

Article

# Analysis of Cash Flow Patterns of Companies that Indicate Financial Distress

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**Abstract:** This study aims to analyze cash flow patterns in companies experiencing financial distress. Financial distress is a condition in which a company faces serious financial difficulties, and this condition can affect the overall financial health of the company. This study uses a quantitative analysis method to identify cash flow patterns in companies that are experiencing financial distress by collecting financial data from several healthy companies and identified as experiencing financial distress in the 2020-2022 period based on secondary data from the IDX financial statements. The results of this study are expected to provide a deeper understanding of cash flow patterns in companies experiencing financial distress and several other factors that influence it. The implications of this analysis are expected to assist in designing appropriate financial improvement strategies to overcome financial distress situations as well as provide insight to stakeholders regarding actions that can be taken to improve the company's financial health in the future.

**Keywords:** management, economics, finance, financial distress, cash flow

## 1. Introduction

The success of a company as it survives and grows can be determined by its capacity to generate cash into the business. First of all, a positive cash flow allows a company to meet its financial obligations, such as paying employee salaries, paying debts, and meeting various operating expenses. In this way, the company can ensure the continuity of its operations and avoid the risk of failure that can occur if financial obligations cannot be met. In addition, sufficient cash flow allows companies to invest and expand. Companies that are able to invest funds in research and development, acquisitions, or market development can increase their competitiveness and create long-term growth opportunities. By having sufficient financial resources, companies can adapt to changes in markets, technology and industry trends. Furthermore, positive cash flow also provides financial flexibility. Companies with cash reserves can better respond to sudden changes in the business environment, such as economic crises, market fluctuations or regulatory changes. This financial flexibility allows companies to make the right strategic decisions at the right time.

Chiang (2019) defines financial distress as a condition in which the liquidation value of the company's assets is less than the total nominal value of creditor bills. In line with Chen Yehning, Purnanandam (2008) also argues that financial distress is a situation where the company does not have the funds to pay its financial obligations while at maturity. Financial distress includes four terms with different definitions: failure, default, insolvency, and bankruptcy. Failure means that a company's revenues are less than its costs or the realized rate of return on an investment is less than the return on comparable investments. Technical default occurs when a company breaches a debt covenant, while

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insolvency occurs when a company fails to meet periodic repayment of loan obligations. Bankruptcy refers to the inability to meet current obligations due to liquidity constraints. From these definitions it can be concluded that basically financial distress refers to a condition in which a company or individual faces serious financial difficulties or is unable to meet its financial obligations, including situations where: (1) the company or individual cannot pay its debts; (2) has significant liquidity problems; (3) faces financial pressures that may threaten operational viability or long-term financial viability.

Thus, a company's capacity to generate consistent and sufficient cash flow is a key factor in determining its success. A positive cash flow not only supports operational continuity, but also provides the company with resilience to economic uncertainty and the opportunity to grow and develop in the long term. Conversely, when cash generated from business activities is insufficient, the company has the potential to experience financial distress to bankruptcy and the opportunity to gain a bad reputation for the company in the future. This is because when the company is facing financial distress, the potential for shareholders to withdraw their shares is higher, and this can also deter potential shareholders from investing in the company (Khaliq et al., 2014).

Cash flow plays a crucial role in analyzing the financial health of a company, one of which is detecting the potential for financial distress. When cash flow conditions are poor, it indicates that the company is experiencing a gap between the cash flow generated and the obligations or costs that must be met, so the risk of financial distress increases. Companies can be said to experience financial distress when they face cash flow problems, or cash shortages in their operations, when they are unable to generate sufficient cash to replace current liabilities (Outcheva, 2007). Because in this situation, companies may find it difficult to meet their financial obligations, such as debt payments or operating costs, potentially disrupting operational activities, which in turn can trigger financial distress.

## 2. Materials and Methods

There are two components in the cash flow statement that are able to predict distressed financial conditions, namely cash flow from operations. Therefore, the cash flow ratio is able to be an indicator that can be used as a predictor of financial distress and ultimately predict bankruptcy situations. The cash flow statement provides useful information about the company's ability to generate cash from operating activities, make investments, settle liabilities, and pay dividends.

In previous research, Adriana Shamsudin and Amrizah Kamaluddin (2015) chose cash flow ratios, including liquidity ratio, solvency ratio, efficiency ratio, and profitability ratio, as exogenous variables. On the other hand, Amrizah Kamaluddin et al. (2019) focused more on cash flow patterns as exogenous variables in their study. This difference indicates a different approach in identifying factors that are considered relevant to understanding and predicting corporate financial distress. Both studies involve data collection from annual reports, OSIRIS, and the Bursa Malaysia website, which complement each other. However, there are differences in the sample selection methods. Adriana Shamsudin and Amrizah Kamaluddin (2015) used stratified sampling involving 150 sample companies, while Amrizah Kamaluddin et al. (2019) expanded the scope by involving 372 samples. This difference reflects the different level of generalization of their research findings.

In data analysis techniques, both use a regression analysis approach in analyzing data. Although the data analysis techniques used are the same, differences in exogenous and endogenous variables indicate differences in the focus and purpose of the analysis. In the research results, Adriana Shamsudin and Amrizah Kamaluddin (2015) found that there is a relationship between cash flow ratios and financial distress. However, it turns out that

not all ratios have the same influence in predicting financial distress (only profitability and solvency were found to have an effect).

The theoretical suggestion of this research is a contribution to the literature regarding the prediction of financial distress using the cash flow ratio. On the other hand, Amrizah Kamaluddin et al. (2019) contributed to the existence of significant differences between companies experiencing financial distress and those that are not, based on cash flow patterns. Amrizah Kamaluddin et al. (2019) mentioned that there are four characteristics of cash flow that need to be watched out for because they lead to financial distress as a more in-depth view of the factors that cause financial difficulties, namely:

- the company has generated positive cash inflows from day-to-day operating activities and used the cash generated to finance future investments and long-term debt.
- Insufficient cash inflows to cover financial obligations, forcing companies to sell their main revenue generating assets such as property plant and equipment, subsidiaries, divisions and investments in stocks and bonds.
- The cash flow pattern reflects that companies in distressed conditions are more likely to obtain external funding because the excess cash generated from operating activities is insufficient.
- The combination of outflows in all three activities; operating, investing and financing reflects that the company is incurring huge losses and thus has less chance of getting financial assistance from outside. If they fail to recover and the situation persists, there is nothing else to do but liquidate.

Understanding the company's identified and unidentified cash flow patterns is expected to contribute to research both for management in guiding more proactive and efficient decision making and for other stakeholders in providing a deep understanding of the ability of cash flow patterns to predict financial distress.

This research was conducted using secondary data from the Indonesia Stock Exchange (IDX) financial statements during the 2020-2022 research period with details of the population and samples used as follows:

Table 1. Total Population and Sample

Year	Population	Discarded Sample	Sample Used
2020	586	366	220
2021	601	381	220
2022	502	282	220
<b>Total</b>	<b>1689</b>	<b>660</b>	<b>660</b>

Source(s): Processed Data, 2024

The total sample used is the total population after deducting companies that do not have complete data for the required variables during the 2020-2022 period and only includes companies engaged in the industrial sector and companies engaged in the trade, commerce and investment sectors because other sectors have different policies related to cash flow patterns so it is feared that it will cause bias in research. The research data was processed using the "STATA 14.2" application using the logistic multiple regression analysis approach (details of data processing using the "STATA 14.2" application can be seen in Appendix-01).

The regression model used is as follows:

$$FD = 1 / \{1 + \exp [-(\beta_0 + \beta_1 CFP_1 + \beta_2 CFP_2 + \beta_3 CFP_3 + \beta_4 CFP_4 + \beta_5 CFP_5 + \beta_6 CFP_6 + \beta_7 CFP_7 + \beta_8 CFP_8 + \beta_9 LN\_ASSET + \beta_{10} LN\_SALES + \beta_{11} (LNABS\_PROFIT))]\}$$

Where:

FD The possibility of the company experiencing financial distress, marked with "1" if the company is indicated financial distress, and "0" if otherwise

- CFP1 Dummy variable marked "1" if the company has a cash flow pattern (+,+,+), "0" otherwise
- CFP2 Dummy variable marked "1" if the company has a cash flow pattern (+,-,-), "0" otherwise
- CFP3 Dummy variable marked "1" if the company has a cash flow pattern (+,+,-), "0" otherwise
- CFP4 Dummy variable marked "1" if the company has a cash flow pattern (+,-,+), "0" otherwise
- CFP5 Dummy variable marked "1" if the company has a cash flow pattern (-,+,+), "0" otherwise
- CFP6 Dummy variable marked "1" if the company has a cash flow pattern (-,-,+), "0" otherwise
- CFP7 Dummy variable marked "1" if the company has a cash flow pattern (-,+,-), "0" otherwise.
- CFP8 Dummy variable marked "1" if the company has a cash flow pattern (-,-,-), "0" otherwise.
- LN\_ASSET Natural log of total assets
- LN\_SALES Natural log of total revenue or sales
- LNABS\_PROFIT Natural log abs of total profit
- exp Exponential function

The possibility of a company experiencing financial distress is measured using the Springate S-Score Model. The Springate (1978) model refers to Altman (1968) in the use of the Multiple Discriminant Analysis (MDA) method in his research. Springate also collected various financial ratios that can be used in predicting financial distress. Initially, there were 19 financial ratios tested on 40 companies as samples of his research which resulted in 4 ratios that were believed to be able to distinguish between distressed and non-distressed companies with an accuracy rate of up to 92.5%.

The Springate model (1978) is formulated as follows:

$$S = 1.03A + 3.07B + 0.66C + 0.4D$$

Where:

- A Working Capital to Total Assets
- B Net Profit Before Interest and Taxes to Total Assets
- C Net Profit Before Taxes to Current Liabilities
- D Sales to Total Assets
- S Overall Index (S-Score)

The cutoff value in this model is, if S-Score:

- < 0,082 then it is stated that it has the potential to experience financial distress
- > 0,082 then it is stated that it does not have the potential to experience financial distress

The Springate approach model was chosen because research conducted in emerging markets shows that the Springate model is more conservative than the Zmijewski model (ElBananan, 2021). Then for research in Indonesia, one of them was conducted by Reni, et al. (2020) entitled Comparative Analysis of the Prediction of Bankruptcy of the Altman Modified Z-Score, Springate, Zmijewski, and Ohlson Models in Manufacturing companies listed in SWA 100 shows that the Springate model has the highest consistency of 96% compared to the Altman model, Zmijewski model and Ohlson model.

### 3. Results

The results of this study are as follows:

Logistic regression	Number of obs	=	660
	Wald chi2(10)	=	92.47
	Prob > chi2	=	0.0000
Log pseudolikelihood = -102.49216	Pseudo R2	=	0.5862

fd	Coef.	Robust Std. Err.	z	P> z	[95% Conf. Interval]	
cfp1	-2.641682	.8329737	-3.17	0.002	-4.274281	-1.009084
cfp2	-.6176086	.5634793	-1.10	0.273	-1.722008	.4867905
cfp3	-.0580419	1.02103	-0.06	0.955	-2.059223	1.94314
cfp4	-.0056456	.6135527	-0.01	0.993	-1.208187	1.196896
cfp5	.7968344	1.005552	0.79	0.428	-1.174011	2.76768
cfp6	.0941069	.6914817	0.14	0.892	-1.261172	1.449386
cfp7	-.6430642	1.077289	-0.60	0.551	-2.754512	1.468384
cfp8	0	(omitted)				
ln_asset	-.1072057	.2889673	-0.37	0.711	-.6735713	.4591598
ln_sales	-2.213358	.3169149	-6.98	0.000	-2.8345	-1.592216
lnabs_profit	1.801686	.2482596	7.26	0.000	1.315106	2.288266
_cons	15.93245	3.073698	5.18	0.000	9.908111	21.95679

Note: 1 failure and 0 successes completely determined.

#### Figure 1. Robust Regression Results

Source(s): "STATA 14.2" Application Regression Results, 2024

In general, the summary statistic test results can be read as follows (for more details in the Appendix):

- Wald chi2(10): The Wald test statistic with 10 degrees of freedom is 92.47. It tests the null hypothesis that all regression coefficients (except the constant) are zero.
- Prob > chi2: The p value of the Wald test is 0.0000, indicating that at least one regression coefficient is significantly different from zero at the 0.05 significance level.
- Pseudo R2: The Pseudo R-squared value is 0.5862. This gives an indication of how well the model explains the variability of the data, although the value cannot be interpreted in the same way as R-squared in linear regression.

So the results of the regression above can be concluded as follows:

- CFP1 (Coef.: -2.641682, P>|z|: 0.002)

The coefficient of -2.641682 indicates that an increase in cash flow pattern 1 (CFP1) is associated with a decrease in the log-odds of financial distress (FD). With a p-value of 0.002, this coefficient is statistically significant at the 0.05 significance level.

- CFP2 (Coef.: -0.6176086, P>|z|: 0.273)

The coefficient of -0.6176086 is not statistically significant (P>|z| of 0.273), indicating that there is no strong evidence that cash flow pattern 2 (CFP2) affects the dependent variable (FD).

- CFP3 (Coef.: -0.0580419, P>|z|: 0.955)

This coefficient is also insignificant (P>|z| of 0.955), indicating no strong influence of this variable.

- CFP4 (Coef.: 0.0056456, P>|z|: 0.993)

Not statistically significant (P>|z| of 0.993), so there is no evidence that this variable has an effect.

- CFP5 (Coef.: 0.7968344, P>|z|: 0.431)

Also not significant (P>|z| of 0.431), indicating no significant effect.

- CFP6 (Coef.: 0.0941069, P>|z|: 0.885)

Not significant (P>|z| of 0.885).

g. CFP7 (Coef.: -0.6430642,  $P > |z|$ : 0.551)

Not significant ( $P > |z|$  of 0.551).

h. CFP8 (omitted)

This variable was omitted from the model, possibly because it was the reference category.

i. LN\_ASSET (Coef.: -0.1072057,  $P > |z|$ : 0.711)

Not significant ( $P > |z|$  of 0.711).

j. LN\_SALES (Coef.: -2.213358,  $P > |z|$ : 0.000)

The coefficient of -2.213358 is statistically significant ( $P > |z|$  of 0.000), indicating that an increase in LN\_SALES is associated with a significant decrease in the log-odds of financial distress (FD).

k. LNABS\_PROFIT (Coef.: 1.801686,  $P > |z|$ : 0.006)

The coefficient of 1.801686 is significant ( $P > |z|$  of 0.006), indicating that an increase in LNABS\_PROFIT is associated with a significant increase in the log-odds of financial distress (FD).

From these logistic regression results, only a few variables are significant CFP1, LN\_SALES, and LNABS\_PROFIT. Other variables did not show statistical significance at the 0.05 level. The pseudo R-squared of 0.5862 indicates that the model does a fairly good job of explaining the variability of the data, but it is not as robust as the interpretation of R-squared in linear regression.

#### 4. Discussion

Cash flow is one of the key indicators of a company's financial health. In the context of financial analysis, cash flows are divided into three main categories: operating cash flows, investing cash flows, and financing cash flows. These three types of cash flows provide a comprehensive picture of a company's ability to generate cash and manage its financial resources effectively.

Operating cash flow reflects a company's ability to generate cash from its operating activities. This cash flow includes cash receipts and disbursements that are directly related to the sale of products or services, such as payments to suppliers, employee salaries, and other operating expenses. According to financial theory, a company that has positive operating cash flow indicates that its core business is able to generate enough cash to cover its operating expenses and finance its short-term needs. Positive operating cash flow is an important indicator of a company's financial health as it reflects the company's ability to maintain its day-to-day operations without having to rely on external sources of funding.

Investing cash flows reflect cash used or earned from investing activities, such as the purchase or sale of fixed assets (land, buildings, equipment), and investments in securities or other entities. Positive investing cash flow often indicates that the company successfully sold assets it no longer needed or cashed out investments, which could have been used to fund strategic projects or increase liquidity. Well-managed investment cash flow reflects strategic financial planning and efficient capital allocation, which contributes to a company's long-term financial stability.

Financing cash flow reflects cash received or paid by the company related to financing activities, such as issuing shares, issuing debt, paying dividends, or repaying loans. A positive financing cash flow indicates that the company is able to attract investment from shareholders or creditors, which can be used to fund expansion or other capital needs. The ability to access capital markets and obtain financing at a reasonable cost is a sign of investor and creditor confidence in the health and future prospects of the company.

When the cash flows from these three categories are all positive, the company is in a very strong position.

a. Positive operating cash flow ensures that the company has enough cash to cover its short-term obligations. This reduces liquidity risk, which is often the main cause of financial distress.

b. Investing Capability: Positive investment cash flow indicates that the company is able to sell assets or earn income from investments, which can be used to finance new projects or improve infrastructure, thus supporting long-term growth.

c. Access to Financing: A positive financing cash flow indicates that the company has good access to capital markets and is able to obtain the necessary financing at a reasonable cost. This provides financial flexibility and the ability to cope with financial shocks.

d. Positive Stakeholder Perception: Healthy cash flow across all categories increases the confidence of investors, creditors and other stakeholders in the stability and future prospects of the company. This confidence is critical to maintaining good financial standing and reducing the risk of bankruptcy.

Thus, positive cash flows across all categories (cash flow pattern 1 - CFP 1) are a strong sign of good financial health and the company's ability to avoid financial distress. Healthy cash flows allow companies to meet short-term obligations, invest in growth opportunities, and obtain financing on favorable conditions, all of which contribute to long-term financial sustainability.

Furthermore, from the regression results above, it can also be seen that a high value of sales is often considered a strong indicator that the company will not experience financial distress, although there are situations where increased profits do not necessarily reduce the risk of financial distress (there are somewhat contradictory findings between profits and sales). To understand this relationship, it is important to separate the concepts of sales, profit and cash flow, and understand how each of these components affects the financial health of the company.

FASB (1981, in Casey and Bartczak 1985) states that the greater the amount of net cash inflows from future operations, the greater the ability of the company to be able to stand and overcome changes that occur in the company's operating conditions. In other words, if the company has limited, even negative cash flow from operating activities, then there is a possibility that the company will experience financial distress. If there are changes that occur in economic conditions and affect the company's operational activities, then companies will tend to experience financial distress if their operating cash flow is not much or even negative. The results of this study are also in line with the prediction of financial distress through cash flow by Casey and Bartczak (1985) and Kordestani et al. (2011).

#### **Relationship between Sales and Financial Distress**

##### 1. Liquidity and Operating Cash Flow:

a. High Sales: High sales generally result in large cash inflows from operating activities. With strong operating cash flows, companies have more liquidity to meet short-term obligations, such as payroll, supplier and debt payments. This reduces liquidity risk, which is one of the main causes of financial distress.

##### 2. Operational Efficiency and Scalability:

a. Economies of Scale: High sales are often associated with the benefits of economies of scale, where the cost per unit of product decreases as production volumes increase. This increases profit margins and operational efficiency, which contributes to financial stability.

b. Companies that are able to increase their sales at a lower cost per unit tend to be more financially stable and have a lower risk of financial distress.

#### **Earnings and Potential Financial Distress**

##### 1. Earnings Quality:

a. Accounting Profit vs. Cash Flow: Accounting profit can be affected by various accounting policies such as depreciation, amortization, and revenue recognition. High

profits do not necessarily reflect incoming cash flows. For example, profits could be inflated due to certain accounting policies that do not involve real cash flows.

b. Brealey, Myers, and Allen (1991) in "Principles of Corporate Finance" explain that companies with high profits but low operating cash flow may still face financial distress because they do not have enough cash to meet short-term obligations.

2. Use of Leverage:

a. Funding Through Debt: Increased profits often prompt companies to take on more debt to fund expansion. While debt can increase profits through the leverage effect, it also increases interest expense and the risk of bankruptcy if the company is unable to generate sufficient cash flow to service its debt obligations.

b. Highly leveraged companies with low profit margins can experience financial distress if there is a decrease in sales or an increase in interest rates. This is explained in "Financial Management" by Brigham and Ehrhardt (2005), where an increase in leverage increases a company's financial risk.

3. Unsustainable Growth:

a. Sales Growth Without Infrastructure Support: If sales increase without a commensurate increase in operational and management infrastructure, the company may face problems meeting demand, which could lead to a decline in product or service quality, and ultimately, the loss of customers.

b. In several studies published in financial journals, it was found that companies that grow too fast without adequate support often experience operational and financial problems that eventually lead to financial distress.

High sales tend to provide strong liquidity and operating cash flow, reducing the risk of financial distress. However, high profits do not always reflect healthy cash flows and could increase the risk of financial distress especially if the increase in profits is accompanied by the use of high leverage or accounting practices that increase profits without increasing cash flows. Therefore, sales and profits are related, but liquidity and cash flow management are key in determining a company's financial health and risk of financial distress. Companies should focus not only on increasing sales and profits but also on effective cash flow management and financial risk control to ensure long-term stability.

## 5. Conclusion

From the results of the above research, it can be concluded that the research results are as follows:

a. Significance and Negative Effect of CFP1:

CFP1 (cash flow pattern +,+,+) reflects a cash flow pattern that is able to significantly reduce the risk of financial distress. This may be related to the stable and healthy operating cash flow, which allows the company to manage its short-term liabilities effectively.

b. Negative and Significant Effect of LN\_SALES:

High sales generate strong cash inflows, which help companies meet short-term obligations and reduce liquidity risk. High sales also allow companies to utilize economies of scale, improve operational efficiency, and reduce the risk of financial distress.

c. LNABS\_PROFIT Improvement Paradox:

This is a paradoxical and interesting finding because in general, an increase in earnings is considered a positive sign. However, in this context, high earnings may be associated with the use of high leverage or risky investments, which may increase the risk of financial distress if not offset by healthy cash flows.

While strong cash flow patterns (both operating, investing, and financing when all three show positive flows) and strong sales are important indicators of a company's financial health, high profits do not always guarantee financial stability if not supported by healthy cash flows and good risk management. This research highlights the importance



of focusing on cash flow and sales as leading indicators to reduce the risk of financial distress.

The limitation of this research is limited to analyzing the financial distress link from the cash flow pattern only. There is still a possibility that financial distress besides being influenced by cash flow patterns can also be influenced by other variables, including: audit committee and intellectual capital; firm life cycle, profitability, growth opportunities, liquidity, size, and institutional characteristics. The financial distress proxy used in this study uses the Springate S-Score Model. So that future research can also use other proxies such as Altman Z-Score, etc. In addition, this research was conducted during the COVID-19 pandemic (2020-2022), so that future research can also compare the results of research on cash flow patterns before and after the COVID-19 pandemic to simultaneously see whether the pandemic also has an influence on the company's cash flow considering that during the pandemic almost most companies experienced financial distress problems.

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