) model when the F test is restricted to the level of significance (5%, 10%).

The default risk indicators do not affect the profitability indicators of cash flows to operating income through the application of the longitudinal data analysis method, and according to the (OLS) model, and (EGLS) model at a significant level (5%). As for the (LSDV) model, the default risk Payment affects the profitability indicators of cash flows to operating income.

Therefore, we conclude from the restricted F test that the (LSDV) model is more appropriate than the (OLS) model at the level of significance (5%), and according to the Hausman test, the (OLS) model is more appropriate compared to the (EGLS) model.

According to the results, some specific suggestions and recommendations can be made, such as:
1. The need to study the situation of borrowers by the banks, the research sample, and the extent of their need to borrow, and to provide all guarantees to the bank in order to help it recover its loans in the event of default on the part of the borrower.
2. Carry out a wide study to analyze the default risks by the banks, the research sample, and prepare specialists to study everything related to granting loans in order to reduce the risk default risk.
3. The use of statistical models that have a positive impact on the variables of default risk indicators that banks are exposed to, and their impact on the profitability indicators of cash flows to operating income and net income.

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## REFERENCES

1. Abdul Rahman, Abdul Aziz A., (2017). The Relationship between Solvency Ratios and Profitability Ratios: Analytical Study in Food Industrial Companies Listed In Amman Bursa, *International Journal of Economics* and *Financial Issues, 7(2), PP. 8693*

2. Albrecht, W. Steve & Stice, Earl K. & Stice, James D., (2011). *Financial accounting*, 11th. Edition, south-Western, Cengage Learning, U.S.A.

3. Amuzu, Maxwell Samuel, (2010). *Cash Flow Ratio as A Measure of Performance of Listed Companies in Emerging Economies: The Ghana Example,* A Dissertation Submitted In Fulfillment Of The Requirement For The Degree Of Doctor Of Philosophy, Clements University, Turks And Caicos Islands , March.

4. Atieh, Sulayman H. (2014). Liquidity analysis Using Cash Flow Ratios as Compared to Traditional Ratios in the Pharmaceutical Sector in Jordan, *International Journal of Financial Research,* Vol 5, No 3.

5. Barua, Suborna & Saha, Anup Kumar,(2015). Traditional Ratios vs. Cash Flow based Ratios: Which One is Better Performance Indicator? *Journal Advances in Economics and Business, 3(6): 232-251.*

6. Bodie, Zvi & Kane, Alex & Marcus, Alan J. (2011).*Investments $9^{th}$.edition*, McGraw- Hill education, New York.

7. Bragg, Steven M., (2002). *Accounting reference Desktop*, John Wiley & Sons, Inc., U.S.A.

8. Casu, Barbara & Girardone, Claudia & Molyneux, Philip, (2006).*Introduction to Banking*, Pearson Education Limited, England.

9. Cecchetti, Stephen G., (2008).*Money Banking and Financial Market*, $2^{nd}$. Edition, U.S.A.

10. Chotkunakitti, Porntip, (2005). *Cash Flows And Accrual Accounting In Predicting Future Cash Flows Of Thai Listed Companies*, A Thesis Of Doctoral In Business Administration, Southern Cross University, Australia.

11. Fout, Hamilton, Li b .Grace, Palim, Mark. C, & Pan, Ying, (2018). Credit risk of low income mortgages, *Regional Science and Urban Economics*, https://doi.org/10.1016/j.regsciurbeco.2018.07.013

12. Gestel, Tony Van, & Baesens, Bart, (2009). *Credit Risk Management: Basic Concepts: Financial Risk Components, Rating Analysis, Models, Economic and Regulatory Capital*, Oxford University Press Inc., New York.

13. Gitman, Lawrence J. & Zutter, Chad J. (2012). *Principles of Managerial Finance*, $13^{th}$, Edition, Prentice Hall, U.S.A.

14. Gujarati, Damodar, translation and review, return, hind Abdul Ghaffar, (2015). *Econometrics - Part Two*, Mars publishing House, Saudi Arabia, Riyadh.

15. Harrison, Walter T., JR., Horngren, Charles T.Thomas, C. William, Berberich, Greg & SEeguin, Catherten, (2019). *Financial Accounting*, $5^{th}$Canadian Edition, Pearson Canada Inc.

16. Hoggett, J. R., Medlin, John, Edwards, Lew,Chalmers, Keryn, Hellmann, Andreas, Beattie, Claire & Maxfield, Jodie, (2015). *Financial Accounting,$9^{th}$ edition,* John Wiley & Sons Australia, Ltd, Australia.

17. Howard, Malcolm K., (2008). *Accounting and Business: Valuation Methods*, $1^{st}$ Edition, Elsevier Ltd., UK, CIMA Publishing, U.S.A.

18. Kajananthan, R. & Velnampy, T.,(2014). Liquidity, Solvency and Profitability Analysis Using Cash Flow Ratios and Traditional Ratios: The Telecommunication Sector in Sri Lanka, *Research Journal of Finance and Accounting,* Vol.5, No.23, PP. 163170.

19. Muriithi, Jane, & Waweru. (2017).Kennedy Liquidity Risk and Financial Performance of Commercial Banks in Kenya, *International Journal of Economics and Finance,* Vol. 9, No. 3.

20. Penman, Stephen H.,(2013). *Financial Statement analysis and security valuation $5^{th}$.edition*, McGraw- Hill Companies, Inc. New York.

21. Reports: Reports and final accounts in Securities Commission of the research sample banks for the period (2005-2015).

22. Reports: The financial reports of the Iraq Stock Exchange for the banks of research sample for the period (2005-2015)

23. Robinson, Thomas R. & Greening, Hennie Van & Henry, Elaine & Broihahn, Michael A. ,(2009). International Financial Statenent Analysis, CFA Institute, John Wiley & Sons, Inc., Hoboken, New Jersey.

24. Rose, Peter S. & Hudging, Sylvia C., (2008). *Bank Management & Financial Services, $7^{th}$.edition*, McGraw-Hill, Inc., New York.

25.  Rose, Peter S., (1999).*Commercial Bank Management*, 4th. Ed, McGraw – Hill Irwin, U.S.A.
26.  Ross, Stephen A. & Westerfi Eld, Randolph W. & Jordan, Bradford D. (2013). *Fundamentals of corporate Finance Standard 10th Edition*, McGraw-Hill/Irwin, U.S.A. NY
27.  Saunders, Anthony & Allen, Linda, (2010). *Credit Risk Measurement In And Out Of the Financial Crisis: New Approaches to Value at Risk and Other Paradigms*, 3rd. Edition, John Wiley Sons, Inc., Hoboken, New Jersey.
28.  Stice, Earl K. & Stice, James D.,(2012). *Intermediate Accounting, 18th.ed.* South-Western, Cengage Learning, U.S.A.
29.  Sun, Chuxuan & Chang, Xiaoyue, (2018). *The Impact of Credit Risk on Profitability of Commercial Banks*, Project Submitted in Partial Fulfillment of the Requirements for the degree of Master of Science in finance.
30.  Wahlen, James & Baginski, Stephen & Bradshaw, Mark,(2015). *Financial Reporting, Financial Statement Analysis and Valuation, 8th edition*, engage Learning, U.S.A.
31.  Webster, William H., (2004). *Accounting For Managers*, the McGraw-Hill Companies, Inc. U.S.A.
32.  Woods, Margaret & Dowd, Kevin,(2008). *Financial Risk Management for Management Accountants, the Society of Management Accountants of Canada (CMA Canada)*, the American Institute Of Certified Public Accountants, Inc.