



Controlling the Rate of Return in the Chemical Corporation

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Abstract. Rate of Return (ROR) is one of the most important measurements to the company in analyzing net gain or loss of an investment over a specified time period. There are some alternative measurements that are used by the company, such as ROE (Return on Equity), ROI (Return on Investment), and ROA (Return on Assets). Controlling ROR would make a company obtain the greatest annual net cash flow in sustainability per dollar invested. The more return that company will obtain, the more strength the company is. The chemical corporation in this research was conducted by using a descriptive quantitative method. This paper focuses on how the chemical corporation will control the rate of return by improving ROI in three ways, such as increasing sales, reducing expenses, and reducing assets.

Keywords : Rate of Return (RoR), ROE, ROI, ROA, ROC, Chemical Corporation

1. INTRODUCTION

In the highly competitive landscape of the industry, corporations face the ongoing challenge of achieving and sustaining profitable growth. As companies strive to maximize their financial performance, one crucial metric that requires careful management is the rate of return (RoR). The rate of return is often defined as the discount rate, hurdle rate, or opportunity cost of capital. It is called by opportunity cost because it depends on the investment opportunities available to investors in the financial market. (Brealey & Myers, 2017). Rate of return works on any investment from real estate, stocks, bonds, and various investment types. In essence, the rate of return is on any asset as long as the asset is purchased at one particular time and generates cash flow at some point in the future. The rule of ROR is the accepting investments that offer rates of return in excess of their opportunity costs of capital. ROR is usually used in many companies to formulate a financial argument for continued investment. The Chemical Corporation as one of the companies that used RoR to demonstrate how such investment can be returned greater. Effective control over the RoR is essential for chemical corporations to optimize their investment decisions, allocate resources efficiently, and enhance overall financial performance. The greater the percentage of ROR, the greater the profit achieved by the company from the investment. Therefore, it is necessary to look further into how chemical corporation company can control the rate of return with the standard's measurement of rate of return. This purpose of this article is to explain what is ROR and try to answer how it is applied in chemical corporation by analyse annual report of several companies in chemical field.

2. LITERATURE REVIEW

2.1. Rate of Return

The rate of return (RoR) is a key metric used by businesses to measure the profitability of their investments. the rate of return on the investment project and the rate of return that the stockholders can earn by investing in financial markets is necessary to control to get the expected return (Brealey & Myers, 2017). The rate of return has two principles, First, a lower-but-safer return can be better than a higher but riskier return. Second, an investment with a higher percentage return can generate less value than a lower-return investment that is larger or lasts longer. When the firm invests cash rather than paying it out, shareholders forgone the opportunity to invest it for themselves in financial markets. The return that they are giving up is therefore called the opportunity cost of capital. If the firm's investments can earn a return higher than the opportunity cost of capital, the stock price

increases. If the firm invests at a return lower than the opportunity cost of capital, the stock price falls. Based on this explanation, the writers would like to dig deeper into what is actually the effect of controlling the RoR in company. Controlling the rate of return is crucial to ensure the long-term success and sustainability of the corporation. Several methods or strategies have been proposed as alternative measurement on controlling the ROR, as followings :

a. Return on Investment (ROI)

ROI can be defined as the measurement to total return that the company has provide for its investor. It is commonly expressed as a percentage or ratio and provides insights into the effectiveness and efficiency of an investment. (Brigham & Houston, 2018).

The formula for calculating ROI is as follows:

$$\text{ROI} = \frac{\text{Net Profit}}{\text{Cost of Investment}} \times 100$$

Net Profit refers to the gain or profit generated from the investment, which is calculated by subtracting the cost of the investment from the total returns (revenue, income, or savings) it generates. Cost of Investment refers to the total expenses incurred in acquiring, implementing, and maintaining the investment (Afzalia et al., 2022). This may include the initial purchase price, transaction fees, installation costs, and ongoing operational expenses. ROI is a crucial metric for evaluating the financial performance and viability of an investment (Pratama, et al., 2022). A positive ROI indicates that the investment generated more profit than its cost, suggesting a favorable return. Conversely, a negative ROI implies that the investment resulted in a net loss. The ROI metric allows investors, businesses, and individuals to compare different investment opportunities and make informed decisions based on their expected returns. It is essential to consider other factors such as risk, time frame, and potential alternative investments when interpreting and utilizing ROI as an investment indicator.

b. Return on Equity (ROE)

Another important ratio is ROE, which measures the rate of return on common's stockholders' investments. It measures the income to shareholders per dollar invested.

So its return on equity was :

$$\text{ROE} = \frac{\text{Net Income}}{\text{Equity}}$$

Net Income represents the profit earned by the company after deducting all expenses, including operating expenses, taxes, interest, and other costs. It is typically obtained from the company's income statement. Average Common Equity is the average value of the common shareholders' equity over a specific period. It is usually calculated by taking the average of the beginning and ending common equity balances.

ROE is expressed as a percentage and indicates the profitability generated per dollar of common equity. A higher ROE suggests that the company is generating more profit from the equity invested by common shareholders, indicating efficient use of their investment. Conversely, a lower ROE indicates lower profitability relative to the company's common equity.

ROE is an important metric for evaluating a company's profitability and the effectiveness of its capital structure. It helps investors, analysts, and stakeholders assess the returns generated for common shareholders and compare the performance of companies within the same industry. Additionally, ROE can be used to analyze changes in profitability over time and assess management's ability to generate returns on equity investments.

c. Return on Assets (ROA)

Return on assets measures the income available to debt and equity investors per dollar of the firm's total assets. Total assets (which equal total liabilities plus shareholders' equity) are greater than total capital because total capital does not include current liabilities (Brealey & Myers, 2017).

The calculation of Return on Assets is as follows:

$$ROA = \frac{(after\ tax\ interest + net\ income)}{Total\ Assets}$$

Net Income represents the profit earned by the company after deducting all expenses, including operating expenses, taxes, interest, and other costs. It is typically obtained from the company's income statement. Total Assets refer to the sum of all the assets owned or controlled by the company, including both current and non-current assets. This includes items such as cash, accounts receivable, inventory, property, plant, and equipment, as well as intangible assets.

ROA is expressed as a percentage, indicating the profitability generated per dollar of assets. A higher ROA suggests that the company is generating more profit from its asset base, indicating efficient utilization of resources. Conversely, a lower ROA indicates lower profitability relative to the company's asset base.

ROA is a crucial metric for evaluating a company's operational efficiency and profitability. It helps investors, analysts, and stakeholders understand how well a company is generating returns on the investments made in its assets. It is important to note that ROA may vary significantly across different industries, so it is often more meaningful to compare ROA values within the same industry for benchmarking and analysis purposes.

d. Return on Capital (ROC)

Return on Capital (ROC) is a financial metric that measures the profitability of an entire firm, considering both debt and equity capital. It indicates the efficiency with which a company generates returns on the capital invested in its operations. ROC is an opportunity cost of capital, because it equals the expected rate of return on investment opportunities open to investors in financial markets. The firm creates value for investors only if it can earn more than its cost of capital, that is, more than its investors can earn by investing on their own. ROC is calculated as equal to the total profits that the company has earned for its debt- and equityholders, divided by the amount of money that they have contributed.

The formula for calculating Return on Invested Capital is as follows:

$$ROC = \frac{(after\ tax\ interest + net\ income)}{Total\ Capital}$$

When calculating the Company's return on capital, the company's after-tax interest and net income are summed. The reason we subtracted the tax shield on debt interest was that we wished to calculate the income that the company would have earned with all-equity financing (Muda et al., 2019). The tax advantages of debt financing are picked up when we compare the company's return on capital with its weighted-average cost of capital.

ROC is expressed as a percentage and measures the return generated on each dollar of invested capital. A higher ROC indicates that the company is generating more returns from its invested capital, indicating efficient capital allocation and profitability. On the other hand, a lower ROC suggests that the company is generating lower returns relative to its invested capital.

ROC is a valuable metric for evaluating a company's financial performance and the efficiency of its capital utilization. It helps investors, analysts, and stakeholders assess how well a company is generating returns on the capital employed in its operations. ROC is also useful for comparing companies within the same industry and evaluating their relative profitability and capital efficiency.

2.2. The Nature of Chemical Corporation

A chemical corporation, also known as a chemical company, is an organization that is primarily engaged in the production, distribution, and sale of chemicals. These companies typically manufacture a wide range of chemical products, including industrial chemicals, specialty chemicals, agricultural chemicals, and consumer chemicals. These corporations are involved in various sectors of the chemical industry, which encompasses a broad range of activities, including manufacturing basic chemicals, specialty chemicals, polymers, plastics, fertilizers, pharmaceuticals, and more.

Chemical corporations typically operate large-scale production facilities, research and development laboratories, and distribution networks to supply chemicals to various industries such as agriculture, automotive, construction, healthcare, electronics, and consumer goods (Muda & Nurlina. 2018). They may also engage in the exploration and extraction of raw materials used in chemical production, as well as the development of new chemical compounds and technologies. The chemical industry mostly related to oil and natural gas, which represent an estimated 90% of its feedstocks. In addition, it is an energy intensive industry, but with the improvement efficiency. As a result, the chemical industry have become focus oil and natural gas for both petrochemical feedstocks and energy production.(Jones,2009) Nowadays, The modern global chemical industry has become largely based on petrochemical feedstocks, an evolution during the past century from plant materials and coal. As a corporation, chemical industry manages their operational system from raw materials until it becomes a product. In the process, the chemical industry needs money for all costs. Some money also comes from the investors who make an investment for the industry in expected return.

In this article, the writers will use the annual report of the chemical corporations to get a better understanding of controlling the rate of return.

2.3 Sales, Expenses and Net Assets

Sales refers to the volume of goods and services sold by a business during a reporting period. Sale is a term that refers to the operating revenues a business receives from its business activities, such as the sale of goods, services, products, etc. Moekjat in Uddin & Akter (2021) said that Sales is an activity aimed at finding buyers, influencing, and giving instructions so that buyer can adjust their needs to the products offered and enter into agreements regarding prices that are profitable for both parties. It is also known as a transaction between two or more parties in which goods or services are exchanged for money or other assets. In the financial markets, a sale is an agreement between a buyer and seller to exchange a security at an agreed-upon price and time. Increasing sales can improve return on investment (ROI) because ROI is a performance measure used to evaluate the efficiency or profitability of an investment or compare the efficiency of a number of different investments. ROI tries to directly measure the amount of return on a particular investment, relative to the investment's cost. Increasing sales can increase revenue and therefore increase ROI.

Expenses are costs that businesses incur in running their operations, such as wages, salaries, rent, and depreciation. It is including as a financing cost on the firm's income statement. (Brigharm & Houston, 2018). Expenses are the cost of assets consumed or services used in the process of earning revenue. They are decreases in owner's equity that result from operating the business (Waygandt, Kimmel and

Kieso, 2011). Expenses are deducted from revenue to arrive at profits, and businesses can deduct certain expenses from taxes to help alleviate the tax burden and increase profits. Reducing expenses can improve return on investment because it increases the net income of a company. When a company reduces its expenses, it has more money left over after paying for its costs. This extra money can be used to pay dividends to shareholders or reinvested in the company to fund growth opportunities. By reducing expenses, companies can also increase their profit margins, which is the amount of profit earned per Dollar of sales.

Assets are resources a business owns. The business uses its assets in carrying out such activities as production and sales. The common characteristic possessed by all assets is the capacity to provide future services or benefits (Waygandt, Kimmel and Kieso, 2011). Asset values depend in a fundamental way on earnings and cash flows as reported in the accounting statements (Brigham & Houston, 2018). Reducing assets can improve the return on investment by increasing the return on assets (ROA). ROA is a financial ratio that measures how efficiently a company uses its assets to generate profit. By reducing assets, companies can increase their ROA because they have less money tied up in assets that are not generating revenue. For example, if a company has a lot of cash sitting in a bank account earning low interest rates, it could reduce its cash balance and invest the money in higher-yielding investments. This would increase the company's ROA and improve its return on investment.

3. METHOD

This study uses a descriptive quantitative method to analyze how the chemical corporation controls the rate of return. The descriptive quantitative method is a research method that deals with the description of data. Sources of data are collected through journals, annual reports of corporations, and books. Therefore, the methodology used is pure literature analysis, evaluation, and drawing conclusions from theoretical analysis and discussion results based on data, adding deeper insight to achieve a better understanding. Using financial report data from several chemical companies listed on the Indonesian stock exchange to find out whether the rate of return can be controlled or increased by increasing sales or increasing revenue, reducing costs, and reducing the value of company assets. The method used by researchers is to compare the financial data of several of these companies and see whether the trend of increasing sales is directly proportional to the increase in the rate of return, is the trend of decreasing costs is directly proportional to the increase in the rate of return, and is the decrease in asset value in comparison to the increase in the rate of return from some of these companies.

4. RESULT & DISCUSSION

Table 1- Rate of Return on Several Chemical Corporations listed on The Indonesia Stock Exchange

No	Chemical Corporation	The Year 2022		The Year 2021		increase/ decrease ROA	increase/ decrease ROE
		(ROA) %	(ROE) %	(ROA) %	(ROE) %		
1	PT Avia Avian Tbk	12,98	14,63	13,19	15,24	-0,21	-0,61
2	PT Indo Acidatama Tbk	3,84	5,11	4,36	3,09	-0,52	2,02
3	PT Intanwijaya Internasional Tbk	4,94	5,88	2,16	2,91	2,78	2,97
4	PT Barito Pacific Tbk	0,35	0,87	3,20	6,93	-2,85	-6,06
5	PT Duta Pertiwi Nusantara Tbk	6,76	8,31	6,27	7,38	0,49	0,93
6	PT Madusari Murni Indah Tbk	0,5	0,8	1,7	2,7	-1,2	-1,9
7	PT Emdeki Utama Tbk	3,67	4,1	3,94	4,3	-0,27	-0,2

8	PT Samator Indo Gas TBk	1,29	3,75	2,59	5,88	-1,3	-2,13
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Based on an analysis of several financial reports of chemical companies that are listed on the Indonesian stock exchange for 2021 and 2022, it is known that we can not come to the conclusion that any increase in sales will give result in an increase in the rate of return. There are several companies that have recorded an increase in sales in 2022 compared to 2021 but have recorded a smaller return on assets and return on equity. For example, in 2022 PT Emdeki Utama Tbk recorded a sales increase of 22.54% in 2022 compared to the previous year, but it also recorded a decrease in return on assets and return on equity. Increasing and decreasing sales in the rate of return also occurred at PT Avia Avian Tbk and PT Indo Acidatama Tbk. However, increasing sales does not always give an impact on the increase in the rate of return for chemical companies. Increasing sales will usually affect the company's cost structure. When the company has reached the point of maximum production or point of maximum sales, it comes to increase sales after that. It necessary for the company to make an additional new investment which will certainly affect the company's fixed costs. Changes in fixed costs and variable costs will change the calculation of return on assets because of the increase in assets and the increase in new fixed costs for the additional investment.

Table 2- Sales of Several Chemical Corporations listed on The Indonesia Stock Exchange

No	Chemical Corporation	The Year 2022	The Year 2021	increase/ decrease Sales (revenue)	increase/ decrease Sales (revenue) %
1	PT Avia Avian Tbk	6.779.643	6.694.171	85.472,00	1,28%
2	PT Indo Acidatama Tbk	977.708	907.833	69.875,00	7,70%
3	PT Intanwijaya Internasional	478.207	520.717	(42.510,00)	-8,16%
4	PT Barito Pacific Tbk	2.961.532	3.155.656	(194.124,00)	-6,15%
5	PT Duta Pertiwi Nusantara	200.912	147.210	53.702,00	36,48%
6	PT Madusari Murni Indah Tbk	1.515.320	1.612.054	(96.734,00)	-6,00%
7	PT Emdeki Utama Tbk	486.876	397.308	89.568,00	22,54%
8	PT Samator Indo Gas Tbk	2.612.464	2.738.813	(126.349,00)	-4,61%

The data also show that not all decrease in company asset values will result in increasing the rate of return for chemical on the Indonesian stock exchange. In the other hand, an increase in the value of a company's assets also does not always record a decrease in the rate of return. PT Duta Pertiwi Nusantara Tbk has recorded an increase in asset value of 11.99% in 2022 when compared to the previous year. This increase did not directly make the rate of return decrease, instead, the company recorded an increase in return on assets and return on equity that year. Companies that have invested in additional assets obviously have the objective of increasing their income. There are almost no cases of adding assets without the aim of increasing the company's current and future income. The addition of assets that affect the increase in income certainly does not always have a negative effect on the company's rate of return. For example, PT Duta Pertiwi Nusantara Tbk, which added assets in 2022, was followed by an additional 36.48% in sales, which is even greater than the percentage increase in company assets.

Table 3- Net Assets of Several Chemical Corporations listed on The Indonesia Stock Exchange

No	Chemical Corporation	The Year 2022	The Year 2021	increase/ decrease Total Asset	increase/ decrease Total Asset %
1	PT Avia Avian Tbk	10.792.122	10.873.760	(81.638)	-0,75%

2	PT Indo Acidatama Tbk	876.602	860.163	16.439	1,91%
3	PT Intanwijaya Internasional	496.011	510.699	(14.688)	-2,88%
4	PT Barito Pacific Tbk	9.248.254	9.241.551	6.703	0,07%
5	PT Duta Pertiwi Nusantara	405.675	362.242	43.433	11,99%
6	PT Madusari Murni Indah Tbk	2.182.946	2.275.217	(92.271)	-4,06%
7	PT Emdeki Utama Tbk	1.045.929	985.400	60.529	6,14%
8	PT Samator Indo Gas Tbk	8.041.989	8.164.599	(122.610)	-1,50%

A decrease in expense will lead to an increase in net income if revenue or sales remain constant or increase. However, if the decrease in expense is accompanied by a decrease in revenue or sales, then the increase or decrease in net income will be determined by the difference in the value of the decrease in expense with the decrease in income and sales. If the decrease in expense is greater than the decrease in income, it will produce a positive value in the company's net income. Conversely, if the decrease in expense is less than the decrease in revenues or sales, it will lead to a decrease in the net profit of the company. As a result, lower expenses will not always increase the rate of return to the business. The results of an analysis of the financial statement data of several chemical companies listed on the Indonesian stock exchange also show that there are companies that have experienced a decrease in costs but have not recorded an increase in return on assets and return on equity. PT Madu Sari Murni Tbk, for example, recorded an expense reduction of 4.40% in 2022 but did not record an increase in the rate of return. Instead, the company experienced a decline in return on assets from 1.7% the year before to 0.5% in 2022. The value of the return on equity decreased as well.

Table 3- Expenses of Several Chemical Corporations listed on The Indonesia Stock Exchange

No	Chemical Corporation	The Year 2022	The Year 2021	increase/ decrease Expenses	increase/ decrease Expenses %
1	PT Avia Avian Tbk	5.293.806	5.345.092	(51.286)	-0,96%
2	PT Indo Acidatama Tbk	933.285	875.576	57.709	6,59%
3	PT Intanwijaya Internasional	446.703	506.928	(60.225)	-11,88%
4	PT Barito Pacific Tbk	2.929.322	2.859.649	69.673	2,44%
5	PT Duta Pertiwi Nusantara Tbk	173.483	124.486	48.997	39,36%
6	PT Madusari Murni Indah Tbk	1.504.010	1.573.253	(69.243)	-4,40%
7	PT Emdeki Utama Tbk	437.821	350.263	87.558	25,00%
8	PT Samator Indo Gas Tbk	2.508.568	2.527.328	(18.760)	-0,74%

5. CONCLUSION

Increasing sales will increase the rate of return if the expense and the net asset remain constant. Similarly, the reduction of expenses will increase the rate of return as long as the value of the sales and the value of the asset remain the same. The decrease in net assets can also be used as a means of increasing the rate of return as long as the sales and expense does not change.

Changes in the value of sales will normally be followed by changes in the value of expenses and net assets. The increase in sales will continue to result in an increase in the rate of return as long as the percentage increase exceeds the percentage increase in expense and net assets. Otherwise, an increase in sales can result in a decrease in the rate of return if the percentage increase is lower than the increase in expense and net assets.

Expenses can be used as a tool by chemical corporations to control the rate of return. Reducing costs to increase the net profit company to lead higher rate of return. A decrease in the value of expenses that is not followed by a decrease in sales and an increase in net assets can increase the rate of return. On the contrary, a decrease in expense is caused by a decrease in sales with a smaller percentage of decreased expenses can result in a decrease in the value of the company's rate of return.

The value of sales, total cost, and net assets is directly giving an impact to the rate of return of chemical companies listed on the Indonesian Stock Exchange. However, we can not conclude that an increase in sales, a decrease in costs, and a decrease in the value of assets will positively affect the rate of return. The effect that arises from changing one of that accounts depends on the effects that arise from changing one account to another account. For example, changes in the value of assets will impact the value of expenses, and usually the value of sales. To find out whether the increase in assets has a negative effect on the rate of return, we have to look deeply at the effect of its increase in sales and expense for the addition of these assets.

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