# 4 Financial Distress Models For Analysis Of Companies Before And During The Covid-19 Pandemic: Surveys In Automotive Companies In Indonesia

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**Abstract:** It is undeniable that the influence of Covid-19 has hit all directions, from upstream to downstream. One of the sectors that has really felt the impact of Covid-19 is the automotive sector, especially since the implementation of the PSBB. Automotive manufacturers must close their production facilities as long as the government has not granted a permit. This is in line with the weakening public purchasing power for automotives. It took a long time for the automotive industry to emerge from the slump of this pandemic

## 1. Introduction

Every company wants to generate profits, so that it can survive for the long term (Widiasmara and Catur, 2019; Athiyaman & Magapa, 2019). But the situation says differently, that the Covid-19 pandemic is outside of the company's plans. One of the analyzes to measure the occurrence of financial difficulties is Financial Distress by using the company's financial ratios with certain models.

There are several models for predicting financial distress, including Altman (1968), Springate (1978), Zmijewski (1984), and Taffler (1983) and others. Researchers tried to analyze using these 4 methods. The samples used were 40 companies during Quarter 1,2 and 3 in 2019 and Quarter 1 and 2 in 2020. Researchers tried to take samples before and during the Covid-19 occurrence. Based on this phenomenon, the writer wants to know the Financial Distress analysis before and during the Covid-19 pandemic.

Listyarini (2020) describes several formulas for analysis as follows:

1. The Altman method
$$Z = 0,717 WCTA + 0,847 RETA + 3,107 EBITTA + 0,420 TETL + 0,988 SATA$$

WCTA     = *working capital / total asset*
RETA     = *retained earnings / total asset*
EBITTA= *earnings before interest and taxes / total asset*
TETL     = *book value of equity / book value of total liabilities*
SATA     = *sales / total asset*

Where if the value of Z <1.23 experiences financial distress, if the value of 1.23 <Z <2.9 is in the Gray area, and if the value of Z> 2.9 does not experience financial distress.

2. The Springate method
$$S = 1.03 WCTA + 3,07 EBITTA + 0,66 EBTCL + 0,4 SATA$$
WCTA    = *working capital / total asset*
EBITTA = *earnings before interest and taxes / total asset*
EBTCL   = *earnings before taxes / current liabilities*
SATA       = *sales / total asset*

Where if the value of S <0.862 experienced financial distress and the value of S> 0.862 did not experience financial distress.

3. The Zmijewski method
$$X = -4,3 - 4,5 NITA + 5,7 TLTA + 0,004 CACL$$

NITA  = *net income / total asset*
TLTA = *total liabilities / total asset*
CACL = *current asset / current liabilities*

Where if X> 0, experiencing Financial Distress
If X <0, there is no financial distress

4.   The Taffler Method
According to Widiasmara (2019) the formula is
$Z_{Taffler}$= 3,20+12,82EBITTA+2,50CATL-10,68CLTA+0,0289EATTA
EBITTA = *earnings before interest and taxes / total asset*
CATL            = *current assets/total liability*
CLTA            = *current liability/total assets*
EATTA   = *earnings after tax/total assets*

Where if ZTaffler> 0.3 the risk of bankruptcy is low

ZTaffler <0.3 High risk of bankruptcy (Financial Distress)

## 2.   Methodology

The method in this research uses descriptive analysis using the results of 4 methods of financial distress. There are 8 companies engaged in the automotive sector using Financial Statements for Quarter 1,2 and 3 in 2019 and Quarter 1 and 2 in 2020 so that the total sample is 40 companies.

**Table 1 Sampel Perusahaan**

| NO | KODE SAHAM | NAMA EMITEN |
|----|-----------|-------------|
| 1 | ASII | Astra International Tbk |
| 2 | AUTO | Astra Otoparts Tbk |
| 3 | BOLT | Garuda Metalindo Tbk |
| 4 | GJTL | Gajah Tunggal Tbk |
| 5 | IMAS | Indomobil Sukses International Tbk |
| 6 | INDS | Indospring Tbk |
| 7 | LPIN | Multi Prima Sejahtera Tbk (d/h Lippo Enterprises Tbk) |
| 8 | SMSM | Selamat Sempurna Tbk |

## 3.   Conclusions & Implications

The Altman method
Following are the results of the author's analysis using the Altman model for Quarter 1,2 and 3 of 2019, there are 6 companies that are included in the area, 10 companies that are gray area and 8 healthy companies as in the table below. Companies in Gray Area such as PT Astra International Tbk, PT Astra Otoparts Tbk, PT Garuda Metalindo Tbk, and PT Selamat Sempurna Tbk must be careful in making decisions, this analysis is only for the reflection of the company to make the latest innovations.
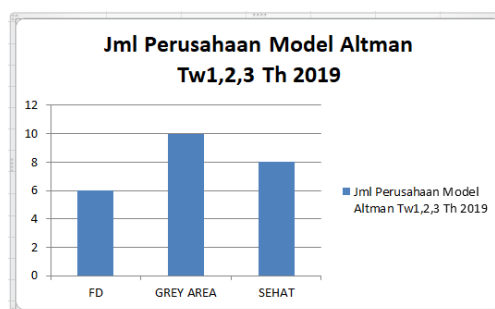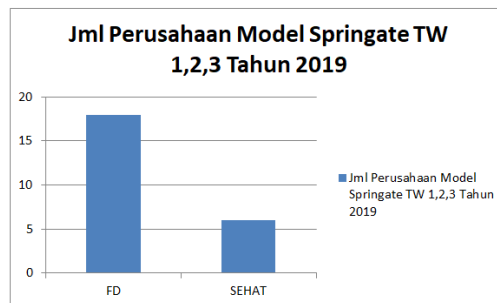


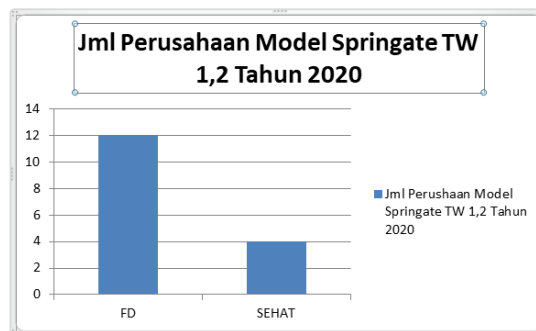Picture 1 Jumlah Perusahaan Model Altman pada TW 1,2 dan 3 Tahun 2019
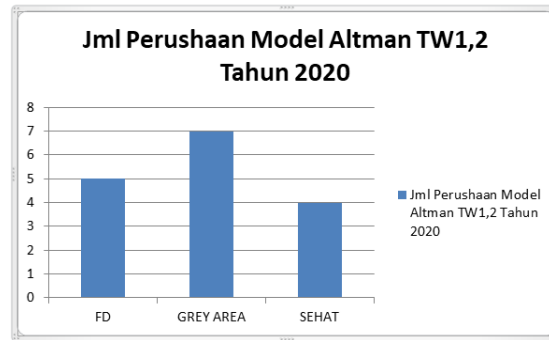
Picture 2 Jumlah Perusahaan Model Altman pada TW 1,2 Tahun 2020

It can be seen in Figure 2 that the percentage for companies experiencing financial distress has increased by 6% when compared to Figure 1.

Model Springate



Picture 3 Jumlah Perusahaan Model Springate pada TW 1,2 dan 3 Tahun 2020



Picture 4 Jumlah Perusahaan Model Springate pada TW 1,2 Tahun 2020

The springate model is somewhat different from Altman's because it only has 2 criteria, if seen from the picture above, there is no indication of an increase in the number of companies experiencing financial distress, because in terms of percentage, around 75% of companies are together. It is possible that this 75% will increase as Covid-19 has not subsided in Indonesia. Companies still have to be careful in facing this 3rd Quarter of 2020.
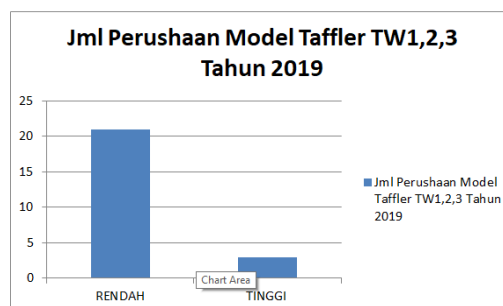
Model Zmisjewski
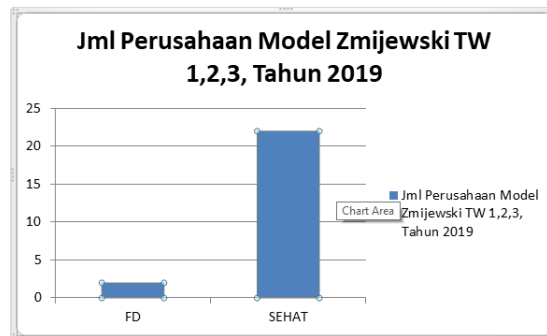
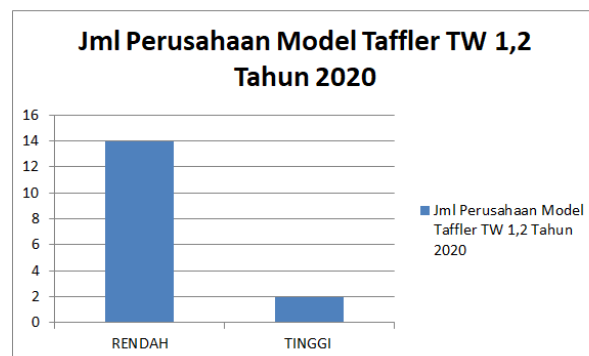Picture 5 Jumlah Perusahaan Model Zmijewski pada TW 1,2 dan 3 Tahun 2019
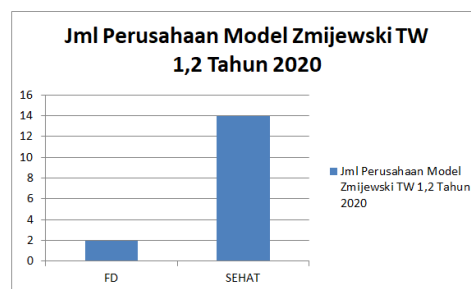


Picture 6 Jumlah Perusahaan Model Zmijewski pada TW 1,2 Tahun 2020

As a percentage, there is an increase in the number who experience FD from this model, which is around 5% until the 2nd Quarter of 2020.

The Taffler Method



Picture 7 Jumlah Perusahaan Model Taffler pada TW 1,2 dan 3 Tahun 2019



Picture 8 Jumlah Perusahaan Model Taffler pada TW 1,2 Tahun 2020

The last model is the Taffler Model, for the percentage of this model is the same from the 1st Quarter of 2019 to the 1st Quarter of 2020. Companies must continue to implement future strategies to face the 3rd Quarter of 2020

because Covid-19 is still increasing and how companies that have a low risk of bankruptcy this can last until Covid-19 is over. These four models have their own characteristics because basically everything starts with financial ratio analysis. This analysis is not the only tool to detect financial difficulties, but there are many other factors, such as external factors, which greatly influence internal factors in Indonesia.

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