The Cash Flows and Capital Adequacy Ratio of Indonesian Commercial Banks

La Madjid Samryn, Issham bin Ismail, Sudarmadji, and Kasmir

ABSTRACT

This article examines the impact of partial Cash Flows from Operating Activities (CFO), Cash Flow from Investing Activities (CFI), and Cash Flow from Financing Activities (CFF) on the Capital Adequacy Ratio (CAR) of Indonesian commercial banks. The tests are conducted over a purposive population, sample, and unit of analysis of data from five years from 2009 to 2013 of the Big-Five commercial banks in the country. The period selection considered the banks’ response post-financial crisis in 2008. The classic assumption tests assumed that all data are valid for the simple regression to test each independent variable's correlation and effect on the dependent variable using EViewS econometric software. The test results show that all CF elements correlated negatively with CAR. The CFO shows a significant impact, while the CFO and CFF have insignificant implications on CAR. The conclusions imply that the parties should pay special attention to CFI, which significantly influences the CAR. This conclusion supports the CFI’s central position as the source of long-term profit funded by the CFF. The finding indicated that post-crisis 2008, the Indonesian commercial banks improved their investment in long-term assets. The new long-term investment has not resulted in an additional cash flow and even depressed the net cash flow from investing activities. Given the necessity of banks to avoid idle funds, this study recommends future studies concerning the trade-off between CF decrease and the banks' profitability.

Keywords: Cash flow, financing activities, investing activities, operating activities.

I. INTRODUCTION

When experiencing liquidity shortages, a bank can inject substantial liquidity to make up the capital adequacy ratios. However, it is impractical for a bank to do this every time to maintain the required capital ratio. A good way is to maintain CAR through proper bank operations, by which the bank automatically shapes the capital adequacy itself. Under normal conditions, CAR will change automatically in line with changes in the value of CAR accounts. Changes to the CAR accounts can originate from operations the bank transforms into cash flows from operating, investing, and financing activities. The CFO primarily generates periodic net income, ultimately accumulated as the bank equity, which is an element of bank capital. CFI describes changes in the value of long-term assets the banks use to support long-term profits. While the CFO represents a change in the long-term source of funds, conceptually, the bank uses it to acquire long-term assets. Thus, the CFO, CFI, and CFF constitute a cash cycle that supports each other in maintaining the bank's viability.

From an accounting perspective, the amount of outstanding money in the statement of cash flows illustrates the intensity of the activities carried out by an entity. Therefore, the bank’s CFO, CFI, and CFF values might represent a group of activities in shaping bank capital.

Meanwhile, banking uses money as a medium of payment for all transactions. Thus, the flow of money might affect all accounts and measures of banking's financial performance. In the first five years after the 2008 financial crisis, Indonesian banking cash flow and CAR trends showed opposite directions. However, it raises questions about the statistical relationships between the cash flows and CAR in Indonesian banking. This article offers a case study on the partial relationship between each group of cash flows and the capital adequacy ratio of Indonesian commercial banks in order to analyze the issue.

II. LITERATURE REVIEW

A. Capital Adequacy Ratio

The ratio of capital adequacy, known as the capital adequacy ratio, is calculated by comparing total capital to the risk-weighted asset ratio. Some literature refers to it as the Capital to Risk-Weighted Assets Ratio since it includes risk-weighted assets (RWA) as a divisor in its computation (CRAR). Capital adequacy was defined by Dhandha and Rani (2010) as a bank's capital ratio to its total risk-weighted assets, which expresses the percentage of total assets financed by equity capital, demonstrates the capacity to withstand losses in the value of the assets (Sangmi & Nazir, 2010), lowers financial risk, and ensures bank survival (Farag et al., 2013). Bank capital adequacy prevents potential bank failures by maintaining shareholders' equity and other securities as backups against the financial assets risk (Eun & Resnick,
In order to match the cost of credit losses with a capital buffer to absorb such losses, Laiola (2015) asserts that capital adequacy regulation also seeks to increase capital.

Capital is the main element of the capital adequacy ratio, distinguished into Tier 1 and Tier 2 capital (Ramona, 2013). The common term of capital is the shareholders’ equity (Elliott & Elliott, 2017), which contains the funds contributed by the shareholders through their purchases of the stock plus accumulated, retained profits (Hubbard & O’Brien, 2012). Bank capital is the net worth, which is the disparity between all of its assets and liabilities (Mishkin & Eakins, 2023), which is a combination of shareholder share purchases and the profit or loss percentage kept during operations. In addition, Farag et al. (2013) defined capital as long-term money supplied to a bank largely by its owner and made up of stock, reserves, and retained earnings, excluding off-balance-sheet risk (Rose & Hudgins, 2013).

Banks need significant capital to combat unpredictable swings in business risk (Maurin & Toivanen, 2015). Lessamo (2020) comes to the conclusion that the main purposes of capital are to support the bank’s operations, serve as a buffer against unforeseen losses and drops in asset values that might otherwise force a bank into failure, and offer protection to depositors and debt holders in the case of liquidation.

Tier 1 capital is loss-absorbing and includes equity (Adesina & Mwamba, 2016), preferred stock, and general reserves, which make up the pure form of regulatory capital (Belém & Gartner, 2016). Non-common equity is included in additional Tier 2 capital in long-term obligations with subordinate repayment rights and long-term subordinated bonds (Kishore, 2017). According to Davies (2015), bank capital acts as a buffer against asset value drops that could compel a bank to run out of assets to cover its liabilities, leading to a lack of liquidity and possibly even insolvency. To ensure the availability of bank liquidity, bank management must decide how much suitable capital to retain and look for sources of funding with reduced costs and risks (Bell & Hindmoor, 2017).

The risk-weighted asset is a formula to identify the minimum capital amount a bank must provide to avoid insolvency and protect its customers from banking risk. According to BCBS, to tighten the minimum bank capital and make it more conservative, a capital plan should assess the effect of credit risk, earnings at risk, and liquidity risk on capital (Brew, 2011). In the early stages, the Basel Committee on Banking Supervision expects the banks to meet the Common Equity Tier 1 to RWAs of 3.5%, Tier 1 capital to RWAs of 4.5%, and total capital to RWAs of 8.0%. Basel II simplified the banking risks into credit, market, and operational risks to determine the RWA (Roy, 2016).

B. Cash Flow from Operating Activities

Cash flow from operating activities includes the changes in working capital related to corporate activity in the form of cash conversion into short-term assets available to fund operating activities (Kuprina & Chernenko, 2018). Cash flow for operating activities of banks includes interest payments on loans to customers, loan payments, and returns on equity securities investments (Jeppson et al., 2016). The cash flowing from operating activities and net income generation is connected to working capital accounts, including receivables, prepayments, short-term obligations, and accrued expenses (Ross et al., 2013). This cash flow provides the cash available to the bank to finance the investment in the new earning assets, dividends to the shareholders, debt repayment, repurchase the treasury stock, and inject new liquidity (Kieso et al., 2020).

The bank’s ability to produce liquidity from operating activities, raise the value of the stock market, or sell other assets that are deemed unproductive could contribute to its financial flexibility without interfering with the continuance of bank operations (Schroeder et al., 2016). The change in working capital for net cash flows from operations is absorbed by the increase in net operating assets, which also increases assets (Wahlen et al., 2018). Cash flow comprises the cash inflows and outflows related to transactions and other financial events resulting in the net income and establishing the financial flexibility the banks adopted to calculate the cash available to fund investing and financing activities (Kieso et al., 2020). In addition, banks used liquid assets to raise profit, being captured into the bank equity afterward to reduce risks (Adesina & Mwamba, 2016), maximize profits, and foster bank capital and liquidity (Molnár, 2018).

According to Rahman and Younus (2017), the banks account for the cash receipts and disbursements for short-term assets and liabilities. Hence, this cash flow comprises short-term credit channeling, current deposit revenues from customers, as well as cash receipts and disbursements for maturing interest, and loan principal repayments to increase annual profits and reduce liquidity risks. In addition, Jeppson et al. (2016) elaborated that the cash outflow is often caused by costs for purchasing merchandise, paying employees, making government payments, paying interest, and paying supplies for other relevant expenses. Further to the above descriptions, Petruska (2011), confirmed that profit is a reliable predictor of a future operating cash flow for a bank. Huang and Zhang (2012) described that current profitability is closely related to the current earnings and the use of previous capital investments, by which conceptually, the CFO is sequentially related to the CFI and CFF and simultaneously stimulates the annual Net Interest Income (Choudhry, 2011) ability from the different financial sides.

Qin and Dickson (2012) asserted that commercial bank profitability results from the amount of capital it maintains, the ability to absorb losses from the outstanding loan, supporting asset growth, and consistency of compliance in paying the returns to investors. The operating cycle begins with cash disbursements to acquire goods or services until the cash collection settlement for the company from the operational transactions (Ross et al., 2013). Specifically, the primary source of bank profit is the difference in interest income from the outstanding loan with interest expenses to be paid to the depositors and on the debts to the creditors (Qin & Dickson, 2012).

C. Cash Flow from Investing Activities

Due to the company’s ongoing restrictions on turning its investment assets into cash, Dasgupta et al. (2011) claimed that cash flows from investing activities involve cash in and
out for acquiring long-term assets, loan provision, and recollection, as well as acquiring and retiring productive long-term assets. In conjunction with the cash flow, acquiring bank assets requires using funds, as the cash outflow depends on the frequency and scale of day-to-day transactions influenced by the bank size (Regehr & Sengupta, 2016). Banks maintain a variety of assets to support their investing activities, including tangible assets like buildings and other physical equipment and liquid assets like cash, central bank reserves, or government bonds (Farag et al., 2013).

According to Wahlen et al. (2018), the firms purchase these investments by investing extra income in the securities of other companies, such as money market funds, private enterprises, government bonds, and stocks. These securities are also referred to as financial assets. Dasgupta et al. (2011) claim that long-term asset investments are sensitive to cash flow since they cannot be expected to consistently withstand financial risks. Investors invest their money by entering into agreements regarding the execution's date, the applicable currency, the interest rate or other compensation, the investment period, and the payment's risks and anticipated outcomes (Reilly & Brown, 2012).

The banks accounted for net cash flow from investing activities as the difference between cash receipts from the long-term assets retirement against the payments related to the long-term asset purchase (John et al., 2015). From an accounting standpoint, investing activities entail long-term asset acquisition, such as routing a loan and collecting it, as well as investing to buy and sell any productive assets that provide service for more than one year (Kieso et al., 2020). Banks borrow money throughout the fundraising process by issuing long-term debt securities, receiving cash as a source of liquidity, and then reinvesting the funds in long-term assets (Jeppson et al., 2016).

Banks can manage an investment portfolio, long-term financing, future cash receipt, and profitability expectations by including risk accounts in CAR computation (Singh & Vyas, 2011). Lending to other companies, buying bonds or equity securities from other people, and buying real estate, factories, and equipment are just a few of the investing-related capital outflows. In the long run, cash flow is impacted by investment return since it raises capital by increasing capital through an accounting cycle into equity capital (Ostergaard et al., 2010). In contrast, cash inflows consist of receipts from loans that have been paid back, sales of bonds and stock in other corporations, and the sale of real estate, manufacturing facilities, and equipment (Gibson, 2011).

Conversely, interest income derived from debtors is a source of profit (Sepe, 2012), which the banks reported as the element of cash flow from operating activities. The investment includes a financial commitment to buy future economic benefits or a group of assets related to the ownership of different assets using the cash from third parties' long-term funding. If banks use their capital for new investments, future liquidity and investment capacity will be automatically reduced (Ostergaard et al., 2010). In the statement of cash flow, this portion of cash details the cash transactions for buying and selling assets with extended economic valuable lives, typically exceeding one year (Warren et al., 2016).

D. Cash Flow from Financing Activities

Long-term liabilities to creditors and shareholder equity are the main components of cash flow from financing activities (Siddiqua & Hossan, 2012). Among the financing activities are cash receipts and payments for bonds and other long-term debt, as well as receipts from the sale of shares, payments for share redundancy, and dividend payments to shareholders (Kieso et al., 2020). Cash flow from financing activities explains the acquisition of financial resources from the owner, the flow of refunds to owners of their investments, lending activities, and their repayment back to long-term creditors (Schroeder et al., 2016).

The role that cash flow from financing activities has in creating banks' capital is a crucial component (Park, 2018). According to Gibson (2011), the sale of bonds, mortgages, money orders, and other short- or long-term loans are among the cash inflows from liabilities, whilst the payments on the maturing debt amounts are the cash outflows. In addition, financing activities refer to the business and legal entities the company uses regarding the source of business funding in the long term (Subramaniam, 2014).

DeBoeuf (2010) confirmed that free cash flow, a measure of cash available for distribution to a company’s shareholders and creditors, is predominantly affected by the operating income in the statement of profit and loss and the asset side of the balance sheets. In conjunction with the net worth, the bank's capital also serves as the cushion for the impairment of assets that can press banks into insolvency (Pervin & Nowreen, 2018).

The capital equity group is also partly constituted by retained earnings that stem from periodic net income as a result of its operating activities. Therefore, cash flow from financing activities states the summary of cash transactions related to the shareholders' ownership and loan receipts from third parties and their payments, but available for investing activities (Warren et al., 2016). Therefore, management makes decisions about the combination of sources of financing by considering the advantages and disadvantages that influence the cash flow or profitability (Parrino et al., 2012).

Regarding the regulation, banks require minimum capital liability to meet the rules set by the banking authorities in which a bank operates its business (Stowell, 2013). In addition, Bellouma (2010) found that net liquidity balance is positively associated with increased profitability while working capital requirements are negatively related to corporate capital investment.

E. Cash Flow and Capital Adequacy Ratio Linkage

In accounting reports, the banks capitalized the gains and losses from the long-term assets withdrawal and the income from operating activities into retained earnings in the equity capital (Harrison et al., 2013). The gain or loss is re-capitalized through an accounting cycle into equity capital when the investment is sold or retired from normal usage (Gibson, 2011). The relationship between the cash flow and capital adequacy ratio might be found in the accounting procedures and the fund flow traces (Sepehrdoust & Aeini, 2014).

Adesina and Mwamba (2016) confirmed that long-term debt and equity are elements of bank capital which become
the core accounts in the formula of capital adequacy ratio (Xiong & Wang, 2018). However, long-term liabilities generate interest expenses (Teres, 2018), reducing the cash flow of operating activities. Regarding cash disbursements, the CFO is the primary source of funds to pay off the principal and interest on long-term debt, as well as dividend payments (Afza & Mirza, 2010) and withdrawal of outstanding capital stocks of the CFF. Rasoolpura (2014) found that the cash flow coverage ratio correlates with capital structure. Hazar et al. (2018) accounted for the capital in calculating the CAR. The banks funded long-term investments with long-term third parties funds or shareholders’ equity (Bakke & Whited, 2010).

The regular CF and CAR relationships appear through cash-in and cash-out distributions in operating, investing, and financing activities (Siddiqua & Hossan, 2012). Al-Khoury (2012) found a positive and significant impact of capital on liquidity. On the other hand, issuing shares implies the capital strength to hold the financial risks and the bank’s survival (Calomiris et al., 2013). From this viewpoint, Qin and Dickson (2012) showed that capital structure correlates with profitability, and an overall liquidity ratio shows many contributions to the profitability of commercial banks. Hence, Sepehrdoost and Aeini (2014) confirmed that cash flow correlates with the CAR.

III. THIS STUDY

In connection with the research problems and literature reviews described above, this study raises questions about whether the partial:

- Cash flow from operating activities has a positive and significant impact on the capital adequacy ratio,
- Cash flow from investing activities has a positive and significant impact on the capital adequacy ratio,
- Cash flow from financing activities has a positive and significant impact on the capital adequacy ratio.

This study examines whether the partial

- Cash flow from operating activities,
- Cash flow from investing activities,
- Cash flow from financing activities has positive and significant impacts on the capital adequacy ratio.

Furthermore, the following three hypotheses are put forth as provisional assumptions for the above research questions and objectives:

1. The cash flow from operating activities positively and significantly influences the capital adequacy ratio (H₁).
2. The cash flow from investing activities positively and significantly influences the capital adequacy ratio (H₂).
3. The cash flow from financing activities positively and significantly influences the capital adequacy ratio (H₃).

IV. METHODOLOGY

This purposive quantitative study uses secondary data for five years on CFO, CFI, CFF, and CAR from the five largest Indonesian banks after the 2008 financial crisis. Data analysis used simple regression, which was processed using EViews software. The selection of research location and object considered the commercial banks’ vulnerability in facing the recent financial crisis of 2008. The banks’ size is based on the total assets rating. This study identified the CAR as the dependent variable and CFO, CFI, and CFF as the independent variables. Table I describes the characteristics of each variable.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Description</th>
<th>Formula</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAR</td>
<td>(Tier 1 Capital + Tier 2 Capital)/(Credit Risk+ Market Risk + Operational Risk)</td>
<td>$\frac{TC + TC}{CR + MR + OR}$</td>
</tr>
<tr>
<td>CFO</td>
<td>Net income + Non-cash expenses – (Increase in Current Liabilities- (Decreases in Current Assets + Increases in Current Assets)</td>
<td>$NI + NCE + \Delta CL \ + \Delta CA$</td>
</tr>
<tr>
<td>CFI</td>
<td>Acquisition of Long-Term Assets + Gains from Long-Term Assets Retirement – Loss from Long-Term Assets Retirement (Stock Issue – Stock Withdrawals) – Dividend + (Acquisition Long-Term Debt – Long Term Debt Repayment) + (Capital Gain – Stock and LTD Discounts) + Other Capital</td>
<td>$ALTA + GLTAR + LITAR \ + \Delta SD + \Delta G + \Delta C$</td>
</tr>
<tr>
<td>CFF</td>
<td>Formula</td>
<td></td>
</tr>
</tbody>
</table>

The literature review discusses the variables showing the relationship between the cash groups and banking risk and capital elements. Therefore, this study suspects any shortcut correlational relationship between CF and the CAR. Consistent with the research questions, objectives, and hypotheses, the relationship between each cash flow group and CAR is visually illustrated in Fig. 1.

In order to solve the intervariable relationships, this study applied the following regression and t-test models:

$$CAR = a_1 + b_1 CFO$$  \hspace{1cm} (1)

$$CAR = a_2 + b_2 CFI$$ \hspace{1cm} (2)

$$CAR = a_3 + b_3 CFF$$ \hspace{1cm} (3)

$$t = \frac{\bar{x}_1 - \bar{x}_2}{Sp \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}$$ \hspace{1cm} (4)

Drawing a conclusion for each hypothesis on the partial CF and CAR relationship, this study adopts the criteria of accepting $H_0$ and rejecting $H_a$ if $t_{\text{obs}} < t_{\text{table}}$, and conversely accepting $H_a$ and rejecting $H_0$ if $t_{\text{obs}} > t_{\text{table}}$. Concluding the hypothesis on the simultaneous CF and CAR relationship, this study adopts the criteria of accepting $H_0$ and rejecting $H_a$ if $F_{\text{obs}} < F_{\text{table}}$, and conversely accepting $H_a$ and rejecting $H_0$ if $F_{\text{obs}} > F_{\text{table}}$. The statistical analyses are conducted using EViews econometric software.

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V. ANALYSIS AND RESULTS

A. Data Description

This section describes the statistical figures on the research variables consisting of the minimum, mean, median, maximum, and number observations of CFO, CFI, CFF, and CAR data. Consistent with the five-year period and the big five banks as the units of analysis, the number of observations for the subsample is 25. The data analysis results in acceptable standard deviations for each variable.

The capital adequacy ratio (CAR) that is accounted for below includes the average percentage of the banks’ risk-weighted assets of total capital, spread from 14.06% in 2009 to 15.83% at the end of 2013. Furthermore, the CFI moved from IDR 12,304.60 million at the end of 2009 to IDR 3,171.10 million at the end of 2013. The CFI moved from IDR 4,517.40 million at the end of 2009 to IDR 8,880.54 million at the end of 2013. Finally, the CFF includes the average net cash flow from operating activities moved from IDR (221.40) million at the end of 2009 to IDR (2,214.94) million at the end of 2013.

The spread of CFO, CFI, CFF, and CAR from 2009 to the end of 2013, with a sample size of 25, shows acceptable standard deviations. The CAR summary shows a minimum of 12.20% during the five years from 2009 to 2013. At the same time, the CFI spread with a mean of 7918.480 million, a median of 6085.00 million, a maximum of 54335.00 million, and a minimum of -37228.00 million. The CFI included in the accounts covers the banks’ average net cash flow from investing activities. During the observation period from 2009 to 2013, the CFI moved in the mean of -2283.72 million, median of -2,694.00 million, maximum of 13,176.00 million, and minimum of -12,569.00 million.

The CFF in the accounts below covers the average net cash flow from the operating activities of the banks. With the observation of a year period from 2009 to 2013 on the five units of the banks, the statistical number of observations is 25. As a result, the CFF moved in the mean of 245.28, median of 553.00, maximum of 14820.00, and minimum of -7070.00. Table II summarizes the data.

<table>
<thead>
<tr>
<th>CAR</th>
<th>Mean</th>
<th>Median</th>
<th>Maximum</th>
<th>Minimum</th>
<th>Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>15.36</td>
<td>14.96</td>
<td>20.87</td>
<td>12.2</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>CFO</td>
<td>7918.48</td>
<td>6085</td>
<td>54335</td>
<td>-37228</td>
<td>25</td>
</tr>
<tr>
<td>CFI</td>
<td>-2283.72</td>
<td>-2694</td>
<td>13176</td>
<td>-12569</td>
<td>25</td>
</tr>
<tr>
<td>CFF</td>
<td>245.28</td>
<td>-1553</td>
<td>14820</td>
<td>-7070</td>
<td>25</td>
</tr>
</tbody>
</table>

B. Reliability Test of the Data

The classical assumption tests indicate no multicollinearity, autocorrelation, or heteroscedasticity between the banks’ CF and CAR data. The linearity test shows that cash flows as independent variables and capital adequacy ratio as the dependent variable fulfill the linearity requirements. Therefore, the overall CFs and the CAR are applicable in the regression analysis by reinforcing the normality test results. Following the above criteria, the banks’ CF and CAR data meet the requirements for being used in the subsequent regression analysis. A summary of the data reliability tests is presented in Table III.

<table>
<thead>
<tr>
<th>Types of Test</th>
<th>Criterion of Acceptance</th>
<th>Value</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multicollinearities</td>
<td>VIF &lt; 10</td>
<td>CFO = 1.0354</td>
<td>No Multicollinearity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CFI = 1.1335</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>CFF = 1.0977</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>CAR = N/A</td>
<td></td>
</tr>
<tr>
<td>Autocorrelations</td>
<td>D &gt; dU</td>
<td>1.9024 &gt; 1.7574</td>
<td>No Autocorrelation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No Heteroscedasticity</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Independent variables are linear against the dependent variable</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Normally distributed</td>
<td></td>
</tr>
</tbody>
</table>

C. Hypothesis 1 - Cash Flow from Operating Activities and Capital Adequacy Ratio

The link between CAR and CFO, previously formulated in Equation (1), was shown in this study. The regression of CAR = 15.49105 – 1.60E-05*CFO was discovered by the EViews statistical tool for the association between CFO and CAR of the banks’ pool. The regression also produced a statistical residual sum of squares of 59.6380, a probability t-statistic of 0.4521, and a t-statistic of -2.2128.

Concerning the banks’ CAR spreading, it proves that the CFO and CAR changed in the opposite direction. The skewness of these growths in the CAR and CFO relationship regression represents the negative value of the b coefficient for CFO in the amount of -1.60E-05. The negative factor of the CFI represents its inverse correlation against the CAR. The equation means each billion rise of CFO decreases CAR by -1.60E-05%. Conversely, a decrease of Rp 1 billion in the CFI decreases the CAR by -1.60E-05% under the constant level of about 15.49105%. It implies that the CAR will be lower if the CFO is greater, and vice versa.

The average CFO rose by 83.24% times the rate of CAR growth. According to the data, the CAR increased by 0.32 points, or 2.07%, from 15.40% at the end of 2009 to 15.72% at the end of 2013. In other words, the CAR increased on average by 0.41% for a 0.06 annual increase.

According to the results of statistical t-tests, the changes in CFI did not significantly influence the CAR. Plotting the number of observations n = 25, k = 2, significance level α = 5% on the two-tail table of t distribution results in a t-table of 2.069. Concerning the significance criteria, with t-statistic < 2.723 < t-table 2.069, this study concluded that the CFI had no significant influences on the CAR.

D. Hypothesis 2 - Cash Flow from Investing Activities and Capital Adequacy Ratio

The CAR and CFI correlation, previously formulated in Equation (2), was tested in this study. The banks’ CFI and CAR relationship was determined by an EViews statistical tool, and the results revealed that CAR = 15.0949 - 0.000118*CFI. The inverse correlation between CFI and CAR is shown by the CFI coefficient’s negative value. The regression analysis reveals that the CFI's negative value of -0.000118 indicates the inverse CAR changed to the CFI.
According to the regression, when the CFI fell by Rp 1 billion, the CAR rose by -0.000118% simultaneously. Conversely, when the CFI rose by Rp 1 billion, the CAR fell by -0.000118% below the constant level of 15.0949. In other words, the smaller the CFI, the greater the CAR, and vice versa.

Additionally, the regression produced a residual square sum of 205.3125 and a \( t_{\text{statistic}} \) of 3.477. The results of statistical tests show that the changes in CFI have a substantial impact on the CAR. Table = 2.069 is the output of the two-tail table of the \( t \) distribution with \( n = 25 \), \( k = 2 \), and \( \alpha = 5\% \). Hence, this study concludes that CFI considerably influences the CAR based on the significance criteria, where \( t_{\text{statistic}} \) 3.477 > \( t_{\text{table}} \) 2.069.

According to the average cash flow and capital adequacy ratio trend, the CAR increased from 14.0 to 15.83% between 2009 and 2013. In brief, the CAR increased 1.77 points, or 12.56%, for average growth of 2.51 points, or 0.35%, per year.

**E. Hypothesis 3 - Cash Flow from Financing Activities and Capital Adequacy Ratio**

The CAR and CFF correlation, previously formulated in Equation (3), was tested and confirmed in this study. The regression of \( \text{CAR} = 15.36619 - 7.30E\text{-}06*\text{CFF} \) is displayed by the EViews statistics tool for the relationship between variables. The equation indicates that every Rp 1 billion rise in the CFF potentially decreases the CAR by \(-7.30E\text{-}06\) under the constant level of 15.36619%. Conversely, a decrease of Rp 1 billion in the CFF might raise the CAR by \(7.30E\text{-}06\). The skewness of these growths represents the negative value of the \( b \) coefficient in the amount of \(-7.30E\text{-}06\). Conversely, the CAR showed positive increases in the same period. It means that the CAR and the CFF are changing in the opposite direction.

The regression produced the statistical residual square sum of 79.10564 and a \( t_{\text{statistic}} \) of 1.273. The \( t_{\text{table}} \) of 2.069 was discovered using the two-tail table of the \( t \) distribution with \( n = 25 \), \( k = 2 \), and \( \alpha = 5\% \). Due to the lower \( t_{\text{statistic}} \) of 1.273 against the \( t_{\text{table}} \) of 2.069, this study concludes that CFF has no significant impact on the CAR.

Regarding the CAR spreading, it is noticeable that the CFF showed adverse changes. On the other hand, the CAR showed positive increases in the same period. The average CAR decreased by 137.11 times growth in CAR. The CAR rose by 0.32 points or 2.07% from an average of 14.06% at the beginning of 2009 to 15.83% at the end of 2013. Therefore, it resulted in an average growth of 2.51% for 0.35 points per year.

**VI. DISCUSSION**

Using the Ordinary Least Squares (OLS) for partial regressions, significant impacts appear in the partial relationship between CFI and CAR. However, CFI and CFF do not seem to affect the CAR significantly. The regression outputs for each equation representing the univariate partial CFO, CFI, and CFF relationship against the CAR are summarized below.

**TABLE 4. CASH FLOWS AND CAPITAL ADEQUACY RATIO RELATIONSHIPS 2009-2013**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Equation</th>
<th>( t\text{-stat} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>CFO, CAR</td>
<td>( \text{CAR} = 15.49105-1.60E\text{-}06*\text{CFO} )</td>
<td>0.4521</td>
</tr>
<tr>
<td>CFO, CAR</td>
<td>( \text{CAR} = 15.09492-0.000118*\text{CFI} )</td>
<td>0.0393*</td>
</tr>
<tr>
<td>CFF, CAR</td>
<td>( \text{CAR} = 15.36619-7.30E\text{-}06*\text{CFF} )</td>
<td>0.9190</td>
</tr>
</tbody>
</table>

Note: *\( p = 0.05 \).*

This study is essential because it forms the basis for mapping sources and uses of cash affecting the CAR. Conceptually, a high CAR indicates stronger bank capital than a low CAR. However, a bank that maintains a too-high CAR is very conservative and sacrifices the opportunity to obtain interest income due to retained liquidity as a capital buffer.

The CFI, which has a significantly negative correlation with CAR, shows that after the 2008 crisis, Indonesian commercial banks positioned themselves more as banks that improve the investment climate, even with the consequence that many funds do not generate cash in the short term.

The negative CFI correlation with CAR indicates that banks increase CAR by increasing spending on long-term assets. The strange thing is that even though the banks funded CFI with capital, which is a component of CAR, the CFF has a negative correlation with CAR, even though it is not statistically significant.

The result of data processing by EViews software showed each individual CFO, CFI, and CFF are closer to the level of 0.5, indicating moderate impacts on CAR. The coefficient of determination, denoted as \( r^2 \), of the CF of the respective commercial banks of Indonesia against the CAR is \( \text{CFO} = 0.5164, \text{CFI} = 0.6036, \) and \( \text{CFF} = 0.5017 \).

The \( R^2 \) of this study represents the correlation coefficient that implies the linearity of the cash flow and capital adequacy ratio. The results sequentially show the coefficient correlations of CFI of 0.7769, CFO of 0.7186, and CFF of 0.7083 against the banks’ CAR. Each coefficient of correlation shows a level that is close to 1.

Supporting the statistical tests, Fig. 1 and 2 show the annual trend of average CFO, CFI, CFF, and CAR development from 2009 to 2013, respectively.
From the accounting perspective, a decrease in CFI implies an increase in long-term assets. A reduction in CFO means the banks use cash from net income to fund current assets and pay off current liabilities. A decrease in CFF implies long-term debt settlement. On the other hand, an increase in CAR when CFO, CFI, and CFF decline indicates a significant reduction in the banks’ Risk-Weighted Assets. Conceptually, a decrease in the cash balance shows the banks’ tendency to avoid hoarding cash but instead channel it for commercial purposes that might contribute to profitability.

VII. CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

The analysis of this study concludes that the three elements of cash flow are all negatively correlated with CAR, and only CFI has a significant influence on CAR. This study provides additional tools to estimate the changes in CAR through the intensity of cash receipts and disbursement information available in the cash flow statements. Because cash is a means of payment that acts as an intermediary for all banking transactions, this study’s conclusions provide the following managerial and theoretical implications.

1) Managerial Implications: Indonesian commercial bank stakeholders need to pay specific attention to the significant negative effect of CFI on CAR. For a trade-off between the short-run cash flow decrease and increase in productive assets that might contribute to the long-term bank profitability, it needs to consider the maximum and minimum cash flow provision limits for funding CFI to get an ideal CAR. In addition, the interest parties need to pay attention to more productive CFI spending objects. A high CFI indicates an effort to increase total long-term assets, but that increase is not followed by a rise in abundant cash flow. It is necessary to plan for CFF to spend on CFI to get a CFO that is profitable in the long term.

2) Theoretical Implications: Indonesian commercial banks require further studies on the negative relationship between cash flows and the CAR because, in the five years after the financial crisis of 2008, CAR has continued to increase while cash flows decreased. The banks show higher cash flow spending. On the other hand, the receipts from each CF group did not exceed the expenditures. Given the banks’ necessity to avoid idle funds, this study recommends future studies concerning the trade-off between CF decrease and the banks’ profitability.

CONFLICT OF INTEREST

The authors declare that they do not have any conflict of interest.

REFERENCES


