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Bulls and Bears and Bankruptcy- An Early Warning of Distress

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Abstract
This study examines possible indicators of financial distress: financial ratio; financial decision; the preferences of investors; and economic macro conditions. Based on these indicators, the model of financial distress was constructed using capital structure theory. The population in this study is manufacturing companies listed on The Indonesian Stock Exchange from 2003 to 2016. This study relies on the composite market index to detect whether the market is bullish or bearish using regression analysis time series. Then, the factor analysis and logistic regression are used. Models which predict financial distress in bearish markets are more accurate than in a bullish market. Investors, therefore, are more vulnerable ina bullish market. Equity financing will reduce the probability of financial distress in both bullish and bearish markets. This supports the pecking order theory in capital structure - when the companies need funding, an early funding alternative is to retain earnings.

Keywords: Bearish; Bullish; Financial distress; Early warning tools.

1. Introduction
Financial problems faced by a company, may result in bankruptcy. Some companies try to solve financial problems by borrowing or by amalgamation and others simply go out of business. Investors and creditors before invest their fund in a company will always look beforehand financial condition the company. Hence, analysis and by prediction to a condition financial a the company is very important.

During the global financial crisis in 2008-2009, the manufacturing sector in Indonesia was affected worse than other sectors. Primary commodity prices (raw materials) increased production costs. Likewise the price of oil triggered increased costs because fuel prices to the industry lost their Government subsidy. Meanwhile export markets for manufactured products deteriorated due to other countries suffering serious effects of the crisis (Indonesia commercial newsletter, March 2010).

Economic conditions in Indonesia are still threatening companies with high risks of financial trouble or even bankruptcy. To make a mistake in predictions of the future can be fatal to a company and to investors who rely on dividends from a company. A model predicting bankruptcy for an enterprise is really needed by many players such as shareholders, investors, banks, the government, employees, the community, and management.

Many problems arise when a situation specific to a company in financial distress cannot be explained by the existing financial theories. Capital budgeting cannot be used by a firm in which financial distress is the main consideration (Vasiliou, 2008). The pecking order theory (Myers, 1984) gives a hierarchy of financing for an enterprise, beginning with internal funds, then debt, and lastly the issuance of equity. In a crisis, these cannot be used. When companies experience financial distress, the sources of funds in the pecking order have already been exhausted. Similarly, the application of Modigliani & Miller's theory of a trade-off between debt and equity is problematic. A company in debt (overhang) and listed on the stock exchange, will find it difficult to issue new stock.

Until now there is no theory that specifies the indicators most appropriate to predict bankruptcy. This results in the current variety of financial ratios used without reliable predictions.

A reliable model can be used to improve matters and avert bankruptcy. Large manufacturing companies are very interested in the financial health of their suppliers, to avoid any disturbance in their production and distribution schedule. Information about a company's distress is useful to: (1) speed up action to prevent a bankruptcy; (2) facilitate a merger or takeover to pay debt and manage the distressed company better; (3) give a warning of possible bankruptcy in the future (Platt and dan Platt, 2002).

This study identifies factors that indicate financial distress in both bullish and bearish markets in Indonesia, and then, the model of investment decisions, funding, and dividend policy are constructed. Subsequently, this study shows how sensitive corporate profits are to changes in economic macro-conditions.

2. Literature Review
2.1. Financial Distress
Financial distress, in previous research, is synonymous with business failure (Altman *et al.*, 1977; Ball and Foster, 1982; Moses and Liao, 1987; Tretsky and Ruth, 2001). But other researchers find that financial distress has some of the characteristics of financial health; not all distress ends in bankruptcy (Gilbert *et al.*, 1990; Lau, 1987;

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Tretsky and Ruth, 2001). Financial distress as a series of financial events reflecting various levels of corporate adversity (Tretsky and Ruth, 2001).

Distress happens before the bankrupcy. Financial distress as a situation where cash flow is unable to meet current liabilities such as suppliers' raw materials, tax, bank debt, and other obligations (Wruck, 1990). Financial problems may be long-term, over years or decades (Whitaker, 1999). Distress can be inferred from incidents such as the reduction of a dividend, a factory that is closed, a loss of money, the dismissal of employees, dismissal of the CEO of the company, and the price of a stock decreasing sharply.

A company is in distress if it is removed from the government's authority and is required to make the restructure itself (Tirapat and dan Nittayagasetwat, 1999). A technical default in debt and predicts consequent bankruptcy (Wilkins, 1997). Distress begins when the company is unable to meet scheduled payment or when projected cash flow indicates that the company will be unable to fulfill its future obligations (Brigham and Philip, 2003; Lau, 1987). Hhighlight the dismissal of labour or failure to pay a dividend (Hill *et al.*, 1996).

2.2. The Cause of Financial Distress

The major causes are economic (involving weakness of demand, competing industries, and location) and financial (cost of debt, inadequate capital). Other factors include incompetence, corruption, and theft (Brigham and Philip, 2003). Dun and Bradstreet (1997) identify failures per industry.

Financial distress down to economic stringency, a decrease in industry activity, and bad management (Whitaker, 1999; Wruck, 1990). Bad management is defined as a decrease in the percentage income against revenue industrial in the past five years of the operations of a firm.

The causes of difficulty and models bankruptcy classified in three ways: (1) In the neoclassical model, bankruptcy follows improper resource allocation; (2) In the financial model, if assets are imprecise but the capital structure is inherited, then even though the company can survive in the long run, it may go bankrupt in the short term; (3) In the corporate governance model, bankruptcy follows bad management (Lizal, 2002).

2.3. Financial Distress and Capital Structure Theory

The theory of capital structure put forward by Modigliani and Miller has received response and criticism from various parties. Bankruptcy is caused by the debts of the company. If a business continues to increase its debt, it will pay more and more interest, leading to eventual bankruptcy.

Investors must not borrow and lend at the same interest rates (Roberts and Sufi, 2009; Stiglitz and Weiss, 1981). An insolvent company pays much higher interest and investors who use a debt issuing company as security should also pay higher interest.

To increase debt to reach an optimal capital structure forces a choice (trade-off) between the cost of the increasing debt and the cost of the bankruptcy which is going to happen. The cost of bankruptcy is significant. It includes: (a) the direct costs of paying administration fees, lawyers, accountants, and other professional expenses; (b) the indirect costs of bad publicity, unemployment, forced sales, and loss of normal connections, for example, suppliers will not want to supply goods.

3. Design and Research Method

The population of the research is all companies in manufacturing classifications of Indonesian Capital Markets Directory. This study uses purposive sampling to get a representative sample. The criteria are: (1) Manufacturing companies in 2001-2014. This study looks at one industry only, to avoid any influence from differences in industry; (2) They must have published an audited financial report each year between 2001 and 2014; (3) The sample contains companies that report a positive operating profit and also companies that did not, and made a loss.

3.1. Variable Measure

To measure a variable in this research is (a). establish the condition of bullishness or bearishness. According to Gujarati (2003), there are five ratios to consider in this approach to economic forecasting in a data-driven time series. The financial ratios used are:
1. net fixed assets to total assets,
2. total debt to total assets,
3. long term debt to equity ratio (Platt and dan Platt, 2002),
4. size (Faulkender and Rong, 2006; Ohlson, 1980),
5. dividend payout ratio (Kothari and Jay, 1997),
6. retained earnings to total assets (Kahya, 1999) and
7. sensitivity to return company exchange rate (Tirapat and dan Nittayagasetwat, 1999).

Companies reporting an operating loss are given symbol dummy 1, and companies reporting an operating profit are given symbol dummy 0.

3.2. Model Suggested as Follows

P(D/BU)=a+b1FATA+b2TDTA+b3LDTE+b4Size+b5DPR+b6RETA+b7SRK

P(D/BE)=a+b1FATA+b2TDTA+b3LDTE+b4Size+b5DPR+b6RETA+b7SRK

P(D/BU)　　= The probability of companies experiencing financial distress in the bullish market

P(D/BE)　　= The probability of companies experiencing financial distress in the bearish market.

FATA   = net fixed assets to total assets
TDTA   = Total Debt To Total Assets
LDTE   = Long Term Debt To Equity Ratio
Size   = Ln Total Assets
DPR   = Dividend Payout Ratio
RETA   = Retained Earnings To Total Assets
SRK   = Sensitivity Return against Dollar Exhange Rate

4. Research Results and Discussion

Eighty-four companies report a negative operating profit (a loss). The model predicts financial distress in a bearish market for 485 companies. Although making a profit, many companies probably experience financial distress. This is because in a bearish market, funding their own capital is required in order to insure continuity of operations and reduce the risk of illiquidity. The owners must postpone a return on investment so that the company does not depend on funding debt. This study shows that the company which has high value asset also has big potential for distress in a bearish market.

Both TDTA and TETA can predict distress. To have assets funded by borrowing can reduce the probability of distress. This can happen if the companies which have big debts are able to re-invest and get a high return.

On the other hand, it is indeed high-risk, but creditors will provide loans to a company if they think the company has the ability to pay back the loan. Large debts are high-risk, but they are also an opportunity to make a profitable investment in a company which will grow and develop. The higher the total of assets that are funded by their own capital, the less probability of financial distress. The company that does not need the debt funds paradoxically makes the best use of them. The pecking order theory says that funding should be found early when needed. If funding is delayed or is insufficient, further funding is by incurring debt. Next if such funding is sufficient, then issuing new shares is the last resort, because such funding has a high cost of capital. Funding is to be considered carefully by management in a bullish market. Capital financing itself is safe for companies in both bullish and bearish markets. Funding by debt is important in the bullish market because interest rates are low. It provides the opportunity to company to re-invest. This can be done by careful control and monitoring.

The early prediction of distress in bearish condition is 17.36%, but based on model, there are 93.18% companies probably financial distress. In bullish condition, the early prediction the company influencing distress is17.29% and based on model, there are 73.65% companies probably financial distress. That shows in bullish and bearish market the probability the company influencing distressis greater than the early prediction.

Our research supports Agarwal and Taffler (2005) finding, that the company which experiences financial distress has more chance of economic growth at a high level. When the market appear to be bullish and optimistic, good shares will return to the previous price and even above the old price, while bad shares will stay low. There is a tendency for most investors to buy when the price is high and sell when the price is low, which eventually hurtful for them in the long-term.

The data shows that the model formed on bearish conditions has the greater value of McFadden r-squared. In bearish conditions, a company may suffer distress even though it makes a profit. In bullish condition, however, a company shows financial distress by an absence of profit.

Negative TDTA significant at z statistics, is valued at more than 2 (α=5%). It is opposed to the theory of financial distress, because greater debt reduces company liquidity and increases the obligations that need to be paid by the company in their operations. It is better to use the ratio of corporate finance individually rather than the ratio of the relative financial industry. Another ratio that becomes a predictor is TDTA. This indicates that the company which has a big debt is belived to have the ability to pay. Creditors can also estimate the ability of a firm to pay their liabilities from the loan to credit ratio. Thus high TDTA can predict financial distress.

SRK, the Sensitivity Return against Dollar Exhange Rate, is the best indicator of risk in both bullish and bearish conditions. Business transactions involving foreign currencies will facethe current exchange rate. Exports or imports which require foreign currencies like the US dollar can be postponed for a certain period of time but not forever.

Predictions in bearish conditions are more accurate than in the bullish conditions, because in bearish condition, circumstances for the company and for the whole industry are relatively unstable. A mistake in the either financing or investment is less serious.

Based on the model formed either on bullish and bearish condition, the probability of distress in bearish conditions is greater than in bullish conditions. The probability of distress is also greater if using the financial ratio of individual firms rather than the industry ratio and this is true for both bullish or bearish market condition.

Table-1. Early Prediction and Probability of Financial Distress Based Model

Ratio	Condition	Early Prediction		Probability Based Model	
		Non Distress	**Distress**	**P<=0.5**	**P>0.5**
Industry	*Bullish*	722	151	230	643
	Bearish	400	84	33	451
Firm	*Bullish*	722	151	55	818
	Bearish	400	84	8	476

Table 1 shows that a negative operating profit can be the visible sign of financial distress. The prediction based on the individual financial ratio of company is greater than that based on the relative industry ratio. Processed data indicate that there are differences in the actual value of the company in the bullish and bearish market. The price to earnings ratios are different. Interest rates become important when the company makes a policy of funding and re-investment. In bearish conditions, high interest rates can encourage equity financing in order to increases liquidity in the one hand, but on the other hand, the owners gain little advantage. In bullish conditions with low interest rates, a company's debt burden is light. Companies have a chance to make profitable investments, but require supervision. The investments must increase corporate profit and the shareholders' wealth. Besides, low interest rates in a bullish market will encourage investors to invest in shares, so that company equity during this condition can increase.

5. Conclusion

Funding, risks and profitability ratios determine financial distress in both bullish and bearish markets. Equity financing is required to reduce the possibility of distress. This supports the pecking order theory which states that when companies need funding the first alternative is retained earnings.

Another indicator is asset management. This shows how the company allocates funds to a profitable assets. One way of managing assets is through inventory turnover. Inventory turnover controls the company capacity to obtain cash to able to pay current liabilities.

Individual corporate financial ratios feature higher than the relative industry ratios. Funding and risk determine distress in both bullish and bearish markets. The company which has higher debt is potentially exposed to greater shock, especially when the industry as a whole experiences disruption and is in great uncertainty. This study does not support Platt and dan Platt (2002) who find that the industry relative ratios are more accurate than the individual corporate financial ratios. Manufacturing in Indonesia is divided into three sub sectors; in every sub sector, the characteristics of business are unique.

6. Implications

First, funding of the company must be underpinned by strong own-capital funding. Investment decisions must be carefully made in order to avoid financial distress.

Second, investors who want to invest in manufacturing should not only look for information about profit in the financial report, but should also consider the financial structure of the company. An opearting loss is a clear signal of financial distress, but even companies making a profit are likely to experience financial distress. Besides an understanding of business, investors must understand financial risk. An operating loss is a clear signal of financial distress, but even companies making a profit are likely to experience financial distress. Besides an understanding of business, investors must understand financial risk.

Third, For future research, testing of risk factors such as inflation and the fluctuation of interest rates should be included in the model .Besides the economic factors, further studies are needed on the psychological factors driving investors making an investment decision.

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Appendix

Tabe-A. Detecting Bullish and Bearish Market Based on Arima Model 1,1,1.

Year	Rising Return	Decline Return	Difference	Width Market	BI Rate	Bullish/Bearish
2003	0.1413	-0.0265	0.1148	0.1148		
	0.0517	-0.0279	0.0237	0.1385		
	0.0174	-0.0296	-0.0122	0.1385		
	0.0052	-0.1029	-0.0977	0.0408		
		-0.1600	-0.1600	-0.1192	16,62%	*Bearish*
2004	0.1484	-0.0145	0.1339	0.1339		
	0.0994	-0.0273	0.0721	0.2060		
	0.0976	-0.0285	0.0691	0.2752		
	0.0826	-0.0486	0.0340	0.3092		
	0.0526	-0.0656	-0.0130	0.2961		
		-0.0834	-0.0834	0.2128		
		-0.1160	-0.1160	0.0968	14,95%	*Bearish*
2005	0.1869	-0.0139	0.1729	0.1729		
	0.1216	-0.0140	0.1076	0.2806		
	0.0676	-0.0398	0.0278	0.3084		
	0.0642	-0.0981	-0.0339	0.2745		
	0.0570		0.0570	0.3315		
	0.0446		0.0446	0.3760		
	0.0405		0.0405	0.4165		
	0.0294		0.0294	0.4459	9,94%	*Bullish*
2006	0.1569	-0.0071	0.1498	0.1498		
	0.1465	-0.0446	0.1018	0.2516		
	0.0954	-0.1118	-0.0163	0.2353		
	0.0838		0.0838	0.3191		
	0.0605		0.0605	0.3796		
	0.0581		0.0581	0.4377		
	0.0401		0.0401	0.4778		
	0.0205		0.0205	0.4983		
	0.0142		0.0142	0.5125	7,43%	*Bullish*
2007	0.1227	-0.0039	0.1187	0.1187		
	0.1042	-0.0085	0.0957	0.2144		
	0.1030	-0.0159	0.0871	0.3016		
	0.0891	-0.0719	0.0171	0.3187		
	0.0804	-0.0867	-0.0063	0.3125		
	0.0254	-0.1686	-0.1432	0.1693	9,18%	*Bullish*

2008	0.1258	-0.0418	0.0840	0.0840		
	0.0981	-0.1104	-0.0123	0.0716		
	0.0955		0.0955	0.1671		
	0.0796		0.0796	0.2467		
	0.0736		0.0736	0.3203		
	0.0575		0.0575	0.3778		
	0.0322		0.0322	0.4100		
	0.0226		0.0226	0.4326		
	0.0112		0.0112	0.4438		
	0.0091		0.0091	0.4529	11,83%	*Bullish*
2009	0.1467	-0.0008	0.1460	0.1460		
	0.1071	-0.0317	0.0754	0.2214		
	0.0942	-0.1056	-0.0115	0.2099		
	0.0767		0.0767	0.2866		
	0.0574		0.0574	0.3441		
	0.0346		0.0346	0.3786		
	0.0323		0.0323	0.4110		
	0.0294		0.0294	0.4404		
	0.0252		0.0252	0.4656	8,58%	*Bullish*
2010	0.1218	-0.0012	0.1206	0.1206		
	0.0625	-0.0096	0.0528	0.1734		
	0.0383	-0.0440	-0.0057	0.1677		
	0.0155	-0.0526	-0.0371	0.1306		
		-0.0759	-0.0759	0.0548		
		-0.1479	-0.1479	-0.0931		
		-0.1605	-0.1605	-0.2536		
		-0.3422	-0.3422	-0.5958	8,67%	*Bearish*
2011	0.1776	-0.0380	0.1396	0.1396		
	0.1733	-0.0669	0.1064	0.2461		
	0.1693	-0.0938	0.0755	0.3216		
	0.1125		0.1125	0.4340		
	0.1026		0.1026	0.5366		
	0.0834		0.0834	0.6201		
	0.0443		0.0443	0.6644		
	0.0196		0.0196	0.6840		
	0.0107		0.0107	0.6947	7,15%	*Bullish*
2012	0.1649	-0.0011	0.1637	0.1637		
	0.1437	-0.0129	0.1308	0.2946		
	0.0617	-0.0552	0.0066	0.3011		
	0.0584	-0.0559	0.0025	0.3036		
	0.0400		0.0400	0.3436		
	0.0270		0.0270	0.3706		
	0.0071		0.0071	0.3778		
	0.0032		0.0032	0.3810	6,5%	*Bullish*
2013	0.0824	-0.0169	0.0654	0.0654		
	0.0699	-0.0488	0.0211	0.0866		
	0.0571	-0.0553	0.0018	0.0884		
	0.0570	-0.0943	-0.0373	0.0510		
	0.0527	-0.1094	-0.0567	-0.0057		
	0.0329		0.0329	0.0272		
	0.0287		0.0287	0.0559	6,5%	*Bearish*
2014	0.0810	-0.0088	0.0722	0.0722		
	0.0647	-0.0166	0.0480	0.1203		
	0.0559	-0.1055	-0.0496	0.0706		
	0.0275		0.0275	0.0982		
	0.0260		0.0260	0.1242		
	0.0161		0.0161	0.1403		
	0.0134		0.0134	0.1537		
	0.0094		0.0094	0.1632		
	0.0045		0.0045	0.1676	5,75%	*Bullish*

2015	0.0859	-0.0039	0.0820	0.0820		
	0.0710	-0.0382	0.0327	0.1147		
	0.0319	-0.0531	-0.0212	0.0935		
	0.0293	-0.0570	-0.0277	0.0658		
	0.0164	-0.1042	-0.0878	-0.0220		
	0.0151		0.0151	-0.0069		
	0.0135		0.0135	0.0066	7,5%	*Bearish*
2016	0.0539	-0.0040	0.0499	0.0499		
	0.0520	-0.0061	0.0460	0.0958		
	0.0283	-0.0195	0.0088	0.1046		
	0.0250		0.0250	0.1297		
	0.0239		0.0239	0.1536		
	0.0189		0.0189	0.1725		
	0.0175		0.0175	0.1900		
	0.0105		0.0105	0.2004		
	0.0082		0.0082	0.2087	7,75%	*Bullish*

Source: Data Processed

Appendix-B. Result of Factor Analysis of Financial Distress

Rotated Component Matrix[a]

	Component	
	1	2
FATA	.839	-.014
TDTA	.960	-.008
RETA	-.780	-.011
DPR	-.019	.686
SRK	.015	.731
Extraction Method: Principal Component Analysis.		
Rotation Method: Varimax with Kaiser Normalization.		
a. Rotation converged in 3 iterations.		

Appendix-C. Financial Distress in Bearish Market

Dependent Variable: DEBIT				
Method: ML - Binary Probit (Quadratic hill climbing)				
Date: 12/09/16 Time: 08:27				
Sample: 1 484				
Included observations: 484				
Convergence achieved after 8 iterations				
Covariance matrix computed using second derivatives				
Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	-1.400951	0.191083	-7.331638	0.0000
FATA	1.008124	0.316183	3.188417	0.0014
TDTA	-0.118434	0.194530	-0.608820	0.5426
RETA	-0.816901	0.157060	-5.201201	0.0000
DPR	-0.212615	0.264323	-0.804376	0.4212
SRK	0.003875	0.011062	0.350285	0.7261
McFadden R-squared	0.197047	Mean dependent var		0.175620
S.D. dependent var	0.380890	S.E. of regression		0.343080
Akaike info criterion	0.771036	Sum squared resid		56.26244
Schwarz criterion	0.822880	Log likelihood		-180.5907
Hannan-Quinn criter.	0.791408	Restr. log likelihood		-224.9081
LR statistic	88.63485	Avg. log likelihood		-0.373121
Prob(LR statistic)	0.000000			
Obs with Dep=0	399	Total obs		484
Obs with Dep=1	85			

Appendix-D. Financial Distress in Bullish Market

Dependent Variable: DEBIT				
Method: Least Squares				
Date: 12/09/16 Time: 08:48				
Sample: 1 873				
Included observations: 873				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.226313	0.015044	15.04303	0.0000
FATA	-0.071561	0.034906	-2.050070	0.0407
TDTA	-0.058205	0.029222	-1.991803	0.0467
RETA	-0.220989	0.020970	-10.53821	0.0000
DPR	-0.000688	0.002556	-0.269322	0.7877
SRK	0.003695	0.002724	1.356551	0.1753
R-squared	0.171594	Mean dependent var		0.172089
Adjusted R-squared	0.166817	S.D. dependent var		0.379725
S.E. of regression	0.346608	Akaike info criterion		0.725607
Sum squared resid	104.1591	Schwarz criterion		0.758404
Log likelihood	-310.7273	Hannan-Quinn criter.		0.738154
F-statistic	35.91774	Durbin-Watson stat		1.268666
Prob(F-statistic)	0.000000			