

Return on Assets and Its Decomposition into Operating and Non-Operating Segments

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Abstract: Return on total assets (ROA) is a significant indicator of growth of business operations of an entity. It is broader concept than Return on equity (ROE) and Return on investment (ROI). Increase in Return on total assets (ROA) creates wealth for all stakeholders as against Return on Equity (ROE) which creates returns only for Equity Shareholders. This paper has analyzed Return on total assets (ROA), Return on equity (ROE) and Earnings per share (EPS) after decomposition of each into operating and non-operating segments. This paper concludes that for better financial analysis both operating and non-operating segments of return on total assets (ROA), Return on investment (ROE) and Earnings per share (EPS) should be analyzed.

Keywords: ROA, ROI, ROE, Operating and Non-operating

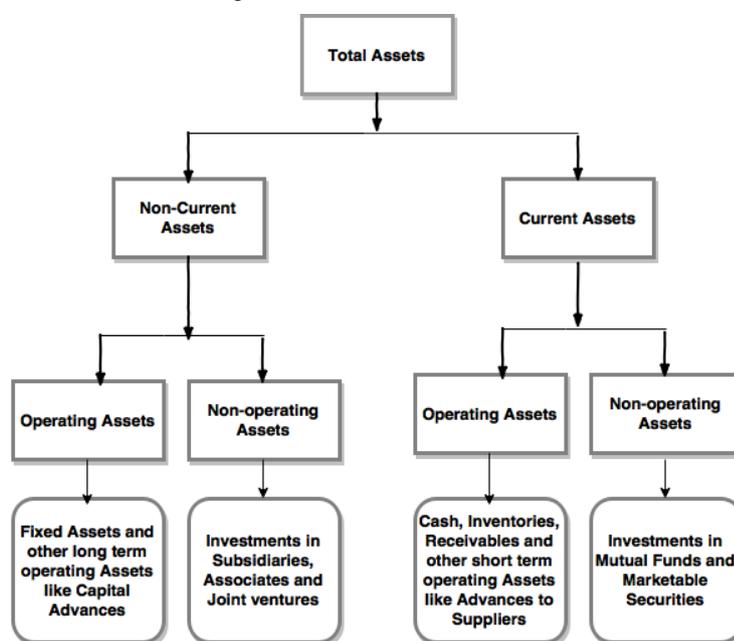
JEL CLASSIFICATION: M41, G32, G33 and G34

I. Introduction

Return on total assets (ROA) is a significant indicator of growth of business operations of an entity. It is broader concept than return on equity (ROE) and return on investment (ROI). Increase in Return on total assets (ROA) creates wealth for all stakeholders as against Return on Equity (ROE) which creates returns only for Equity Shareholders. Further, Return on investment (ROI) takes into consideration only shareholders and lenders but ignores current liabilities. It tells how much return has been generated by investing Rupee one of the capital employed. Decrease in Return on total assets (ROA) should invite immediate attention of top management. To know the exact reason of negative growth of Return on total assets (ROA), it's segmentation into return on operating assets and return on non-operating assets is necessary.

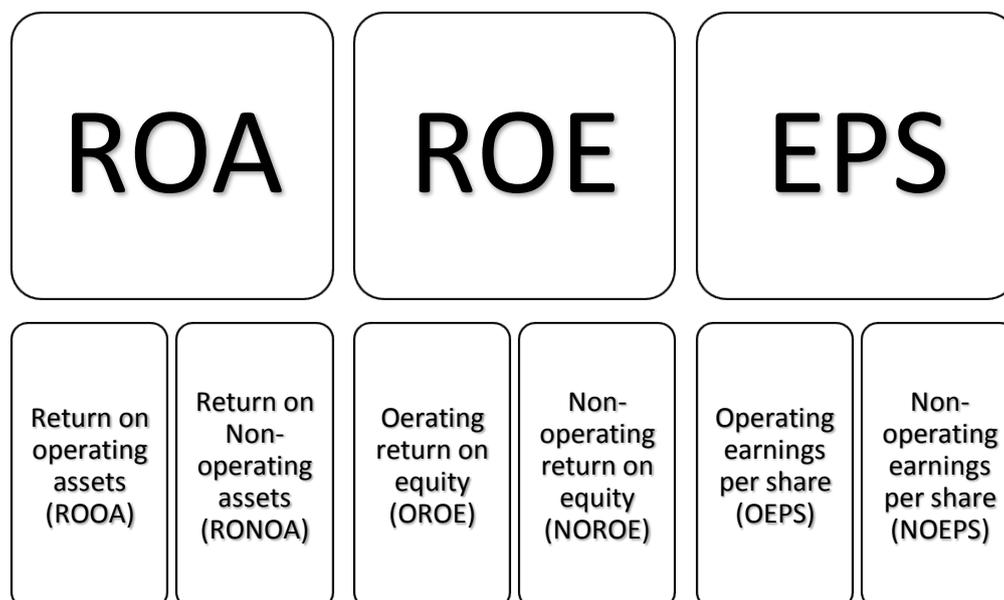
Total assets may be sub-divided into operating and non-operating assets (**Figure-1**). Whereas, operating assets implies part of the total assets deployed for carrying out basic business operations of the company. It broadly includes fixed and other long term assets (both tangible and intangible) plus current assets excluding investments made outside the company and loans and advances made to related parties and associates. Non-operating assets includes part of total assets deployed for purposes other than for carrying out the basic business operations of the company. Non-operating assets include investments (both current and non-current) plus loans and advances made to related parties and associates

Figure- 1: Classification of Total Assets



This paper has analyzed return on total assets (ROA), return on equity (ROE) and earnings per share (EPS) after decomposition of each into operating and non-operating segments(**Figure-2**). Return on total assets (ROA) has been segmented into return on operating assets (ROOA) and return on non-operating assets (RONOA). Further decomposition of return on equity (ROE) has been made into operating return on equity (OROE) and non-operating return on equity (NOROE). In similar lines decomposition of earnings per share (EPS) has been made into operating earnings per share (OEPS) and non-operating earnings per share (NOEPS)

Figure-2: Decomposition of ROA, ROE and EPS



II. Literature Review

Return on Assets (ROA) was first used in 1920 by DuPont as an analysis tool for computing return on farm assets. He had decomposed Return on Assets (ROA) into total assets turnover and net profit margin. In 1970 however there occurred a shift from Return on Assets (ROA) to Return on Equity (ROE) when ROA was decomposed into three segments, profit margin based on turn over, efficiency and financial leverage. Till then many articles have been written on Return on total assets (ROA), Return on Equity (ROE) and Earnings per share (EPS). However, no work has been conducted till date on operating and non-operating assets and their associated return.

Fred. D. Arditti, et al. 1967 held that only those investments should be selected where present value of investment exceeds cost of investment.

MihaelaHerciu, Claudia Ogrea and Lucian Belascu, et al., 2010 focused on ROS, ROA and ROE of 20 most profitable companies in the world. They concluded that absolute measurement are not relevant every time and added that most profitable companies may not be most attractive for investors

Mehta Piyush Ramesh et al. 2015, applied three step Du Pont model to analyze the profitability, efficiency and financial leverage of Axis Bank and concluded that Return on equity is one of the most crucial tools used for financial statement analysis to judge company's effectiveness.

SayanChattaerjee and Birger Werner Felt, et al. 1991, conducted study to find link between resources and type of diversification. They found strong relation between intangible assets related diversification and they also added that higher performing firm supported the model in a better way.

D.M.N.S.W. Dissanayake et al. 2012 studied determinants of Return on Equity in Sri Lankan Microfinance Institutions and concluded that Cost per Borrower and Debt/Equity ratios are statistically significant predictor variables in determining return on equity in a MFI.

Anil M. Pandya and Narendar V. Rao et al. 1998, studied about diversification and firm Performance. They concluded that a dominant undiversified firm may perform better than a highly diversified firm in terms of return but its riskiness will be much greater.

SmitaMeena, et al. 2014, conducted research to study the future prospects of worldwide Merger and Acquisitions and the role of Indian industries in global scenario. She concluded that Indian markets have witnessed burgeoning trend in mergers due due to business consolidation by large industrial houses, consolidation of business by multinationals and increasing competition

Irina Berzkalne and Elvira Zelgalve, et al. 2014 did research on return on equity. They came out with the conclusion that during bad times more profitable company uses less debt. Alternatively more debt may be seen in good times when companies have opportunities to generate more return.

E. ChukeNwude, et al. 2012 did study on rate of return on investment in Banking stocks. He concluded that for an investment to be worthwhile, the return on investment must be greater than the cost of capital.

Dr. Monica Tulsian, et al. 2014 analysed return on capital employed on SAIL and TISCO and concluded that better ROI demands efficiency in management and efficient utilization of fund.

Dr. Majed Abdel Majid Kabajeh, Dr. Said Mukhled Ahmed AL Nu'aimat and Dr. FirasNaimDahmash et al. 2012 studied relationship between the ROA, ROE and ROI Ratios with Jordanian Insurance Public Companies Market Share Prices. They concluded that there was a positive but low relationship between each of ROA ratio separately and ROI ratio with Jordanian insurance public companies share prices but no relationship between the ROE ratio with Jordanian insurance public companies market share prices

Marian Siminica, Daniel Circiumaru, Dalia Simion, et al. 2012 studied on return on assets and concluded that ratios of return are among the most exposed to economic crisis however other ratios like liquidity and solvency ratios were not significantly influenced.

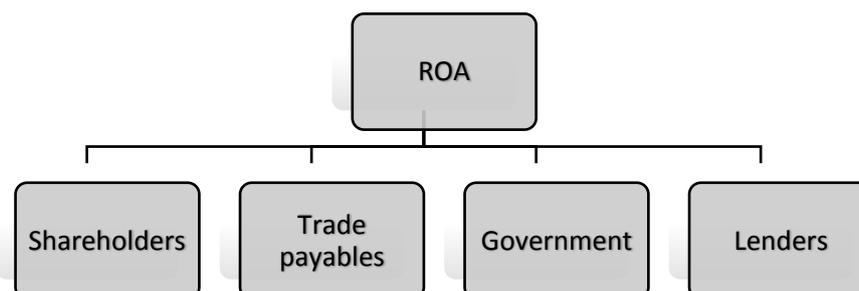
III. Concept and Decomposition of Various Returns

1. **Return on total assets (ROA)** refers to returns generated by a business which is available to all stakeholders/providers of funds, i.e., Shareholders, Bankers, Debenture holders, Government, creditors and so on (**Figure-3**)

ROA can be computed by the formula: $\frac{EBIT}{Avg.totalassets} \times 100$

It implies returns available to all stakeholders per rupee of amount invested in total assets. It is broader concept than Return on Equity (ROE) which is computed only from the point of view of Equity Shareholders. ROE shows share of profit after taxes available per equity share. Return on operating assets can further be subdivided into return on operating assets and return on non-operating assets.

Figure- 3: Stakeholders of ROA



1.1. Return on operating assets (ROOA): By operating, we mean part of the total assets deployed for carrying out basic business operations of the company. It broadly includes fixed and other long term assets (both tangible and intangible) plus current assets excluding investments and loans and advances made to related parties and associates. Increase in return on operating assets reflects growth in returns from basic business operations.

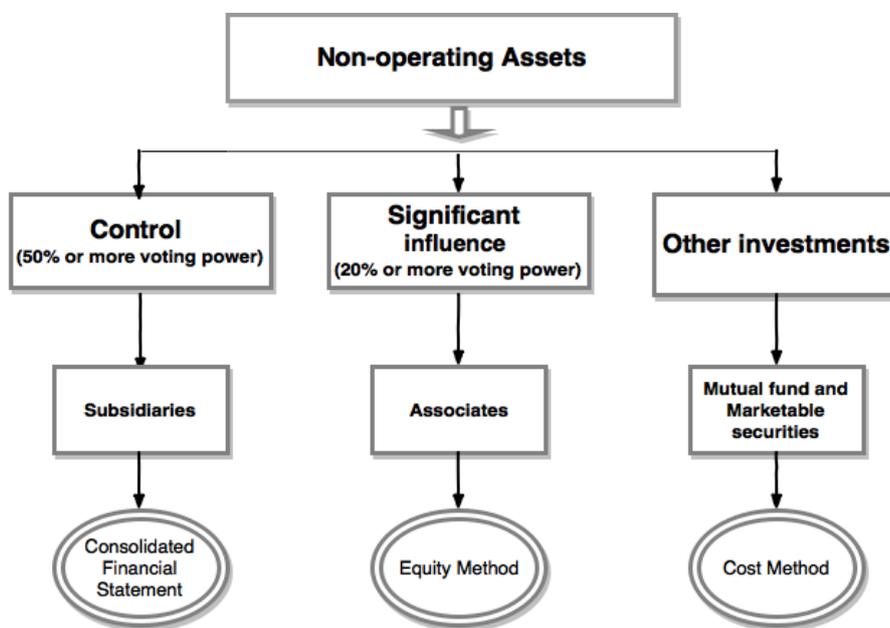
Return on operating assets may be computed by the formula:

$$\frac{\text{Operating profit before interest and taxes}}{\text{Avg. operating assets}} \times 100$$

Or, $\frac{\text{EBIT} - \text{Other income}}{\text{Avg. operating assets}} \times 100$

1.2. Return on non-operating assets (RONOA): Non-operating assets implies part of total assets deployed for purposes other than for carrying out the basic business operations of the company. Non-operating assets include investments (both current and non-current) plus loans and advances made to related parties and associates (Figure-4). As returns, the company receives interests, dividends and capital gains against these assets. Growth in return on non-operating assets may increase the total earnings and consequently earnings per share, however does not reflect the growth of basic business operations.

Figure-4: Classification of Non-operating Assets



1.3. Return on total assets (ROA): It is the total return generated by operating and non-operating assets. It can be computed by the formula:

$$\left[\text{Return on operating assets} \times \frac{\text{Avg. operating assets}}{\text{Avg. total assets}} \right] + \left[\text{Return on non-operating assets} \times \frac{\text{Avg. non-operating assets}}{\text{Avg. total assets}} \right]$$

2. Return on Equity (ROE) and its sub-divisions

Return on equity (ROE): Return on equity (ROE) shows net earnings available to equity shareholders after paying charges to all other stakeholders. It is a composite factor of profitability, efficiency and financial leverage (DuPont Analysis, 1920). Thus, any changes in return on equity should be analyzed from all these three angles. Since, equity shareholders are the real owners of the company, ROE is the most preferred ratio for analyzing the net effect of changes in earnings in the net wealth of equity shareholders.

ROE can be computed by the formula:
$$\frac{\text{PAT}}{\text{Equity shareholder 's fund}} \times 100$$

Return on equity (ROE) can be further sub-divided into the following segments:

- a) Operating return on equity (OROE)
- b) Non-operating return on equity (NOROE)

2.1. Operating return on equity (OROE): Operating return on equity (OROE) Shows net earnings available to equity shareholders for the investments of fund into operating assets of the company into its basic business operations. Thus, if operating return on equity (OROE) is falling it may be due to decrease in investment into operating segment of the company

OROE may be computed by the following formula:

$$\frac{\text{Operating profit after proportionate deduction of interest and taxes}}{\text{Shareholder 's fund or Equity in propotion to operating assets}} \times 100$$

2.2. Non-operating return on equity (NOROE): Non-operating return on equity (NOROE) indicates net earnings available to equity shareholders for the investments of fund into non-operating assets of the company. Thus, if non-operating return on equity (NOROE) is falling, it may be due to in investment into non-operating assets which are not generating adequate returns.

NOROE may be computed by the following formula:

$$\frac{\text{Non – operating profit after proportionate deduction of interest and taxes}}{\text{Shareholder's fund or Equity in propotion to non – operating assets}} \times 100$$

3. Earnings per share (EPS) and its sub-divisions

Earnings per share reflects net earnings of a company available to equity shareholders per share of their holdings in the company. It is assumed to be the yardstick for measuring and comparing Company's earnings capacity for their Equity shareholders. Thus, from investor's point of view it is material information which guides and directs their investment decisions. Since, EPS forms part of financial statement of a company, it is directly visible and accordingly affect market price per share very significantly.

EPS can be computed by the following formula:

$$\frac{\text{Net earnings available to equity shareholders}}{\text{Outstanding numbers of equity shares}}$$

However for understanding it in a better way, its further decomposition is necessary into the following two segments:

- a) Operating earnings per share (OEPS) and
- b) Non-operating earnings per share (NOEPS)

3.1. Operating earnings per share (OEPS): Operating earnings per share (OEPS) reflects net earnings of a company available to equity shareholders per share as earned due to investment of company's funds into operating assets of the company. Thus, if Operating earnings per share (OEPS) is rising, it implies growth of basic business operations due to either increase in investment in operating assets or due to increase in efficiency of existing operating assets.

Operating earnings per share (OEPS) may be computed by the following formula:

$$\frac{\text{Operating profit after proportionate interest and taxes}}{\text{Numbers of equity shares in proportion to operating assets}}$$

3.2. Non-operating earnings per share (NOEPS): Non-operating earnings per share (NOEPS) reflects net earnings of a company available to equity shareholders per share as earned due to investment of company's funds into non-operating assets. Thus, if non-operating earnings per share (NOEPS) is falling, it implies decline in return generating capacity of non-operating assets

Non-operating earnings per share (NOEPS) may be computed by the following formula:

$$\frac{\text{Non – operating profit after proportionate interest and taxes}}{\text{Number of equity shares in proportion to non – operating assets}}$$

IV. Practical Illustration on Decomposition of ROA, ROE And EPS

Balance Sheet			
Assets and Liabilities	2015	2016	2017
Equity	3000	3000	5000
10% Debt	7000	9000	7000
Current Liabilities	2000	2000	3000
Total fund	12000	14000	15000
Fixed Assets	4000	3000	2000
Long Term Investments	2000	3000	4000
Total Non-Current Assets	6000	6000	6000
Inventories	1000	2000	3000
Receivables	2000	1000	1000
Cash and Bank	1000	1000	1000
Short term investments	2000	4000	4000
Total Current Assets	6000	8000	9000
Total Assets	12000	14000	15000

Statement of profit and loss		
Revenue and cost	2016	2017
Revenue from operations	8000	15000
Other income	600	500
Total Revenue	8600	15500
Cost of Revenue from operations	6000	9000
EBIT	2600	6500
Less finance cost	900	700
EBT	1700	5800
Less taxes @30%	510	1740
Profit after Taxes	1190	4060

Table -1: Computation of average operating and non-operating assets

Year	2015	2016	2017
Fixed Assets	4000	3000	2000
Inventories	1000	2000	3000
Receivables	2000	1000	1000
Cash and Bank	1000	1000	1000
Total Operating Assets	8000	7000	7000
Long Term Investments	2000	3000	4000
Short term investments	2000	4000	4000
Total Non-Operating Assets	4000	7000	8000
Total Assets	12000	14000	15000
Average Operating Assets		7500	7000
Average Non-Operating Assets		5500	7500
Average Total Assets		13000	14500

Table -2: Computation of Return on total Assets and its decomposition

Year	2016	2017
Revenue from operations	8000	15000
Less cost of Revenue from operations	6000	9000
Operating Profit (EBIT-Other income)	2000	6000
Non-Operating profit (Other income)	600	500
Profit before interest and tax (EBIT)	2600	6500
less interest expense	900	700
Profit before Taxes (PBT)	1700	5800
less taxes	510	1740
Profit after taxes	1190	4060
Return on Operating Assets	26.7%	85.7%
Return on Non-operating Assets	10.9%	6.7%
Return on total Assets	20%	48.27%

Table -3: Computation of financing pattern of operating and non-operating Assets

Year	2016	2017
Equity	3000	5000
10% Debt	9000	7000
Current Liabilities	2000	3000
Total fund	14000	15000
Total Operating Assets	7000	7000
Total Non-Operating Assets	7000	8000
Total Assets	14000	15000

Table -4: Computation Return on Equity and its decomposition

Year	2016	2017
Equity	3000	5000
Operating profit after proportionate interest and proportionate tax	1085	3971.3
Non-operating profit after proportionate interest and proportionate tax	105	88.667
Total profit after tax	1190	4060
Operating return on Equity (OROE)	36.17%	79.43%
Non-operating return on Equity (NOROE)	3.5%	1.77%
Total return on Equity (ROE)	39.67%	81.2%

Table -5: Computation of Earnings per share and its decomposition

Year	2016	2017
Interest expense in proportion to operating Assets	450	326.67
Interest expense in proportion to non-operating Assets	450	373.33
Total Interest expense	900	700
Operating profit after proportionate interest	1550	5673.3
Non-operating profit after proportionate interest	150	126.67
Total profit after interest before tax	1700	5800
Tax expenses in proportion to operating income	465	1702
Tax expenses in proportion to non-operating income	45	38
Total Tax expenses	510	1740

Operating profit after proportionate interest and proportionate tax	1085	3971.3
Non-operating profit after proportionate interest and proportionate tax	105	88.667
Total profit after tax	1190	4060
Number of Equity shares in proportion to operating Assets	150	233
Number of Equity shares in proportion to Non-operating Assets	150	267
Total number of Equity Shares	300	500
Operating EPS	7.233	17.044
Non-operating EPS	0.7	0.3321
Total EPS	3.967	8.12

V. Analysis and Interpretation Through Decomposition of ROA, ROE and EPS

Return on total assets (ROA) is broader concept than Return on investment (ROI) as well as Return on equity (ROE). It gives realistic picture of returns generated from total assets employed into business financed from both short term and long term sources.

Ideally long term assets should be financed out of long term sources and short term assets from short term sources to have a better liquidity. However, there has been a trend among companies to finance both long term and short term assets from short term sources. They do it because current liabilities are interest free debt and hence they can push through this strategy their earnings per share and consequently the market price per share. However, adoption of this aggressive strategy dampens their liquidity position. Large conglomerates are adopting this strategy because of their influential power on creditors who majorly belong to unorganized sector. Return on total assets (ROA) may change due to either changes in the return on operating assets or non-operating assets. When return on operating assets is increasing, it signifies growth in the basic business operations and conversely decrease indicates down fall. At times it has been noticed that companies start investments in shares and debentures of other companies or mutual funds to maintain their earnings per share when their business is facing a downward trend. From analysis point of view decreasing return on operating assets gives a warning signal.

On the reverse side, when the return on operating assets is increasing but return on non-operating assets is declining or not showing any favorable growth, it may indicate investment by the company into its subsidiary companies and associates which are generating very marginal or no returns. Many times trade payables are used to finance such investments. Further, the situation becomes trivial when these investments are made by raising the funds through borrowings. Both above strategies of financing outside investments very adversely affects liquidity as well financial position of parent company. Segmentation of Return on equity (ROE) into operating ROE and non-operating ROE will help to analyze the impact of change in proportion of operating and non-operating assets on the net wealth of equity shareholders. If operating ROE is rising but non-operating ROE is falling, there is a clear indication that company is doing better in its basic business operations however, non-operating investments are adversely affecting the net wealth of equity shareholders. Thus, more investments on the operating sides are required by shifting the investments from non-operating sides. Finally, the decomposition of EPS into operating and non-operating EPS reflects exact reason of rise or fall in EPS.

VI. Conclusion

Return on total assets (ROA), Return on investment (ROE) and Earnings per share (EPS) are important tools for financial statement analysis and indicators for growth of business of a company. However, Return on total assets (ROA) is broader concept than return on equity (ROE) and return on investment (ROI). From company's point of view, it should keep a close eye on return on total assets (ROA), Return on investment (ROE) and Earnings per share (EPS) and from investor's point of view, they are significant tools for assessing the financial position and directions of the company. These three tools should be given due consideration in every investment decisions.

For pin pointing the exact cause of growth or decline, both operating and non-operating segmentation of return on total assets (ROA) Return on investment (ROE) and Earnings per share (EPS) should be analyzed. Any increase in non-operating assets may indicate either diversification and/ or negative growth in basic

business operations. Thus, if return on non-operating assets, non-operating return on equity or non-operating EPS are showing declining trends, it gives a warning signal.

The hope of converting the company into large conglomerate is attracting more and more promoters towards excessive diversification. Diversification is not bad but excessive diversification may endanger solvency. Particularly, post liberalization, Indian companies are on the high expansion mode. Even, in many cases they have been found to rely on excessive borrowings for scaling up. Particularly, year 2016-17 witnessed a lot of drive for mergers and acquisitions on the strength of borrowings. The jump from less growth sector to more growth sector is very natural but should be carefully planned. The market is highly volatile and thus excessive borrowings should be avoided.

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