Implementation of Beaver Dichotomy to Differentiate Good and Distressed Firms in Indonesia

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ABSTRACT

The purpose of this study is to determine factors/variables that can differentiate the characteristics of distressed and good firms and propose a new model to explain financial distress in Indonesia. There have been many theories, variables, and estimation methods used by previous studies about early warning signs of financial distress. Determining factors of good and distressed firms uses Beaver's (1968) methodology. The samples used are most sectors in Indonesia's Stock Exchange from 2005 to 2020, excluding the financial sector. The characteristic results show that good firms have higher NITA, GPTA, CTA, QATA, CATA, WCTA, CCL, RETA, and EBTCL, while distressed firms are better on CFTS, CFTA, CFNW, CFTD, NITS, NINW, NITD, ROE, CLTA, LTLTA, CLLTLTA, QACL, CR, CTS, ITS, CATS, WCTS, NWTS, and TATS.

Keywords: Financial Distress; Beaver Dichotomy

INTRODUCTION

In 2020, the Covid pandemic shocked the world. In just about ten months of the pandemic, people all over the world were affected by the disease. Even though the virus was not lethal, it was very contagious. People could easily get infected by being within a radius of 1-2 meters from the infected person or by touching things related to them. What makes things more challenging was sometimes the infected people show no symptoms at all although they carried the viruses. In the end, people were scared to go outside, businesses were suffering heavily, and economics were slowing down. The recession was about to haunt Indonesia.

The pandemic of Covid-19 changed the world. Covid-19 accelerated the changes in technology implementation. People used to hesitate to fully implement online technologies for learning, working, and collaborating. Now, almost everything is done online. If you do not have an internet connection, you can hardly have access to the economy and society. Suddenly, smartphones, personal computers, and laptops become very important gadgets to survive during the pandemic. If you do not have one, it is hard for you to do your work, school, or college. The working-from-home (WFH) trend boosted the selling of personal computers (PC) (Stephanie, 2020) and laptops (Rahayu, 2020) for the second quartile of 2020. The way people live, work, and study has changed. People's cultures changed too. The new ways people live are called the new normal way.

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In the era of Covid-19, many real sectors were dying (Soenarso, 2020), and lots of employees got work termination (Karunia, 2020). Around 47% of small to middle industries went bankrupt because of the pandemic (Cahyani, 2020). However, some industries recorded good growth. According to the coordinating minister for economic affairs, on 17 June 2020, cigarette and tobacco industries recorded an improvement of around 1%, and basic food industries increased from 7% to 13%, compared to the last year. The pharmacy industry got an improvement by about 13% during the pandemic era in 2020. As can be seen in Figure 1-1, comparing the result with the whole Consumer Index, these numbers are very small since the overall Consumer Index is still plummeting. Then, coal commodity industries recorded a 25% growth from 11% in 2019 to 36% in 2020. Evaluating the result with Figure 1-1, the Mining Index has increased a lot since last year – meaning overall mining industries increased. The last sector with good growth was palm oil with 25% growth from -12% achievement in 2019, as seen in Figure 1-1. In contrast, other sectors that got heavy blows are automotive and transportation with negative growth of up to 43%. The next sectors were financial services which went down 36% compared to last year's performance (Nurdiana, 2020).
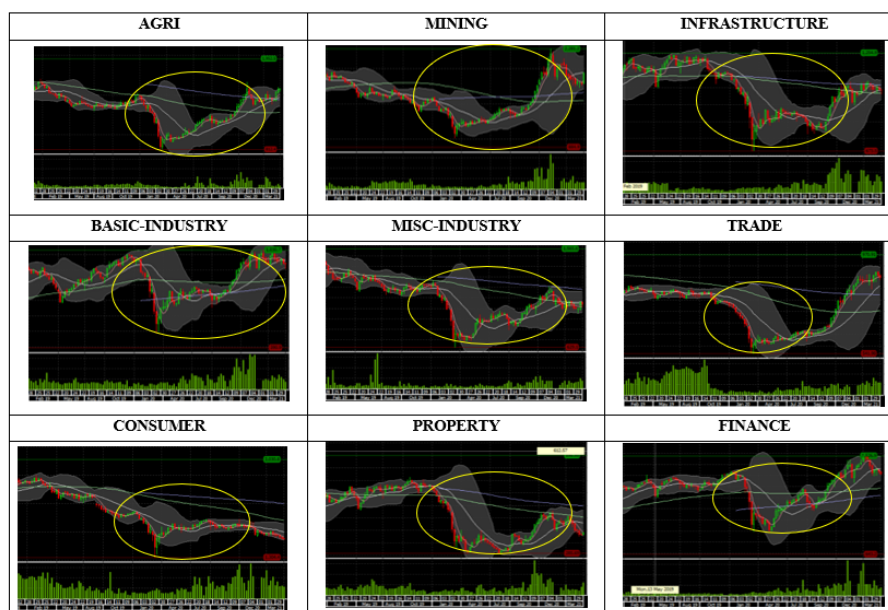

Figure 1-1. Comparison of All Sectors in IDX from Feb 2019 – Mar 2021 ((Indopremier, 2021)

Interestingly, even though real sectors were dying, money sectors recorded significant growth. There were about 8% of new investors who joined the money markets, ranging from many kinds of instruments. The scope of the new investors ranged from stocks, mutual funds, and obligations. This phenomenon showed the high awareness of new investors to utilize the momentum of investing in the Indonesian money market (Hartomo, 2020). The capital market became the main investment target of many new investors in 2020. There were in total 3,276,881 investor accounts in the Indonesia Stock Exchange during September 2020. That is a year-over-year (YoY) growth of 42% for new SIDs (KSEI, 2020). The number of average active daily investors is also the highest with 85,079 daily investors in 2020

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(Bengkulutoday.com, 2020). This is an interesting phenomenon that shows that the pandemic triggers significant growth in Indonesia's capital market.
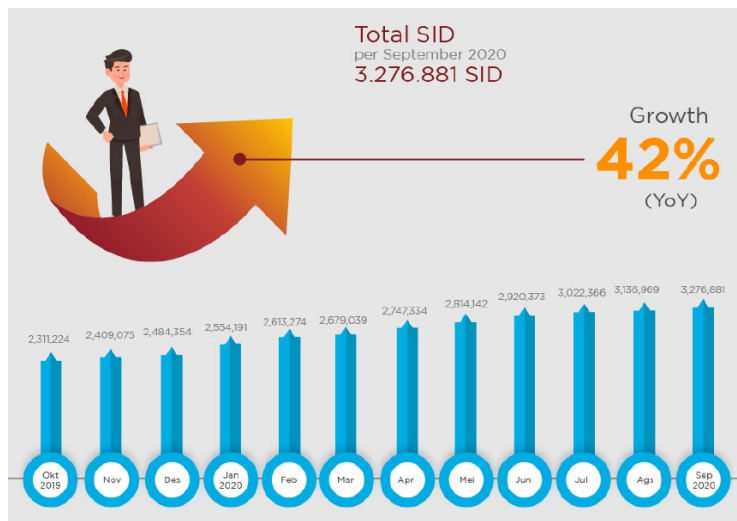

Figure 1-2. The Growth Rate of Single Investor Identification (SID)

This paper tries to implement Beaver Dichotomy to differentiate good and distressed firms in Indonesia. According to Beaver (1966), there are some characteristics that appear in good firms and distressed firms (Beaver, 1966). All proxies used are from Beaver's study (1966) adjusted to the condition of Indonesia. Some proxies that are not available are omitted.

LITERATURE REVIEW

Based on Beaver's study in 1966, this study also sought to find out the latest characteristic differences between good and distressed firms in Indonesia. This study groups Beaver's study (1966) into five categories: (1) cash-flow ratios, (2) profitability ratios, (3) liquidity ratios, (4) turnover ratios, and (5) liability ratios. Some variables are excluded because there are not enough data.

2.1 Cash Flow Ratios

Beaver (1966) uses CFTS, CFTA, CFNW, and CFTD in his study. CFTS measures firms' ability to create cash flow compared to the total sales generated. Normally, if total sales increase, the cash flow should increase too. If the ratio declines, there could be a problem with the firm (Bragg, 2023). CFTA measures firms' ability to create cash flow from their assets without considering any income. The higher CFTA is, the better it is for the firm (MAC, 2023). CFNW measures firms' ability to create cash flow based on their net worth. Positive cash flows can increase firms' net worth. CFTD measures firms' ability to generate cash flow compared to its total debt, it measures how effectively a business generated from leverage. A higher CFTD is a healthy sign for firms (Vipond, 2023). Beaver's study (1966) confirms that CFTD is the most important factor to predict financial distress (Beaver, 1966). Therefore, the hypotheses are:

- **H$_{12a}$: CFTS is higher in good firms than in distressed firms.**
- **H$_{12b}$: CFTA is higher in good firms than in distressed firms.**

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- **H$_{12c}$: CFNW is higher in good firms than in distressed firms.**
- **H$_{12d}$: CFTD is higher in good firms than in distressed firms.**

2.2 Profitability Ratios

NITA measures firms' ability to create profit compared to their total assets. NITA is mostly used by firms to monitor the effectiveness of asset utilization (INC, 2021). Beaver's study (1966) says that NITA is the second most important factor to predict financial distress (Beaver, 1966). NITS measures firms' ability to create net profit from its business operational sales and considers some bad situations such as a tax increase for materials. NITS is expected to be high in good firms (CFI, 2023a). GPTA measures the ability of firms to create gross profit compared to their total assets. Gross profit is total sales minus the cost of goods sold (COGS). GPTA can be used as a sign of a healthy firm (BDC, 2021). NINW measures firms' ability to create net profit compared to their shareholder investment plus retained earnings. However, a high NINW ratio can indicate a sign of high risk in firms (Oster, 2017). NITD measures firms' ability to create net profit compared to their total debt. A low NITD indicates a sign of distress in firms. ROE is a comparison between net income and the total equity of firms. A high ROE ratio means firms can manage the equity of their shareholders (OCBC NISP, 2021). Therefore, the hypotheses are:

- **H$_{13a}$: NITA is higher in good firms than in distressed firms.**
- **H$_{13b}$: NITS is higher in good firms than in distressed firms.**
- **H$_{13c}$: GPTA is higher in good firms than in distressed firms.**
- **H$_{13d}$: NINW is higher in good firms than in distressed firms.**
- **H$_{13e}$: NITD is higher in good firms than in distressed firms.**
- **H$_{13f}$: ROE is higher in good firms than in distressed firms.**

2.3 Liability Ratios

CLTA, LTLTA, and CLLTLTA (TLTA) are often known as debt-to-asset ratios. CLTA measures the comparison of current liabilities to total assets, LTLTA measures the comparison of long-term liabilities to total assets, and CLLTLTA measures current and long-term liabilities (total liabilities) to total assets. High liability ratios mean the shareholders' equity is low. It can be a bad sign for firms. Beaver says TDTA is important to explain financial distress. However, what Beaver uses is CLLTLTA (Beaver, 1966). Therefore, the hypotheses are:

- **H$_{14a}$: CLTA is higher in distressed firms than in good firms.**
- **H$_{14b}$: LTLTA is higher in distressed firms than in good firms.**
- **H$_{14c}$: TLTA is higher in distressed firms than in good firms.**

2.4 Liquidity Ratios

CTA measures the comparison of the most liquid assets in firms (cash and cash equivalents) and total assets. Having a high CTA means a healthy firm (Wealthy Education, 2022). QATA measures the comparison of quick assets generated by the total assets of firms. Having a high QATA is good for firms. CATA measures the comparison of current assets generated by the total assets of firms. Having a high CATA is good for firms. QACL measures the comparison of quick assets and current liabilities. Having a high QACL means firms can generate short-term assets to cover their short-term liabilities (CFI, 2022). WCTA measures the

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amount of working capital generated by firms' total assets. Having a higher working capital means firms can generate more profit. Even though MM theory says that working capital structure does not affect firms' value, having good income streams can increase firms' value. CCL is the amount of cash compared to the firms' current liabilities. It measures the ability of firms to fulfill their short-term debts. RETA is the retained earnings divided by total assets. It measures the portion of the profit that firms use for business growth, expansion, or investment. High RETA means firms are less dependent on debts and equity financing (Kokemuller, 2023). CR measures firms' ability to pay their short-term and long-term debts (Gordon, 2022). EBTCL measures firms' ability to generate profit, then the profit is used to pay short-term debts (Meiliawati & Isharijadi, 2017). A high EBTCL means firms can pay their short-term debts well. Therefore, the hypotheses are:

- H_{15a}: CTA is higher in good firms than in distressed firms.
- H_{15b}: QATA is higher in good firms than in distressed firms.
- H_{15c}: CATA is higher in good firms than in distressed firms.
- H_{15d}: QACL is higher in good firms than in distressed firms.
- H_{15e}: WCTA is higher in good firms than in distressed firms.
- H_{15f}: CCL is higher in good firms than in distressed firms.
- H_{15g}: RETA is higher in good firms than in distressed firms.
- H_{15h}: CR is higher in good firms than in distressed firms.
- H_{15i}: EBTCL is higher in good firms than in distressed firms.

2.5 Turnover Ratios

CTS measures how much cash is generated from the total sales. Firms can have lots of sales but generate low cash. Normally the ratio of sales should stay the same as sales increase. When the ratio declines, there could be a problem with the firm (Bragg, 2023). ITS measures the ability of firms to sell their inventories. A good firm usually expects this ratio to be low, indicating the sales are good (Indeed, 2023). QATS measures the ability of firms to create quick assets from their selling. Firms that have high QATS should have no problem fulfilling their short-term debts. CATS measures the ability of firms to create current assets. Quick assets and current assets are cash or assets that can become cash quickly. Current assets are quick assets with additional inventories. So, current assets are less liquid than quick assets. Like quick assets, firms that have high CATS mean firms' operational selling can generate enough liquidity to fulfill their short-term liabilities. WCTS measures the amount of working capital generated by firms' total sales. Like WCTA, having a higher working capital means firms can generate more profit that can be converted into working capital. NWTS measures firms' ability to increase equity from their sales. Having a high NWTS means the firm has high capital. TATS measures the comparison of firms' total sales that can contribute to their total assets. The bigger the TATS, the better firms' selling is. Therefore, the hypotheses are:

- H_{16a}: CTS is higher in good firms than in distressed firms.
- H_{16b}: ITS is higher in good firms than in distressed firms.
- H_{16c}: QATS is higher in good firms than in distressed firms.
- H_{16d}: CATS is higher in good firms than in distressed firms.
- H_{16e}: WCTS is higher in good firms than in distressed firms.
- H_{16f}: NWTS is higher in good firms than in distressed firms.
- H_{16h}: TATS is higher in good firms than in distressed firms.

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DATA

The population data for this study are all firms listed on Indonesia Stock Exchange (IDX) from the first time IDX established (1973) to 2023. The sample data is quarterly data from 2005 to 2020. This range of time experiences one capital market crash in 2008 and the latest economic recession in 2020. All good firms' data are from S&P CapitalIQ and S&P CapitalIQ Pro. The total population of firms is about 727. Firms in the financial sector are excluded because it is normal for firms in the financial sector to have high leverage. While for non-financial firms having high leverage may indicate financial distress (Fama & French, 1992). All data are winsorized at 1% to reduce bias (Stephanie, 2016). Distressed firms are defined as firms that are delisted (Campbell et al., 2011; Shumway, 2001).

3.1. Sample Firms
3.1.1. Samples of Distressed Firms

The sample firms in distress are taken from the S&P website. The sample size is determined by the total number of firms in distress during the observation time. Firms that volunteer to go private, merged, and have no data are excluded. Firms in the financial sector are also excluded. The samples of good firms are also taken from the S&P website for all firms that are not delisted.

Table 3-1. Delisted firms from Indonesia Stock Exchange

NO.	NOTATION	DESCRIPTION	YEAR	SECTOR
1.	BORN	Borneo Lumbung Energi & Metal Tbk.	2020	Basic industry
2.	CKRA	Cakra Mineral Tbk.	2020	Basic industry
3.	SAIP	Surabaya Agung Industri Pulp dan Kertas Tbk.	2013	Basic industry
4.	SOBI	Sorini Agro Asia Corporindo Tbk.	2017	Basic industry
5.	CPGT	PT Citra Maharlika Nusantara Corpora Tbk.	2017	Infrastructure
6.	INVS	Inovisi Infracom Tbk.	2017	Infrastructure
7.	SIMM	Surya Intrindo Makmur Tbk.	2012	Infrastructure
8.	ATPK	Bara Jaya Internasional Tbk.	2019	Mining
9.	BRAU	Berau Coal Energy Tbk.	2017	Mining
10.	CPDW	Indo Setu Bara Resources Tbk.	2013	Mining
11.	KARK	Dayaindo Resources Internasional Tbk.	2013	Mining
12.	SIAP	Sekawan Intipratama Tbk.	2019	Mining
13.	TKGA	PT Permata Prima Sakti Tbk.	2017	Mining
14.	PWSI	Panca Wirasakti Tbk.	2013	Property
15.	SIIP	Suryainti Permata Tbk.	2012	Property
16.	ASIA	PT Asia Natural Resources Tbk.	2014	Trade
17.	DAJK	PT Dwi Aneka Jaya Kemasindo Tbk.	2018	Trade
18.	GREN	Evergreen Invesco Tbk.	2020	Trade
19.	IATG	Infoasia Teknologi Global Tbk.	2009	Trade
20.	TMPI	PT Sigmagold Inti Perkasa Tbk.	2019	Trade
21.	TRUB	Truba Alam Manunggal Engineering Tbk.	2018	Trade

Source: (CIQ Pro, 2023)

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3.1.2. Samples of Good Firms

The samples of good firms are also taken from the S&P website. The selection process is based on Beaver's (1966) method. There are some considerations in picking good firms. Since there are five sectors of distressed firms, the good firms are picked by the top five biggest average market cap per sector and included in blue-chip firms with a good reputation (Beaver, 1966), then the total is 25 good firms. Most of the time these firms give a dividend to their investors. These good firms are also considered market leaders and IHSG's movers.

Table 3-2. List of good firms per sector

NO.	NOTATION	DESCRIPTION	SECTOR	MARKET CAP
1.	TPIA	PT. Chandra Asri Petrochemical Tbk	Basic Industry	23495.0874
2.	SMGR	PT Semen Indonesia (Persero) Tbk	Basic Industry	18740.3282
3.	INTP	PT Indocement Tunggal Prakarsa Tbk	Basic Industry	18601.7144
4.	CPIN	PT Charoen Pokphand Indonesia Tbk	Basic Industry	14020.1904
5.	BRPT	PT Barito Pacific Tbk	Basic Industry	6097.5669
6.	TLKM	PT Telekomunikasi Indonesia Tbk	Infrastructure	85413.3157
7.	PGAS	PT Perusahaan Gas Negara Tbk	Infrastructure	23758.5462
8.	TRJA	PT Transkon Jaya Tbk	Infrastructure	12035.6254
9.	ISAT	PT Indosat Tbk	Infrastructure	11052.4718
10.	EXCL	PT XL Axiata Tbk	Infrastructure	9627.5689
11.	PTBA	PT Bukit Asam Tbk	Mining	35164.0709
12.	ADRO	PT Adaro Energy Tbk	Mining	11669.8783
13.	INCO	PT Vale Indonesia Tbk	Mining	11336.953
14.	BYAN	PT Bayan Resources Tbk	Mining	9333.5074
15.	BUMI	PT Bumi Resources Tbk	Mining	8673.4603
16.	BSDE	PT Bumi Serpong Damai Tbk	Property	5969.1102
17.	PWON	PT Pakuwon Jati Tbk	Property	4910.8655
18.	LPKR	PT Lippo Karawaci Tbk	Property	3983.6589
19.	CTRA	PT Ciputra Development Tbk	Property	3874.5194
20.	SMRA	PT Summarecon Agung Tbk	Property	3530.9872
21.	UNTR	PT United Tractors Tbk	Trade	21966.5216
22.	EMTK	PT Elang Mahkota Teknologi Tbk	Trade	8633.7959
23.	SCMA	PT Surya Citra Media Tbk	Trade	6766.7776
24.	LPPF	PT Matahari Department Store Tbk	Trade	5667.7785
25.	MNCN	PT. Media Nusantara Citra Tbk	Trade	5480.4666

Source: (CIQ Pro, 2023)

3.2. Methodology to distinguish Good and Distressed Firms

This step follows Beaver (1966) by trying to compare 29 variables, which ones affect good and distressed firms. The mean values are calculated, then compared between the winner and distressed firms.

3.2.1.Variables to Distinguish Good and Distress Firms

The list of variables that were used to distinguish between good and distressed firms.

Table 3-3. List of variables to distinguish good and distressed firms

NO.	GROUPS	VARIABLES	DESCRIPTION
1.	Cash Flow	CFNW	Cash Flow to Net Worth
2.	Cash Flow	CFTA	Cash Flow to Assets
3.	Cash Flow	CFTD	Cash Flow to Total Debts
4.	Cash Flow	CFTS	Cash Flow to Total Sales
5.	Liability	CLLTLTA	Current Plus Long-Term Liabilities to Total Assets
6.	Liability	CLTA	Current Liabilities to Total Assets
7.	Liability	LTLTA	Long-Term Liabilities (Debt) to Total Assets
8.	Liquidity	EBTCL	Earnings Before Tax to Current Liabilities
9.	Liquidity	CATA	Current Assets to Total Assets
10.	Liquidity	CCL	Cash to Current Liabilities
11.	Liquidity	CR	Current Ratio
12.	Liquidity	CTA	Cash to Total Assets
13.	Liquidity	QACL	Quick Assets to Current Liabilities
14.	Liquidity	QATA	Quick Assets to Total Assets
15.	Liquidity	RETA	Retained Earnings to Total Assets
16.	Liquidity	WCTA	Working Capital to Total Assets
17.	Profitability	GPTA	Gross Profit to Total Assets
18.	Profitability	NINW	Net Income to Net Worth
19.	Profitability	NITA	Net Income to Assets (ROA)
20.	Profitability	NITD	Net Income to Total Debts
21.	Profitability	NITS	Net Income to Total Sales
22.	Profitability	ROE	Return on Equity
23.	Turnover	CATS	Current Assets to Total Sales
24.	Turnover	CTS	Cash to Total Sales
25.	Turnover	ITS	Inventory to Total Sales
26.	Turnover	NWTS	Net Worth to Total Sales
27.	Turnover	QATS	Quick Assets to total sales
28.	Turnover	TATS	Total Assets to Total Sales
29.	Turnover	WCTS	Working Capital to Total Sales

Source: (CIQ Pro, 2023)

3.2.2. Analysis of Variance (Lind et al., 2018)

Since the population standard deviations were unknown, the first step to do was to compare the variance of the good and distress firms' variables. The method used was the *F test* which verifies whether two population variances are equal. The F distribution test is used to test the hypothesis of two normal distribution populations whether they are the same or not. The hypothesis is:

$H_0: \sigma_1^2 = \sigma_2^2$

$H_1: \sigma_1^2 \neq \sigma_2^2$

Where σ_1^2 and σ_2^2 are the variance of samples 1 and 2 respectively.

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3.2.3. Equal Unknown Population Standard Deviations (Lind et al., 2018)

The *pooled t-test* is used to compare two equal population standard deviations. The necessary assumptions for both populations are normal distribution, equal standard deviations, and independence. There are two steps to calculate the test statistic: (1) calculate the pooled sample standard deviations and (2) calculate the t-statistic using the pooled standard deviations from (1).

This is the formula to calculate the pooled sample standard deviations.

$$s_p^2 = \frac{(n_1 - 1)s_1^2 + (n_2 - 1)s_2^2}{n_1 + n_2 - 2}$$

Where n_1 is the number of observations of sample 1, n_2 is the number of observations of sample 2, s_1 is the standard deviation of sample 1, and s_2 is the standard deviation of sample 2.

This is the formula to calculate the t-statistic.

$$t = \frac{\overline{x_1} - \overline{x_2}}{\sqrt{s_p^2 \left(\frac{1}{n_1} + \frac{1}{n_2} \right)}}$$

Where $\overline{x_1}$ and $\overline{x_2}$ are the mean of samples 1 and 2 respectively.

The hypothesis is:

H_0: $\mu_1 <= \mu_2$

H_1: $\mu_1 > \mu_2$

Where μ_1 and μ_2 are the mean of winner firms and distress firms respectively.

3.2.4. Unequal Unknown Population Standard Deviations (Lind et al., 2018)

When the two population standard deviations are not equal, the formula to calculate the t-statistic and the degrees of freedom are different. The necessary assumptions for both populations are normal distribution, unequal standard deviations, and independence.

This is the formula to calculate the t-statistic.

$$t = \frac{\overline{x_1} - \overline{x_2}}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}}$$

Where n_1 is the number of observations of sample 1, n_2 is the number of observations of sample 2, s_1 is the standard deviation of sample 1, s_2 is the standard deviation of sample 2, and $\overline{x_1}$ and $\overline{x_2}$ are the mean of samples 1 and 2 respectively.

This is the formula to calculate the degrees of freedom.

$$df = \frac{\left(\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}\right)^2}{\frac{\left(s_1^2/n_1\right)^2}{n_1} + \frac{\left(s_2^2/n_2\right)^2}{n_2}}$$

The hypothesis is:

$H_0: \mu_1 <= \mu_2$

$H_1: \mu_1 > \mu_2$

Where μ_1 and μ_2 are the mean of winner firms and distress firms respectively.

RESULTS AND ANALYSIS

4.1. Descriptive Statistics

Descriptive statistics for good firms and distressed firms are calculated. Table 4-1 shows the result of descriptive statistics for winners and distressed firms. Suffix 1 is for winning firms, while suffix 2 is for distressed firms.

Table 4-1. Descriptive Statistics for Winner and Distressed Firms

	CFTS1	CFTS2	CFTA1	CFTA2	CFNW1	CFNW2	CFTD1	CFTD2	NITA1	NITA2
MEAN	-0.0399	-126.7858	0.0017	0.0024	-0.003	0.0005	2.5279	-6.8423	4.1784	-2.0664
SD	0.4394	878.5059	0.0063	0.011	0.0357	0.2806	9.7659	84.4376	1.7207	11.5748
MIN	-1.7438	-6990.1334	-0.0175	-0.0145	-0.2046	-1.2366	-9.1471	-617.2636	0.2672	-89.085
MAX	1.1384	41.0025	0.0156	0.0402	0.0372	0.9175	59.3515	114.7027	10.2229	3.7925
MEDIAN	0.0277	0.0943	0.0002	-0.001	0.0013	0.006	0.1827	-0.0015	4.201	0.0395

	NITS1	NITS2	GPTA1	GPTA2	NINW1	NINW2	NITD1	NITD2	ROE1	ROE2
MEAN	0.2488	6.6081	0.2381	0.0164	0.0382	0.003	2.8991	-9.6844	-0.99	-7.6205
SD	3.725	77.0004	0.0459	0.0474	0.1879	0.1735	6.2897	73.9536	69.8014	57.773
MIN	-2.0779	-266.9405	0.1595	-0.3194	-0.3871	-0.65	-2.9844	-408.3699	-448.5855	-221.5516
MAX	28.8357	307.4518	0.4489	0.0708	1.4238	0.6511	42.0335	93.1295	230.7882	116.943
MEDIAN	-0.0675	0.4315	0.2343	0.0185	0.021	0.0103	1.0037	-0.1253	7.7002	2

	CLTA1	CLTA2	LTLTA1	LTLTA2	CLLTLTA1	CLLTLTA2	CTA1	CTA2	QATA	QATA2
MEAN	0.4172	0.3702	0.0064	0.0215	0.4236	0.3917	0.0802	0.0361	0.2464	0.1839
SD	0.2642	0.1367	0.0067	0.0334	0.2656	0.1396	0.0117	0.0242	0.0183	0.0667
MIN	0.3155	0.0754	0	0	0.3155	0.0754	0.0591	0.0014	0.2125	0.0421
MAX	1.6361	0.6748	0.0178	0.1176	1.6466	0.6748	0.1131	0.0973	0.2763	0.2944
MEDIAN	0.3542	0.376	0.0036	0	0.3595	0.4129	0.0776	0.0308	0.2459	0.1923

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	CATA1	CATA2	QACL1	QACL2	WCTA1	WCTA2	CCL1	CCL2	RETA1	RETA2
MEAN	0.4588	0.4162	1.5175	2.7329	0.0035	-0.0029	0.6214	0.3171	-0.3664	-0.5495
SD	0.0282	0.1043	0.2939	2.2342	0.0039	0.0147	0.1475	0.713	0.6304	0.2474
MIN	0.4164	0.1875	1.1323	0.25	0	-0.0481	0.4229	0.0051	-3.2129	-0.9464
MAX	0.5106	0.5995	2.4385	12.4767	0.0146	0.0292	1.007	4.7922	-0.0159	-0.077
MEDIAN	0.46	0.4084	1.4678	2.15	0.0007	0	0.5888	0.1034	-0.208	-0.6158

	CR1	CR2	EBTCL1	EBTCL2	CTS1	CTS2	ITS1	ITS2	QATS1	QATS2
MEAN	2.9437	4.5288	62.7019	-0.1053	13.2606	-167.0155	24.1208	-4472.683	60.9825	-2238.1579
SD	0.5865	3.5189	64.3515	0.4023	25.4904	1332.6544	43.4663	38914.1823	149.3886	10662.7322
MIN	1.9734	0.4075	-151.8086	-2.5821	-0.5655	-10618.8649	-6.5321	-309790.4417	-11.0042	-72086.9453
MAX	4.4207	19.3292	221.9958	0.268	147.7973	400.8258	187.8843	26454.3213	733.2133	1475.4666
MEDIAN	2.8054	4	65.5914	-0.021	1.2138	0.7532	4.0563	4.6488	5.2367	6.5149

	CATS1	CATS2	WCTS1	WCTS2	NWTS1	NWTS2	TATS1	TATS2
MEAN	92.1907	-7178.842	-0.1241	0.2057	167.1668	-8516.8987	286.1808	-12357.8468
SD	196.4045	48929.405	0.5905	1.316	536.8958	46077.4741	676.0655	81502.7055
MIN	-22.4043	-386249.5785	-2.2495	-4.2806	-107.3524	-354555.8407	-238.7819	-646450.9637
MAX	910.9139	28183.1862	0.4234	6.2133	3931.1889	6674.9572	4450.1873	37394.6652
MEDIAN	11.7175	16.687	0	0	10.3971	34.5999	43.2586	49.483

Source: (CIQ Pro, 2023)

CFTS, CFTA, CFNW, and CFTD are cash flow ratios. They measure the ability of firms to withstand declines in operating performance and pay dividends to investors (Bragg, 2020). Comparing the CFTS, CFTA, CFNW, and CFTD, the mean values for CFTS and CFTD in good firms are higher than the distressed ones. The result of CFTD complies with Beaver's (1966) study that good firms have higher CFTD. CFTD measures firms' ability to generate cash flow compared to its total debt, it measures how effectively a business generated from leverage. On the other hand, all SD values are higher in distressed firms suggesting the volatility and risk are high. The results imply that good firms can generate better cash flow with lower volatilities – indicating the cash flow is relatively stable. The cash flow variables imply that firms should focus on maintaining stable cash flow to fulfill their short-term debts to avoid financial distress.

NITA, NITS, GPTA, NINW, NITD, and ROE are variables of profitability. Most of the mean values for distressed firms are smaller than the mean values for winning firms, except for NITS and ROE. The higher mean and SD of NITS in distressed firms indicate that even though distressed firms can generate profit from their sales, the volatility is high – meaning the income is unstable. While for ROE, despite the higher SD in good firms, both good and distressed firms have high SDs – meaning the ROE has high volatility. The result of NITA complies with Beaver's (1966) study that good firms have higher NITA. Most good firms lower higher SD values than winning firms, except for NINW and ROE, which show higher volatility in good firms. Firms should avoid getting low profitability with high volatility, it is a sign of distress. Firms should have stable and high value in profitability.

CLTA, LTLTA, and CLLTLTA are liability variables. They reflect the percentage of firms' assets that are funded by debt. The results show that CLTA and CLLTLTA have higher mean and SD values for good firms than distressed ones. The CLLTLTA result does not comply with

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Beaver's (1966) study that distressed firms have higher total liabilities. The results suggest that the risk for short-term and total liabilities is higher in good firms while distressed firms have higher short-term liabilities risk. Firms need leverage to fasten their growth. However, too much leverage can cause problems for firms' financial health.

CTA, QATA, CATA, QACL, WCTA, CCL, RETA, CR, and EBTCL are liquidity variables. They measure firms' ability to pay their short-term debts. Comparing the liquidity ratios, most mean values for good firms are higher than good firms except for QACL and CR. However, those high mean values are compensated with high SDs too – meaning the volatility is high. Analyzing the SDs, most good firms have smaller SDs than distressed ones, except for RETA and EBTCL. The WCTA result complies with Beaver's (1966) study that good firms have higher WCTA. Lower WCTA SD in good firms shows that the WCTA is more stable in good firms too. However, the CR result disagrees with Beaver's (1966) study that good firms have higher CR. Higher CR SD in distressed firms shows that the volatility is high.

CTS, ITS, QATS, CATS, WCTS, NWTS, and TATS are turnover variables. These variables measure how efficiently firms utilize their assets. Analyzing the mean shows that most good firms have higher mean values and lower SD values than distressed firms, except for WCTS. The higher WCTS result in distressed firms is compensated for with higher SD too – indicating high volatility. In most cases, high turnover ratios with low SDs are considered good since they measure the contribution of sales to cash, inventory, current assets, net worth, and total assets.

The descriptive statistical results can only give brief information about the comparison of good and bad firms. To get a better understanding, a t-test will be used in the following chapter.

4.2. Distinguishing Good and Distress Firms

T-test is done to test the hypothesis of which means between the winner and distressed firms are bigger. The following is the result of the hypothesis test. The result column shows whether good or distressed firms have a higher mean in the hypothesis test. The hypotheses results can be referred to in Appendix "Hypothesis Results of Distinguishing Good and Distressed Firms".

Table 4-2 The Result of the t-test Between Winner and Distress Firms

Variables	P	Results	Variables	P	Results
cfts	0.1264	bad	cata	0.0012	good
cfta	0.6779	bad	qacl	1	bad
cfnw	0.5395	bad	wcta	0.0006	good
cftd	0.1905	bad	ccl	0.0007	good
nita	0	good	reta	0.0167	good
nits	0.7442	bad	cr	0.9996	bad
gpta	0	good	ebtcl	0	good
ninw	0.1361	bad	cts	0.1417	bad
nitd	0.0899	bad	its	0.1794	bad
roe	0.2797	bad	qats	0.0447	good
clta	0.1047	bad	cats	0.1195	bad

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Variables	P	Results
ltlta	0.9996	bad
clltlta	0.199	bad
cta	0	good
qata	0	good

Variables	P	Results
wcts	0.9646	bad
nwts	0.0683	bad
tats	0.1096	bad

Source: (CIQ Pro, 2023)

CFTS, CFTA, CFTD, and CFNW are cash flow variables. The results suggest that distressed firms have higher cash flow ratios, which are quite surprising since cash flow ratios indicate the ability of firms to pay their short-term debts. With all hypotheses about cash flow are not supported, it suggests that the mean of cash flow is higher in distressed firms. The CFTD result is contrary to Beaver's (1966) study that when firms can pay their short-term debts well, they should not be in distress. The results disagree with the descriptive statistic results for the mean. The results imply that even though distressed firms can generate enough cash flow, in the end, they still have financial problems. The higher descriptive statistic of SDs in bad firm results supports this argument. High SDs mean high volatility that leads to high risk, even though the t-test results show that distressed firms have higher mean values for all ratios in this category.

NITA, NITS, GPTA, NINW, NITD, NIMTAAVG, CHIN, and ROE are profitability variables. The test results show that good firms are better in NITA and GPTA. The result for NITA agrees with Beaver's (1966) study that NITA is higher in good firms. NITA is a comparison of profit to total assets. NITA measures the effectiveness of asset utilization (INC, 2021). GPTA measures the ability of firms to create gross profit compared to their total assets. Gross profit is total sales minus the cost of goods sold (COGS). NITA and GPTA can be used as a sign of healthy firms (BDC, 2021)

CLTA, LTLTA, and CLLTLTA are liability variables. The results show that distressed firms have higher CLTA, LTLTA, and CLLTLTA. The results disagree with descriptive statistic results on CLTA and CLLTLTA. The CLLTLTA result confirms Beaver's (1966) study. The results suggest that distressed firms take more current, long-term, and total liabilities than good firms. Firms need leverage to fasten their growth. Taking too much liability can cause problems for firms' financial health.

CTA, QATA, CATA, QACL, WCTA, CCL, RETA, RETA, CR, and EBTCL are liquidity variables. The results show that good firms are better in CTA, QATA, CATA, WCTA, CCL, RETA, and EBTCL ratios. The WCTA result agrees with Beaver's (1966) study that WCTA is higher in good firms, which is also supported by the descriptive statistic WCTA's higher mean and lower SD result for good firms. On the other hand, the CR result disagrees with Beaver's (1966) study that CR is higher in good firms. Even though the mean CR for distressed firms is higher, it has a higher SD too – meaning the risk is higher. Failing to pay short-term debts will lead firms to financial distress.

CTS, ITS, QATS, CATS, WCTS, NWTS, and TATS are turnover variables. The results show that good firms are only better in QATS. The QATS result shows that good firms are better at generating quick assets. Quick assets are important for generating liquidity. The results indicate even though distressed firms can utilize their assets better, unfortunately, they do not generate enough profit to cover their liabilities. Most liquidity ratios are better for good firms.

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CONCLUSIONS AND SUGGESTIONS

Determining factors of good and distressed firms uses Beaver's (1968) methodology. The samples used are most sectors in Indonesia's Stock Exchange from 2005 to 2020, excluding the financial sector. The characteristic results show that good firms have higher NITA, GPTA, CTA, QATA, CATA, WCTA, CCL, RETA, and EBTCL, while distressed firms are better on CFTS, CFTA, CFNW, CFTD, NITS, NINW, NITD, ROE, CLTA, LTLTA, CLLTLTA, QACL, CR, CTS, ITS, CATS, WCTS, NWTS, and TATS.

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