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THE INFLUENCE OF FINANCIAL RATIOS AND MATURITY DATES ON BOND RATINGS CHANGES IN FINANCIAL INDUSTRIES OF THE INDONESIA STOCK EXCHANGE

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ABSTRACT

A bond rating is an important indicator in fixed-income securities that significantly assesses. The relationship between financial ratios and maturity dates with changes in bond ratings is very important. It provides valuable insights into the issuer's financial health and ability to repay debts within the specified tenor. This research investigates information related to the effect of financial ratios and maturity dates on changes in bond ratings in the Indonesia Stock Exchange using Panel Data Regression for 2017-2022. The result of this study is that maturity date has a negative effect on changes in bond ratings, current ratio does not affect changes in bond ratings, return on asset has a negative effect on changes in bond ratings, the net profit margin has a positive effect on changes in bond ratings, and debt to equity has a positive effect on bond ratings in Indonesia Stock Exchange (IDX). Before investing, investors should look at the bond-issuing company's financial ratios and bond ratings to get better returns. This study aims to provide a deeper understanding of the credit rating process, help investors make more informed investment decisions, and contribute to the efficient functioning of the Indonesian bond market.

Keywords: *Financial Ratios, Maturity Dates, Bond Ratings, Financial Industries, Indonesia Stock Exchange*

1. Introduction

In Indonesia's dynamic financial market landscape, bond ratings are a compass for investors, guiding them in selecting the various investment options available. Understanding these ratings is critical for investors, policymakers, and market participants who rely on accurate credit assessments to make informed decisions. (Sakinah, Paminto, and Kadafi 2017). Bond Ratings are updated regularly to reflect significant changes in the company's financial and business performance. Changes in bond ratings have a significant effect on the company's future investing and financing activities, risk profile, and future performance.

According to Sakinah (2017), the efficient market hypothesis, security prices in an efficient capital market reflect relevant information. This idea states that an efficient market will react rapidly to information changes. If we purchase a bond, we can ascertain whether the price will align with our preferences by

looking at the capital market efficiency of the securities in Indonesia. Approximately half of all existing corporate bonds, or IDR218.73 trillion, were issued by issuers with AAA ratings.

The increasing bond issuance by banks reflects the optimism of the domestic economy recovery, so the credit demand has also increased. Specifically, the financial industry in Indonesia has expanded dramatically in recent years, drawing in both foreign and domestic investors. (Marfuah, Permatasari, and Salsabilla 2021). With this expansion, public and private businesses have increased the quantity of bonds they issue. According to Nasarudin (2019), the bond rating, or a credit rating agency's evaluation of the issuer's credit quality, is a key factor in differentiating investment-grade bonds from non-investment-grade bonds.

Financing services and banks were the two corporate subsectors with the highest outstanding corporate bonds. As of the end of September 2022, the total outstanding in each subdistrict was IDR 130.98 trillion and IDR 85.37 trillion, respectively, or 28.12% and 18.33% of all outstanding corporate bonds (KSEI, 2022). Regarding credit rating, the majority of corporate bonds. Approximately half of all existing corporate bonds, or IDR 218.73 trillion, were issued by issuers with AAA ratings. While the bulk of corporate bond series, accounting for IDR 406.72 trillion, or 87.33% of the total outstanding, had maturities of less than seven years.

Bond ratings are provided by rating agencies like Standard & Poor's, Moody's in the US, or PEFINDO (Indonesian Securities Rating) to assess how seriously a company takes its obligations to pay off principal and coupons. As the issuer's bonafide code, the ratings are AAA, AA, A, BBB, BB, B, and D, in order of best ratings. Like the ratings in KSEI, companies that have AAA ratings are the most numerous, with issuers concentrated in the AAA rating reaching IDR218.73 trillion of the total debt or almost half of the total outstanding bond corporations (Pefindo ratings, 2022).

Factors that influence the ranking of a bond are not only maturity dates from non-financial factors but also financial ratio factors, specifically financial factors as determined by probability ratios, leverage, solvency, liquidity, and productivity, which are among the variables that affect bond ratings. (Marfuah et al. 2021). According to Marfuah, (2021) in addition, there are non-accounting factors, which means that factors unrelated to finance, such as the environment, guarantors, stability, regulations, and auditors, can affect the bond rating. One of them is financial ratios such as leverage, liquidity, profitability, and productivity, and there are those based on non-financial ratios such as maturity dates.

For this research, I want to concentrate on how bond issuers' health and financial stability are represented in the influencing factors of bond rating changes, such as financial ratios, which will focus on profitability ratios, leverage ratios, and liquidity ratios. These factors provide important details about a company's ability to repay its debt, weather an economic downturn, and maintain financial stability. Therefore, it invites researcher curiosity to see how Financial Ratios and Maturity Dates Influence Bond Ratings Changes in Financial Industries of The Indonesia Stock Exchange, especially for 2017-2022. The researchers will also use a panel data analysis using a fixed effect model (FEM) approach to determine the effect of one or more predictor variables on a response variable with a data structure in the form of panel data in a certain period.

2. Literature Review

2.1 Signalling Theory

The signal theory suggests that companies should provide information signals to investors through promotions or good performance data, ensuring that management has complete information about the company's performance. (Marfuah et al. 2021). Asymmetry can affect management and share price, and asymmetry can be small or significant. This helps investors assess the quality of companies.

2.2 Maturity Dates

Maturity Dates (MD) is a ratio that assesses how long a company takes to pay its debts. The shorter MD of a bond indicates that the company can pay its debts on time. (Marfuah et al. 2021). MD can influence changes in bond rating; if an MD is less than seven years, it is easier to predict risk because it has a smaller risk than bonds with a long-term or tenor.

H_1: *MD significantly influences bond ratings changes on the Indonesia Stock Exchange.*

2.3 Liquidity Ratio

The liquidity ratio of a business shows its ability to make timely payments of its short-term debt. (Herlin Tunjung 2019). High liquidity will show the strength of a company's financial position and affect its finances. According to Herlin Tunjung (2029), liquidity reflects the level of the company's ability to pay off its short-term obligations.

In this case, the liquidity ratio also uses a calculation method that uses the current ratio (CR) to assess whether the company can pay its obligations in the short term or at the agreed maturity. (Marfuah et al. 2021). A CR that is in line or higher generally means the company can pay all its obligations. If the CR is low, it shows a higher risk of default on obligations for the company.

H_2: *CR significantly influences bond ratings changes on the Indonesia Stock Exchange.*

2.4 Profitability Ratio

Profitability ratios are crucial in understanding the relationship between asset management, liquidity, debt, and operational performance. (Purnama 2019). They show how efficiently a company uses its operating funds and generates large profits from sales. According to Purnama (2019), the highest feasible profitability ratio indicates a company's ability to generate large profits. Return on Asset (ROA) and Net Profit Margin (NPM) are ratios used to assess a company's profit efficiency.

ROA measures how efficiently a company generates profits from its total assets (Pinandita & Suryandini, 2016). The higher a company's ROA, the more efficiently it manages its assets to make much profit. An investor usually chooses a company with a high ROA, which indicates that it can efficiently and productively manage its assets.

NPM is usually used to compare net income to the revenue of a company or business segment. NPM also can show the percentage of net profit a company earns from total revenue (Rizal & Sutanti, 2015). A higher NPM indicates that the company can generate significant net profit from sales. Conversely, a low margin could indicate a problem with costs or product selling prices from a company.

H_3: *ROA significantly influences bond ratings changes on the Indonesia Stock Exchange.*
H_4: *NPM significantly influences bond ratings changes on the Indonesia Stock Exchange.*

2.5 Leverage Ratio

Leverage is a ratio that shows how much debt a business uses to measure its ability to meet its financial obligations. (Sakinah et al. 2017). Excessive debt can endanger a business from the moment it reopens. When a company is classified as having extreme leverage, it indicates that the company is trapped in a high debt burden that is difficult to shed.

In this case, there is a calculation method for the leverage ratio so that investors can see whether the company depends on its debt. Usually, the Debt To Equity (DER) calculation measures the extent to which the Company finances its operations with debt compared to its resources. (Sakinah et al. 2017). Usually, companies use this ratio to compare direct competitors or to measure changes in the company's debt over time. According to Sakinah (2017), a high DER value indicates greater risk, while a low DER indicates that the business will not utilize debt financing to expand one day.

H_5: *DER significantly influences bond ratings changes on the Indonesia Stock Exchange.*

2.6 Bond Ratings

Bonds also have a rating, and this rating system is usually used as an indicator of the company paying its debts, whether according to the previous agreement or on time (Manurung et al., 2007). This information will be beneficial to show the operational performance of the company/issuer that issued the bond and as a reference for investors if they want to invest in the company. According to Manurung (2007), there are several differences in interpreting bond ratings: Moody's (1984), Standard & Poor's (2005), Fitch Rating (1984), and PT PEFINDO (2997). Bond ratings are critical in signaling that the company can pay interest and debt on time and according to both parties' agreement.

H_6: *MD, CR, ROA, NPM, and DER simultaneously influence bond rating changes on the Indonesia Stock Exchange.*

2.7 Research Gap

The literature on bond ratings in Indonesia acknowledges the importance of financial ratio factors, which can influence investor views. However, existing studies often lack a comprehensive analysis of Indonesia's unique economic and regulatory environment, which can lead to other contributing factors affecting bond ratings. Marfuah (2021) found that STA does not affect bond ratings, while ROA has a positive effect. Sakinah (2017) found that CR does not significantly affect bond rating predictions, while the leverage ratio (DER) has a significant effect. Kurniawan and Suwarti (2017) found that ROA has a positive effect, while DER has a negative effect. Productivity ratio, maturity, and ROA simultaneously affect bond ratings in the financial sector on the IDX. This study aims to determine the market for a bond by examining its assessment in financial ratios. Various studies have determined that a bond's rating can help determine a company's assessment before investing.

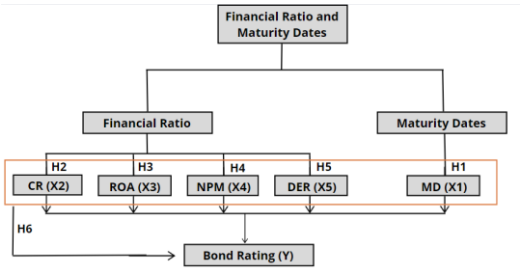

Figure 1. Theoretical Framework
(Source: Adjusted by researchers, 2024)

3. Research Method

3.1. Population and Sample

The population in this study includes companies listed on the Indonesia Stock Exchange (IDX) and those that received bond ratings by PT PEFINDO from 2017 to 2022. This population is comprehensive for the finance companies listed on the Indonesia Stock Exchange (IDX). It was chosen so that the researchers could provide appropriate conclusions and results.

In this study, the sample design can determine the sample representation and the capacity of the findings that will be interconnected with the population. This procedure will be used for researchers to

select the sample. The researchers take a sample using non-probability sampling, which will focus on the sampling technique, namely Purposive Sampling. Purposive sampling has strict requirements, with the aim that the sample selected later will be according to the researcher's wishes: (1) Finance companies listed on the Indonesia Stock Exchange, (2) Company is given bond ratings by PT PEFINDO, (3) Companies have a two-quarter financial report from 2017-2022.

The number of samples used is 76 data from 7 (seven) finance companies listed on the Indonesia Stock Exchange (IDX) from 2017 to 2022.

Table 1. Sample Proportion

No	Code	2017	2018	2019	2020	2021	2022
1.	**ADMF**	2	2	2	2	2	2
2	**ASDF**	2	2	2	2	2	2
3.	**BAFI**	2	2	2	2	2	2
4.	**BEXI**	2	2	2	2	0	0
5.	**BFIN**	2	2	2	2	2	0
6.	**BIIF**	2	2	2	0	2	2
7.	**FIFA**	2	2	2	2	2	2
Total Data of Observation		**14**	**14**	**14**	**12**	**12**	**10**
		76 Unbalanced Data of Observation					

Sources: Adjusted by researchers, 2024

However, several companies do not issue bond data in a certain year, so the researcher leaves the data blank, resulting in unbalanced data. In processing this unbalanced data, we will use Eviews version 13 by entering all data using the balance data processing option.

3.2. Operational Definitions

Table 2. Operational Definition

No	Variables	Formula	References
1	MD (X_1)	-	(Marfuah et al. 2021)
2	CR (X_2)	$(CR) = \frac{Current\ Asset}{Current\ Liabilities}$	(Marfuah et al. 2021)
3	ROA (X_3)	$(ROA) = \frac{net\ income}{total\ asset}$	(Pinandita & Suryandini 2016)
4	NPM (X_4)	$(NPM) = \frac{net\ income}{revenue}$	(Rizal and Sutanti 2015)
5	DER (X_5)	$(DER) = \frac{total\ liabilities}{total\ equity}$	(Hung, Ginting, and Joe 2021)
6	BR (Y)	-	(Sakinah et al. 2017)

Sources: Adjusted by researchers, 2024

In this research, the MD was created by inputting dummy data into Eviews 13, with a tenor of 1-4 years having a dummy scale of 1 and
a tenor of 5-7 years having a dummy scale of 0. Meanwhile, Bond Rating (BR) has a dummy scale of 1 for AAA-AA and a dummy scale of 0 for A-BBB.

3.3. Multiple Regression Analysis

Multiple regression analysis is a method to test the relationship between a dependent variable and

independent variables. (Uyanık and Güler 2013). Unyanik and Guler (2013) said that this regression aims to see the nature of the relationship between changes in the independent variable and changes in the dependent variable. This study has independent variables, namely MD, CR, ROA, NPM, and DER, while the dependent variable is Bond rating. The formula of this regression is as follows:

$$\boldsymbol{Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \in}$$

Where:
Y = Bond Rating
β_0 = Constant
β_1 - β_7 = Regression Coefficient
X_1 = Maturity Dates (MD)
X_2 = Current Ratio (CR)
X_3 = Return On Asset (ROA)
X_4 = Net Profit Margin (NPM)
X_5 = Debt To Equity (DER)
$\in$ = Random Error

The equation above reflects all interconnected variables. Its results can determine whether the independent variable has a positive effect on the dependent variable.

4. Results and Discussion

a) Descriptive Analysis

Table 3. Descriptive Statistics

	BR	MD	CR	ROA	NPM	DER
Mean	0.8591	0.7464	0.8400	0.0203	2.2006	3.0296
Median	1.0000	1.0000	0.7890	0.0180	1.6740	3.2500
Maximum	1.0000	1.0000	4.8510	0.0720	8.6900	7.4000
Minimum	0.0000	0.0000	0.4080	0.0000	1.2050	0.3720
Std. Dev.	0.3503	0.4381	0.5058	0.0141	1.3359	1.9192
Observations	71	71	71	71	71	71

Source: Proceed Data by Eviews 13 SV

Based on Table 3, the result from BR of the mean shows a value of 0.8591, which, with std. Deviation shows a number of 0.3503, which shows diverse data from the observation results. MD has a mean value of 0.7464, and std. Deviation shows a value of 0.4381, showing diverse data from the observation results. CR shows that the mean value is 0.8400, and std. Deviation shows 0.5058, meaning the data is less diverse than the observation results.

ROA shows that the mean value is 0.0203 and std. Deviation shows a value of 0.0141, meaning the data is less diverse from the observation results. NPM has a mean value of 2.2006 and std. Deviation shows a result of 1.3359, which shows diverse data from the observations. For DER, the mean value is 3.0296, and std. Deviation shows a result of 1.9192, which shows diverse data from observations.

This test is carried out to determine whether residual data distribution includes a normal or abnormal distribution. (Masrukhin 2017). The Normality Test results show that the data is normally distributed, with a p-value > 0.05. The Jargue-Bera value of 1.4146, which has a probability value of 0.4929 > 0.05, also shows that the data is normally distributed.

b) Normality Test

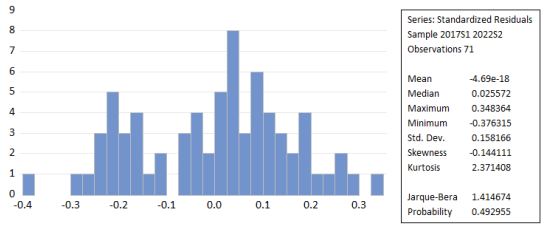

Figure 2. Normality Test
(Source: Proceed Data by Eviews 13 SV)

c) Multicollinearity Test

Table 4. Multicollinearity Test

	MD	CR	ROA	NPM	DER
MD	1.0000	0.0699	0.3198	-0.2038	0.1338
CR	0.0699	1.0000	0.0282	-0.0698	0.1223
ROA	0.3198	0.0282	1.0000	0.0464	-0.0066
NPM	-0.2038	-0.0698	0.0464	1.0000	-0.1680
DER	0.1338	0.1223	-0.006	-0.1680	1.0000

Source: Proceed Data by Eviews 13 SV

This test is carried out to determine whether the regression model used shows a correlation with the independent variables (Musriha, 2021). According to Musriha (2021), the results of identifying multicollinearity show that the relationship between independent variables must have a correlation coefficient with an absolute value of less than 0.08, meaning that the correlation is weak or there is no multicollinearity problem. Conversely, if the relationship coefficient exceeds 0.8, it indicates a strong correlation, so multicollinearity exists.

d) Heteroscedasticity Test

This test is carried out to determine whether variable inequality exists among the residuals in the regression model we choose (Musriha, 2021).

Dependent Variable: Y
Method: Panel Least Squares
Date: 07/02/24 Time: 20:21
Sample: 2017S1 2022S2
Periods included: 12
Cross-sections included: 6
Total panel (unbalanced) observations: 71
White cross-section (period cluster) standard errors & covariance (d.f. corrected)
Standard error and t-statistic probabilities adjusted for clustering

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.060320	0.074932	0.804995	0.4240
X1	0.010789	0.031701	0.340324	0.7348
X2	-0.015006	0.021515	-0.697470	0.4882
X3	2.168579	0.915869	2.367783	0.0211
X4	0.012861	0.010417	1.234537	0.2218
X5	0.000339	0.013801	0.024535	0.9805

Figure 3. Heteroscedasticity Test
(Source: Proceed Data by EViews 13 SV)

It is intended that researchers know whether variable inequality exists in their observations. The results show that the significant value for BR (0.4240), MD (0.7348), CR (0.4882), ROA (0.0211), NPM (0.2218), and DER (0.9805) indicates that there is no heteroscedasticity between variables.

However, if you observe again, one variable experiences heteroscedasticity, namely ROA, whose p-value < 0.05; this can occur with the possibility of an outlier in the research data, which causes one variable to experience heteroscedasticity. Because one data indicates heteroscedasticity, it is necessary to do a white test to prove that all variables avoid no heteroscedasticity. This is evidenced by the results of the white test, which shows that there is no heteroscedasticity between variables.

e) Autocorrelation Test

Cross-section fixed (dummy variables)

R-squared	0.796178	Mean dependent var	0.859155
Adjusted R-squared	0.762207	S.D. dependent var	0.350338
S.E. of regression	0.170839	Akaike info criterion	-0.554671
Sum squared resid	1.751149	Schwarz criterion	-0.204115
Log likelihood	30.69084	Hannan-Quinn criter.	-0.415266
F-statistic	23.43741	Durbin-Watson stat	1.233222
Prob(F-statistic)	0.000000		

Figure 4. Autocorrelation Test
(Source: Proceed Data by Eviews 13 SV)

This test is done to determine whether there is an error in the linear regression model during observation time. (Musriha 2021). In this study, we will use the Durbin-Waston value benchmark to determine whether there is a correlation between one period and the previous period. The results show that the Durbin-Waston value is between -2 and +2, with a value of 1.2332, indicating no autocorrelation in this study. In this case, it can be concluded that there is no error in the regression model used.

f) Multiple Linear Regression Analysis

Dependent Variable: Y
Method: Panel Least Squares
Date: 06/25/24 Time: 08:13
Sample: 2017S1 2022S2
Periods included: 12
Cross-sections included: 6
Total panel (unbalanced) observations: 71

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.548050	0.143619	3.815987	0.0003
X1	-0.283638	0.060761	-4.668107	0.0000
X2	0.018198	0.041238	0.441287	0.6606
X3	-6.075564	1.755419	-3.461033	0.0010
X4	0.110821	0.019967	5.550310	0.0000
X5	0.127786	0.026453	4.830709	0.0000

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.796178	Mean dependent var	0.859155
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Prob(F-statistic)	0.000000		

Figure 5. Multiple Linear Regression Analysis
(Source: Proceed Data by Eviews 13 SV)

Multiple Linear Regression Analysis is a statistical methodology used to test the interaction between dependent and independent variables. (Uyanık and Güler 2013). In this case, the researcher wants to test the linear regression relationship between the dependent variable, namely BR, and the independent variables MD, CR, ROA, NPM, and DER, where these results are shown from the results of Eviews 13 SV processing of 76 observation data which is processed with the unbalanced data method which gets the final total observation of 71 data.

Y(BR) = 0.5480 - 0.2836*MD + 0.0181 *CR – 6.0755*ROA + 0.1108*NPM + 0.1277*DER

This is the expected value of BR when all independent variables MD, CR, ROA, NPM, and DER are equal to zero. It represents the base level of Y. It is shown that for every one-unit increase in MD, variable BR is expected to decrease by about 0.2836 units, assuming other variables remain constant. This indicates that for every one-unit increase in CR, variable BR is estimated to increase by about 0.0181 units, assuming other variables remain constant.

For ROA, variable BR is estimated to decrease by about 6.0755 units, assuming other variables remain constant. NPM, variable BR is estimated to increase by about 0.1108 units, assuming other variables remain constant. DER, variable BR is estimated to increase by about 0.1277 units, assuming other variables remain constant.

g) Coefficient of Determinant (R^2)

Dependent Variable: Y
Method: Panel Least Squares
Date: 06/25/24 Time: 08:13
Sample: 2017S1 2022S2
Periods included: 12
Cross-sections included: 6
Total panel (unbalanced) observations: 71

Variable	Coefficient	Std. Error	t-Statistic	Prob.
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Log likelihood	30.69084	Hannan-Quinn criter.	-0.415266
F-statistic	23.43741	Durbin-Watson stat	1.233222
Prob(F-statistic)	0.000000		

Figure 6. Coefficient of Determinant (R^2)
(Source: Proceed Data by Eviews 13 SV)

The coefficients in the linear regression output provide insight into the relationship between each independent variable and the dependent variable. The coefficient for MD is -0.2836, indicating that a one-unit increase in MD is associated with a one-unit decrease in the variable of -0.2386, which means that MD has a significant negative effect. The coefficient for CR is 0.0181, indicating that a one-unit increase in CR is associated with an increase in the variable by 0.0181 one-unit, which means that CR has no significant effect.

The coefficient for ROA is -6.0755, indicating that a one-unit increase in ROA is associated with a one-unit decrease in the variable of -6.0755, which means that ROA has a significant negative effect. The coefficient for NPM is 0.1108, indicating that a one-unit increase in NPM is associated with an increase in the variable of 0.1108 one-unit and that NPM has a significant positive effect. The coefficient for DER is 0.1277, indicating that a one-unit increase in DER is associated with an increase in the variable of 0.1277 one-unit and that DER has a significant positive effect.

5. Conclusions and Implications

This study investigates the impact of financial ratios and maturity dates on bond ratings in the Indonesian Stock Exchange (IDX) finance industries. The results show that MD significantly affects bond ratings in companies listed on IDX, with lower tenor ranges having a greater effect. CR does not significantly affect bond ratings, while ROA has a negative effect, suggesting proper asset management for profit generation. NPM positively affects bond ratings, with high NPM ratios indicating a company's ability to generate net profit from sales. DER has a positive effect, with low DER ratios indicating minimal debt financing for operational costs.

The study faced challenges in data collection, references, and regression assumptions using panel data models. Future research should consider including non-financial ratio data such as auditors, company size, and inflation to support the results. Due to the limited study period, further research is recommended to

meet predictions of changes in bond ratings in the future.

Investors should understand financial factors before investing in a bond, such as CR, ROA, NPM, and DER, as well as factors like maturity dates offered by the bond. Bonds should be chosen from companies with an AAA-AA rating, as they demonstrate good asset management, timely debt payment, and efficient profit generation.

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