

# EFFECTS OF WORKING CAPITAL MANAGEMENT, SOLVENCY, AND PROFITABILITY ON BANKRUPTCY RISK (CASE: PROPERTY SECTOR IN INDONESIA STOCK EXCHANGE)

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**Abstract:** *Bankruptcy occurs when the company cannot pay off its debts, so it cannot continue its operations, including property sector companies in Indonesia. Bankruptcy can be caused by many factors, one of which is through companies such as working capital management. Bankruptcy also caused huge losses for shareholders, investors, creditors, employees, suppliers, and customers. To determine the effects of working capital management, solvency, and profitability on the risk of bankruptcy using three models, namely Altman, Springate, and Zmijewski and the analysis using the panel data regression method. This research focused on 50 companies in the property sector listed on the Indonesia Stock Exchange from 2015 to 2019. The result showed that only Debt to Assets Ratio as the indicator of solvency has a significant relationship with the Altman model's risk of bankruptcy. In contrast, the Springate and Zmijewski models produce Average Age of Inventory and Average Payable Period as the working capital management indicator, Debt to Assets Ratio as the solvency indicator, and Return on Equity as the profitability indicator that have a significant relationship to bankruptcy risk.*

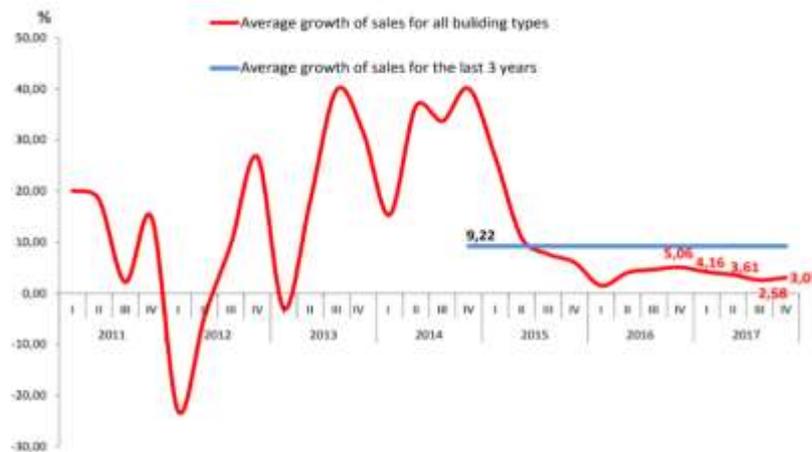
**Keywords:** *bankruptcy risk, altman model, springate model, zmijewski model, working capital management*

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## Introduction

The property sector plays an essential role in the economy and development in Indonesia. This sector is also one of the indicators to assess the economic development of a country. Property growth requires macroeconomic growth and stability as per capita Gross Domestic Product (GDP), purchasing power, and customer confidence need to rise before an increasing number of people can afford to buy property products (Indonesia Investments, 2016). When macroeconomic growth is growing, customers will have more power to purchase their daily needs. It will open up an opportunity for them to invest their money through a property product.

As a result, it will enable property developers to open up new property ventures that will result in Indonesia's dynamic property market. It can see from the figure below (Figure 1) that a survey from Bank Indonesia showed that property sales growth in 2015 experienced a significant decrease in quarter-to-quarter. This declining trend of the Indonesia property market continues until 2017, and it remained sluggish in the second quarter of 2020.



**Figure 1: Growth of Indonesia Property Sales**

Source: Bank Indonesia, 2017

On the Indonesian Stock Exchange, the property sector is divided into two sub-sectors; the property and real estate sub-sector and the construction sub-sector. According to a DBS Bank report in the first half of 2018, we have seen a substantial year-on-year increase in the pre-sale market (37%) compared to the first half of 2017. The demand in 2018 improved across all residential segments. The average demand price for apartments increased by 2.5% in the first half of 2018, compared to the first half of 2017, comparable to other emerging markets. The market remained sluggish in 2019, and property prices declined by 1.63 in the 14 largest cities in the first and second quarters, according to GlobalPropertyGuide.com. The property market during the second quarter of 2020 was the worst performance all the time, even worse than market performance during the 1998 monetary crisis. Local marketing and leasing activities due to the COVID-19 pandemic have led to very modest market changes over the period (Coldwell Banker Commercial, 2020). The deceleration in all property markets due to the COVID-19 pandemic is estimated to persist in the remaining year 2020. Office and retail as property sectors relatively stable in the previous quarter were lagging in the second quarter. There is no absorption of demand in these two markets, and prices have remained under pressure. Overall, the COVID-19 pandemic has disrupted the supply chain of the property market. Based on Bank Indonesia (2019), several factors contributed to the weakening of the property market in Indonesia, such as the slowdown of Indonesia's economic growth, decreasing of Commercial Property Price Index (CPPI), decreasing in the demand of Indonesia property market, and weakening of customers' purchasing power. Since Indonesia's property sector has experienced a sluggish period this year, it will be necessary to examine property companies' performance. If there is no significant change, then bankruptcy could threaten companies engaged. Hence, an assessment of the bankruptcy risk would be appropriate because bankruptcy faced by companies is not only harmful to internal parties but also external parties. The parties affected by the company's bankruptcy have interests in the company, such as investors, creditors, and the government, as the party that receives taxes and reduces unemployment (Kisman and Krisandi, 2019). The bankruptcy analysis would help the company manage to predict the risk and find a strategy to prevent its business from bankruptcy. One of

the essential scopes in financial management to control company bankruptcy is working capital management. Inefficient management of working capital, with a lack of maintenance of an optimal working capital level, reduces the entity's capacity to fulfill the obligations on time and increases the likelihood of company bankruptcy that would weaken the firm's credit rank (Jafari and Jalili, 2014). Therefore, working capital management has a tremendous impact on a company's performance, so it will be necessary to provide a thorough bankruptcy risk assessment. The research objectives are to determine the relationship between bankruptcy risk (Altman, Springate, and Zmijewski models) and average age of inventory, average collection period, and average payable period as the working capital management indicator, debt to assets ratio as the solvency indicator, and return on equity as the profitability indicator. This research observes the property sector in Indonesia Stock Exchange and using secondary data of the companies, which is financial statements. The research sample consists of 50 property sector companies. These companies are listed on the Indonesian Stock Exchange from 2015 to 2019.

### Literature Review

In this research, the author used the literature review as a framework to classify the sources of general data and information studied in the research.

#### Bankruptcy

According to the concept of Altman (1996), bankruptcy occurs when companies are not in a position to pay off their debts; thus, they cannot continue their operations. Many factors can cause bankruptcy. In some cases, the reason can be identified after an analysis of financial statements. Some companies are in decline, but some items in the financial statements still show good short-term performance (Kordestani *et al.*, 2011). Few companies are permitted to go bankrupt without going through these steps; latency, shortage of cash, financial distress, then bankruptcy. Beaver (1996) is one of the first researchers to apply statistical techniques to predict bankruptcy focused on the univariate analysis of selected ratios with very high predictive capacity. Altman (1968) then continued by developing a multiple discriminant analysis models called the Z-score model (Misu and Madaleno, 2020). He used five economic indicators to assess the prediction of bankruptcy. Several other types of research examine bankruptcy as the main topic, such as Springate (1978), Ohlson (1980), Taffler (1984), Zmijewski (1984), and Theodossiou (1991). Researchers most commonly use Altman, Springate, and Zmijewski models to predict bankruptcy. These bankruptcy prediction models use various explanatory variables and statistical techniques. Thus, the predictive ability of these models varies.

#### Altman Z-Score Model

Altman Z-Score is a method used to estimate a company's bankruptcy rate by measuring the value of multiple ratios in the descriptive equation. The analysis of Z-Score was introduced in 1968 by Edward I. Altman. Altman was concerned about the issues of conventional bankruptcy analysis of financial ratios, such as univariate methodology, no bottom line, subjective weightings, uncertainty, and deception (Altman, 1968). The equations estimated by Altman are as follows:

$$Z = 1.2X_1 + 1.4X_2 + 3.3X_3 + 0.6X_4 + 0.999X_5$$

Where,

- $X_1$  : Working Capital to Total Assets
- $X_2$  : Retained Earnings to Total Assets
- $X_3$  : Earnings before Interest and Taxes to Total Assets
- $X_4$  : Market Value of Equity to Book Value of Total Debt
- $X_5$  : Sales to Total Assets

From the equation above, the analysis of the Altman Z-score is divided into three criteria:

**Table 1: The Criteria of Altman Z-Score Model**

Z-Score Value	Criteria
$Z < 1.80$	Distress Zone (Bankrupt Company)
$1.80 < Z < 2.99$	Grey Zone
$Z > 2.99$	Safe Zone (Healthy Company)

Source: Altman, 1968

### Springate S-Score Model

Gorgon LV Springate developed this model in 1978 at Simon Fraser University, following procedures developed by Altman. To evaluate the ratios somewhere that could detect the risk of bankruptcy, Springate used MDA to select four ratios of 19 financial ratios in the literature, which was able to differentiate between sound market insolvents and bankrupts. The equation for Springate model are:

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

Where,

- $A$  : Working Capital to Total Assets
- $B$  : Earnings before Interest and Taxes to Total Assets
- $C$  : Profit before Tax to Current Liabilities
- $D$  : Sales to Total Assets

From the equation above, the analysis of the S-score is divided into two criteria:

**Table 2: The Criteria of Springate S-Score Model**

S-Score Value	Criteria
$S < 0.862$	Potential Bankrupt Company
$S > 0.862$	Healthy Company

Source: Sinarti & Sembiring, 2015

### Zmijewski X-Score Model

Zmijewski's model (1984) used a ratio analysis that analyses its efficiency, leverage, and liquidity for model predictions (Sinarti and Sembiring, 2015). Zmijewski (1984) criticized previous models, considering that other bankruptcy scores oversampled distressed firms and preferred circumstances with more complete results. The equation for Zmijewski model are:

$$X = -4.3 - 4.5X_1 + 5.7X_2 - 0.004X_3$$

Where,

- $X_1$  : Profit after Tax to Total Assets
- $X_2$  : Total Liabilities to Total Assets
- $X_3$  : Current Assets to Current Liabilities

From the equation above, the analysis of the Zmijewski X-Score is divided into two criteria:

**Table 3: The Criteria of Zmijewski X-Score Model**

X-Score Value	Criteria
$X < 0$ or negative	Healthy Company
$X > 0$ or positive	Unhealthy / Bankrupt Company

Source: Sinarti & Sembiring, 2015

### **Working Capital Management**

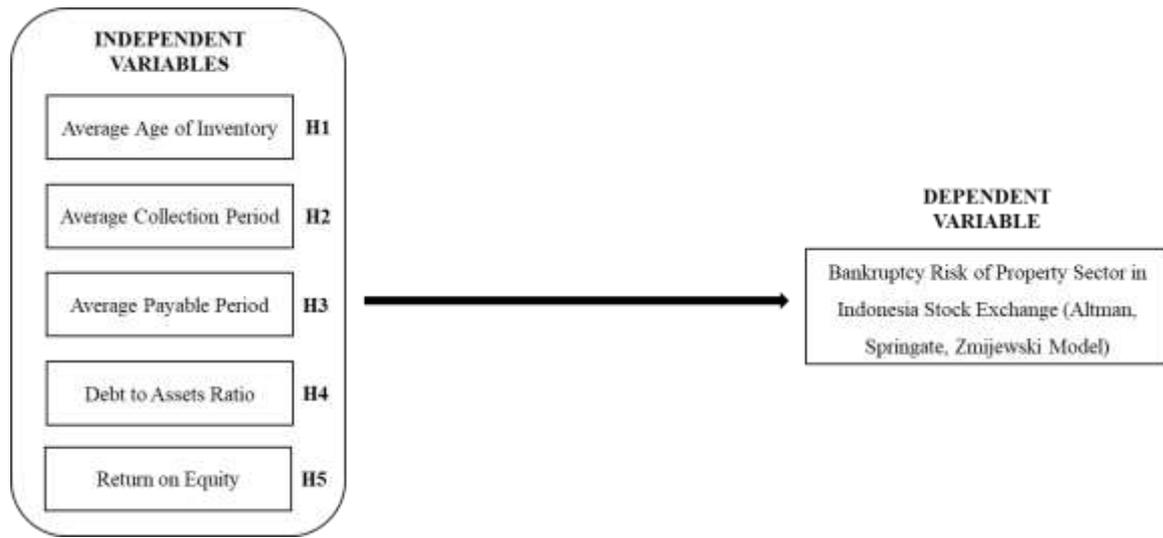
The importance of efficient working capital management is indisputable, given that a company's viability relies on the financial manager's ability to manage receivables, inventory, and payables effectively. Working capital management aims to control both of the company's current assets (inventory, accounts receivable, marketable securities, and cash) and current liabilities (notes payable, accruals, and accounts payable) to maintain a balance between profitability and risk that contributes positively to the valuation of the company (Gitman and Zutter, 2014). Working capital (short-term financial) attribute to trends of cash inflows and outflows that are both non-synchronized and unpredictable. The short-term operating activities reflect both the operating cycle (OC) and the cash conversion cycle (CCC) (Mohareb, 2019). The cash conversion cycle (CCC) is a performance indicator for working capital management quality, calculating the number of days that funds contribute to inventories and accounts receivable minus the number of days that payments to vendors postpone (Gitman, 1974). Verlyn D. Richards and Eugene J. Laughlin introduce the cash conversion cycle in 1980. According to Gitman and Zutter (2014), there are three essential variables in cash conversion cycle calculation, which are inventory, accounts receivable, and accounts payable. These three components will be used to calculate the Average Age of Inventory (AAI), Average Collection Period (ACP), and Average Payable Period (APP).

### **Solvency and Profitability**

The debt position of the company shows the sum of capital used by other people to produce income. In general, the financial analyst is most concerned with long-term debts because they bind the company to a long-term contractual payment stream. The more debt a company has, the greater its probability of not fulfilling its contractual debt payments. It can also be referred to as the solvency ratio. The debt to assets ratio (DAR) is a solvency indicator used to look at the risk of bankruptcy of a company. The debt to assets ratio calculates the proportion of the total assets financed by the creditors of the company. The lower the debt ratio, the lower the source of financing through debt. Conversely, the higher the debt ratio, the higher the source of financing through debt (Husna and Satria, 2019). There are many profitability measures in place. As a group, these measures enable analysts to evaluate the company's profits in terms of the level of sales, the level of assets, or the investors' investment (Gitman and Zutter, 2014). Without profits, the company could not attract foreign capital. Investors, creditors, and management pay close attention to boosting profits because of the great importance that the marketplaces on profits. The return on equity is a profitability indicator used to look at the risk of bankruptcy of a company. The return on equity (ROE) calculates the return on the joint stockholders' investment in the company. Generally, the investors are better off the higher the return is.

### Research Hypothesis and Theoretical Framework

According to the literature review, the hypothesis will be used to establish a theoretical framework for the research. The author describes the company's bankruptcy risk (Altman, Springate, and Zmijewski) as to the dependent variables and the components of working capital management (AAI, ACP, and APP), DAR as solvency indicator, and the profitability indicator, which is ROE as the independent variables. The flowchart below will explain the theoretical framework:



**Figure 2: Theoretical Framework**

Source: Author, 2020

Therefore, it is summarized in the following hypothesis of this research:

- $H_0$  : Average Age of Inventory (AAI) is not significantly related to Bankruptcy Risk (Altman, Springate, and Zmijewski)

$H_1$  : Average Age of Inventory (AAI) is significantly related to Bankruptcy Risk (Altman, Springate, and Zmijewski)
- $H_0$  : Average Collection Period (ACP) is not significantly related to Bankruptcy Risk (Altman, Springate, and Zmijewski)

$H_2$  : Average Collection Period (ACP) is significantly related to Bankruptcy Risk (Altman, Springate, and Zmijewski)
- $H_0$  : Average Payable Period (APP) is not significantly related to Bankruptcy Risk (Altman, Springate, and Zmijewski)

$H_3$  : Average Payable Period (APP) is significantly related to Bankruptcy Risk (Altman, Springate, and Zmijewski)
- $H_0$  : Debt to Assets Ratio (DAR) is not significantly related to Bankruptcy Risk (Altman, Springate, and Zmijewski)

$H_4$  : Debt to Assets Ratio (DAR) is significantly related to Bankruptcy Risk (Altman, Springate, and Zmijewski)
- $H_0$  : Return on Equity (ROE) is not significantly related to Bankruptcy Risk (Altman, Springate, and Zmijewski)

$H_5$  : Return on Equity (ROE) is significantly related to Bankruptcy Risk (Altman, Springate, and Zmijewski)

## Methodology

### Research Design

The research design consists of techniques and research methods used in this research to examine the relationship between working capital management and the bankruptcy risk of Indonesia's property sector using a correlational research design. Correlational research design is a non-experimental research design technique that allows researchers to create a relationship between two closely related variables, independent variables (affecting variables) and dependent variables (affected variables). The panel data regression approach is used to evaluate the hypothesis in this research. The working capital management, solvency, and profitability as the independent variables are Average Age of Inventory (AAI), Average Collection Period (ACP), Average Payable Period (APP), Debt to Assets Ratio (DAR), and Return on Equity (ROE) and then the bankruptcy risk (Altman, Springate, and Zmijewski models) as to the dependent variables.

### Population and Sample

The research population is all property sector companies listed on the Indonesian Stock Exchange. As of December 2019, there are 83 companies listed on the Indonesian Stock Exchange. To determine a research sample, the author use the purposive sampling method. This method is used to obtain a representative sample according to the predetermined criteria. The withdrawal of this sample is based on the following criteria:

1. Property sector companies listed on the Indonesian Stock Exchange from 2015 to 2019.
2. The companies have completed their financial statements from 2015 to 2019.

After the population has been sorted according to these criteria, 50 companies have used the research sample. The list of companies will be explained in the following table:

**Table 4: Research Samples**

No	Companies	Code	No	Companies	Code
1	Acset Indonusa Tbk	ACST	26	Jaya Real Property Tbk	JRPT
2	Adhi Karya (Persero) Tbk	ADHI	27	Kawasan Industri Jababeka Tbk	KIJA
3	Agung Podomoro Land Tbk	APLN	28	Lippo Cikarang Tbk	LCPK
4	Alam Sutera Realty Tbk	ASRI	29	Lippo Karawaci Tbk	LPKR
5	Bekasi Asri Pemula Tbk	BAPA	30	Modernland Realty Tbk	MDLN
6	Bekasi Fajar Industrial Estate Tbk	BEST	31	Metropolitan Kentjana Tbk	MKPI
7	Bumi Citra Permai Tbk	BCIP	32	Metropolitan Land Tbk	MTLA
8	Binakarya Jaya Abadi Tbk	BIKA	33	City Retail Developments Tbk	NIRO
9	Bhuawanatala Indah Permai Tbk	BIPP	34	Nusa Raya Cipta Tbk	NRCA
10	Bukit Darmo Property Tbk	BKDP	35	Indonesia Prima Property Tbk	OMRE
11	Sentul City Tbk	BKSL	36	Plaza Indonesia Realty Tbk	PLIN
12	Bumi Serpong Damai Tbk	BSDE	37	PP Properti Tbk	PPRO
13	Ciputra Development Tbk	CTRA	38	Pembangunan Perumahan (Persero) Tbk	PTPP
14	Duta Anggada Realty Tbk	DART	39	Pudjiadi Prestige Tbk	PUDP
15	Nusa Konstruksi Enjiniring Tbk	DGIK	40	Pakuwon Jati Tbk	PWON
16	Intiland Development Tbk	DILD	41	Ristia Bintang Mahkotasejati Tbk	RBMS
17	Puradelta Lestari Tbk	DMAS	42	Roda Vivatex Tbk	RDTX
18	Duta Pertiwi Tbk	DUTI	43	Pikko Land Development Tbk	RODA
19	Megapolitan Development Tbk	EMDE	44	Suryamas Dutamakmur Tbk	SMDM
20	Fortune Mate Indonesia Tbk	FMII	45	Summarecon Agung Tbk	SMRA
21	Aksara Global Development Tbk	GAMA	46	Surya Semesta Internusa Tbk	SSIA
22	Gowa Makassar Tourism Development Tbk	GMTD	47	Sitara Propertindo Tbk	TARA
23	Perdana Gapuraprima Tbk	GPRA	48	Total Bangun Persada Tbk	TOTL
24	Greenwood Sejahtera Tbk	GWSA	49	Wijaya Karya (Persero) Tbk	WIKA
25	Indonesia Pondasi Raya Tbk	IDPR	50	Waskita Karya (Persero) Tbk	WSKT

Source: Author Analysis, 2020

### Data Collection Method

The author uses secondary data for this research. The financial statements of the samples from 2015 to 2019 are needed. The financial statements are obtained from the Indonesian Stock Exchange ([www.idx.co.id](http://www.idx.co.id)) and the company's official website.

### Result and Discussion

The panel data regression method is used in this research to describe the relationship between independent variables represented by AAI, ACP, APP, DAR, and ROE with the dependent variables, which is defined by the bankruptcy risk (Altman, Springate, and Zmijewski).

### Altman Z-Score Model

The regression results of Altman Z-score model are shown in the table below:

**Table 5: Panel Data Regression of Altman Model**

	(1) BR	(2) BR	(3) BR	(4) BR
AAI	-0.0000251 (0.000187)			-0.0000769 (0.000246)
ACP		-0.00267 (0.00368)		-0.00303 (0.00385)
APP			0.0000360 (0.00187)	0.000884 (0.00252)
DAR	-10.10*** (2.456)	-9.780*** (2.481)	-10.08*** (2.469)	-9.945*** (2.538)
ROE	0.00634 (0.979)	0.0383 (0.977)	0.0157 (0.984)	0.0740 (0.988)
_cons	-7.117*** (1.354)	-7.116*** (1.328)	-7.080*** (1.330)	-7.195*** (1.371)
N	250	250	250	250
R-sq	0.059	0.059	0.059	0.060
Std. error in parentheses * p<0.05, ** p<0.01, *** p<0.1				

Source: Stata Result, 2020

It shows that only the debt to assets ratio is significantly related to the Altman Z-score model with a significance of 0.1. The regression coefficient of DAR is -9.945. It indicates that the Altman Z-score model is predicted to decrease by 9.945 points when the DAR variable increases by one point. It means that as the company's debt gets bigger, the Altman model's value will get smaller, indicating that the company is predicted to go into bankruptcy. The greater the company's assets financed by debt, the higher the risk of repayment of long-term liabilities that could later affect the use of net profit margin generated. These results suggest that the Altman Z-score model is negatively affected by the debt to assets ratio. The R-square of the model is 0.060. It shows that 6% of the dependent variables will be affected by independent variables.

### Springate S-Score Model

The regression results of Springate S-score model are shown in the table below:

**Table 6: Panel Data Regression of Springate Model**

	(1) BR	(2) BR	(3) BR	(4) BR
AAI	-0.0000516* (0.0000306)			-0.000133* (0.0000391)
ACP		0.000791 (0.000555)		0.000415 (0.000556)
APP			0.000379* (0.000256)	0.00105* (0.000333)
DAR	-1.003* (0.424)	-1.128** (0.429)	-1.074* (0.425)	-1.113* (0.418)
ROE	0.325* (0.126)	0.329* (0.127)	0.361* (0.127)	0.370* (0.124)
_cons	1.311* (0.194)	1.262* (0.193)	1.246* (0.194)	1.307* (0.189)
N	250	250	250	250
R-sq	0.146	0.143	0.143	0.197
Std. error in parentheses * p<0.05, ** p<0.01, *** p<0.1				

Source: Stata Result, 2020

It shows that AAI, APP, DAR, and ROE have a significant relationship with the Springate S-score model. For AAI, the regression coefficient is -0.000133. It indicates that the Springate S-score model is predicted to decrease by 0.000133 points when the AAI variable increases by one point. It means that as the company's average age of inventory gets bigger, the Springate model's value will get smaller, indicating that the company is predicted to go into bankruptcy. The longer the company keeps inventory in the warehouse, the longer it can turn into cash or revenue. These results suggest that the Springate S-score model is negatively affected by the average age of inventory. For APP, the regression coefficient is 0.00105. It indicates that the Springate S-score model is predicted to increase by 0.00105 points when the APP variable increases by one point. It means that as the company's average payable period gets bigger, the Springate model's value also gets bigger, indicating that the company is predicted not to go into bankruptcy. The longer the company pays the debt to the vendor or supplier, the better allocation for the company's use of money. The company can use the capital to pay the debt to finance the company's operations, which will increase profitability. These results suggest that the Springate S-score model is positively affected by the average payable period. For DAR, the regression coefficient is -1.113. It indicates that the Springate S-score model is predicted to decrease by 1.113 points when the DAR variable increases by one point. It means that as the company's debt gets bigger, the Springate model's value will get smaller, indicating that the company is predicted to go into bankruptcy. The greater the company's assets financed by debt, the higher the risk of repayment of long-term liabilities that could later affect the use of net profit margin generated. These results suggest that the Springate S-score model is negatively affected by the debt to assets ratio. For ROE, the regression coefficient is 0.370. It indicates that the Springate S-score model is predicted to increase by 0.370 points when the ROE variable increases by one point. It means that as the company's return on equity gets bigger, the

Springate model's value also gets bigger, indicating that the company is predicted not to go into bankruptcy. The greater the return on equity of a company, the net profit for investors or owners of the company's shareholders' investment will increase as well. These results suggest that the Springate S-score model is positively affected by the return on equity. The R-square of the model is 0.197. It shows that 19.7% of the dependent variables will be affected by independent variables.

### Zmijewski X-Score Model

The regression results of Springate S-score model are shown in the table below:

**Table 7: Panel Data Regression of Zmijewski Model**

	(1) BR	(2) BR	(3) BR	(4) BR
AAI	0.0000592* (0.0000116)			0.0000865* (0.0000150)
ACP		-0.0000825 (0.000223)		0.0000164 (0.000212)
APP			0.000105* (0.000103)	-0.000357* (0.000128)
DAR	5.706* (0.160)	5.752* (0.173)	5.731* (0.171)	5.725* (0.160)
ROE	-0.273* (0.0479)	-0.285* (0.0509)	-0.279* (0.0512)	-0.290* (0.0476)
_cons	-4.621* (0.0735)	-4.574* (0.0777)	-4.581* (0.0777)	-4.621* (0.0724)
N	250	250	250	250
R-sq	0.889	0.874	0.874	0.893
Std. error in parentheses				
* p<0.05, ** p<0.01, *** p<0.1				

Source: Stata Result, 2020

It shows that AAI, APP, DAR, and ROE have a significant relationship with the Zmijewski X-score model. For AAI, the regression coefficient is 0.0000865. It indicates that the Zmijewski X-score model is predicted to increase by 0.0000865 points when the AAI variable increases by one point. It means that as the company's average age of inventory gets bigger, the Zmijewski model's value also gets bigger, indicating that the company is predicted to go into bankruptcy. The longer the company keeps inventory in the warehouse, the longer it can turn into cash or revenue. These results suggest that the Zmijewski X-score model is positively affected by the average age of inventory. For APP, the regression coefficient is -0.000357. It indicates that the Zmijewski X-score model is predicted to decrease by 0.000357 points when the APP variable increases by one point. It means that as the company's average payable period gets bigger, the Zmijewski model's value will get smaller, indicating that the company is predicted not to go into bankruptcy. The longer the company pays the debt to the vendor or supplier, the better allocation for the company's use of money. The company can use the capital to pay the debt to finance the company's operations, which will increase profitability. These results suggest that the Zmijewski X-score model is negatively affected by the average payable period. For DAR, the regression coefficient is 5.725. It indicates that the Zmijewski X-score model is predicted to increase by 5.725 points when the DAR variable increases by one point.

It means that as the company's debt gets bigger, the Zmijewski model's value also gets bigger, indicating that the company is predicted to go into bankruptcy. The greater the company's assets financed by debt, the higher the risk of repayment of long-term liabilities that could later affect the use of net profit margin generated. These results suggest that the Zmijewski X-score model is positively affected by the debt to assets ratio. For ROE, the regression coefficient is -0.290. It indicates that the Zmijewski X-score model is predicted to decrease by 0.290 points when the ROE variable increases by one point. It means that as the company's return on equity gets bigger, the Zmijewski model's value will get smaller, indicating that the company is predicted not to go into bankruptcy. The greater the return on equity of a company, the net profit for investors or owners of the company's shareholders' investment will increase as well. These results suggest that the Zmijewski X-score is negatively affected by the return on equity. The R-square of the model is 0.893. It shows that 89.3% of the dependent variables will be affected by independent variables.

### Conclusion

Based on the results of the data analysis and discussion, it can be concluded that efficient management of working capital in the Altman model is not significant for the risk of bankruptcy in Indonesia's property sector between 2015 and 2019. These results are in line with previous research by Delavar et al. in 2015, which concluded that financial distress had an insignificant impact on the relationship with working capital management in Tehran Stock Exchange. Considering these results, because working capital management may differ in different companies, it is recommended that the relationship between working capital management and financial distress be investigated, taking into account the industry's impact. The Altman model has different significant results from the Springate and Zmijewski models. This is because the Altman model uses the calculation indicators of the market value of equity, where it is necessary to include stock price indicators. According to Rizal and Sahar (2015), inventory turnover and profitability have no significant effect on the stock price. The absence of inventory turnover and profitability effects on stock prices proves that investors do not use these variables as a reference in measuring their efficiency. Therefore, AAI and ROE have no impact on the risk of bankruptcy using the Altman model. In contrast, the efficient management of working capital is significant for the risk of bankruptcy for the Springate and Zmijewski models, mainly for managing inventories and accounts payable. Instead of working capital management, the regression also indicates that solvency and profitability directly correlate with the possibility of bankruptcy risk. Compared to return on equity, the variable debt to assets ratio has a high effect on the possibility of bankruptcy (higher regression coefficient value).

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