

Did the Creators of the DuPont Pyramid of Financial Ratios Learn the Configuration From the Egyptians?

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**ABSTRACT**

It is interesting to note that when a pyramid has only one-third of its final height, 71 percent of its support structure is already in place. Does this hold true for conceptual models as well? For example, in the construction of the DuPont pyramid of financial ratios, it appears the bottom third of the DuPont pyramid supports the apex of the pyramid, Return on Investment.

This paper investigates the correlation of the financial ratios in the bottom third of the DuPont pyramid to the financial strength of a company and investigates if the DuPont pyramid can be improved by rearranging the financial blocks at the bottom.

**INTRODUCTION**

It does not take a traveler many kilometers on the road south of Cairo to view the majestic images in the desert of the great pyramids that have stood on that same ground for thousands of years. The pyramids have prevailed through many empires, epic battles, and plundering thieves. In fact, of the original Seven Wonders of the World, only one still exists, the Great Pyramid of Giza.

The strength of the pyramid lies in the perfect alignment of all of its blocks wherein every stone supports all other components. The force of gravity is felt by the base of the pyramid. As gravity pushes on the top of the pyramid, the tension is felt by the base which is much wider than the top. The base and its sides are in the form of triangles, the strongest geometric shape in the world. Triangles are rigid, able to stand freely, and support their own weight under the forces of gravity.

Another interesting fact is that over 70 percent of the time required to complete a pyramid is spent building the pyramid to one third of its final height. Assuming an even rate for adding blocks to the structure, it takes twice as much time to reach one third of the final height of the pyramid than to finish the pyramid from that point forward. According to many estimates it took 30 years to build the Great Pyramid of Giza. If this is true, after 20 years of construction the pyramid only reached one-third of its final height.

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## **WHAT IS A FINANCIAL RATIO?**

Ratios are used in everyday life, not only in business, but also by individuals. Every time a person enters a vehicle, one of the first things he or she observes is the dashboard. Most of the instruments on the dashboard use ratios such as miles per hour (the speedometer), pounds per square inch (the oil pressure gauge), revolutions per minute (the tachometer), etc. These gauges are used by the driver to measure critical operations of the vehicle, which in turn measures progress toward the destination or alerts the driver when something goes wrong. Similarly, financial ratios are used by management to help organizations safely and efficiently get from one point to another. Financial ratios are composed of financial metrics taken from an organization's balance sheet and income statement.

### **DUPONT'S USE OF FINANCIAL RATIOS AND THE PYRAMID**

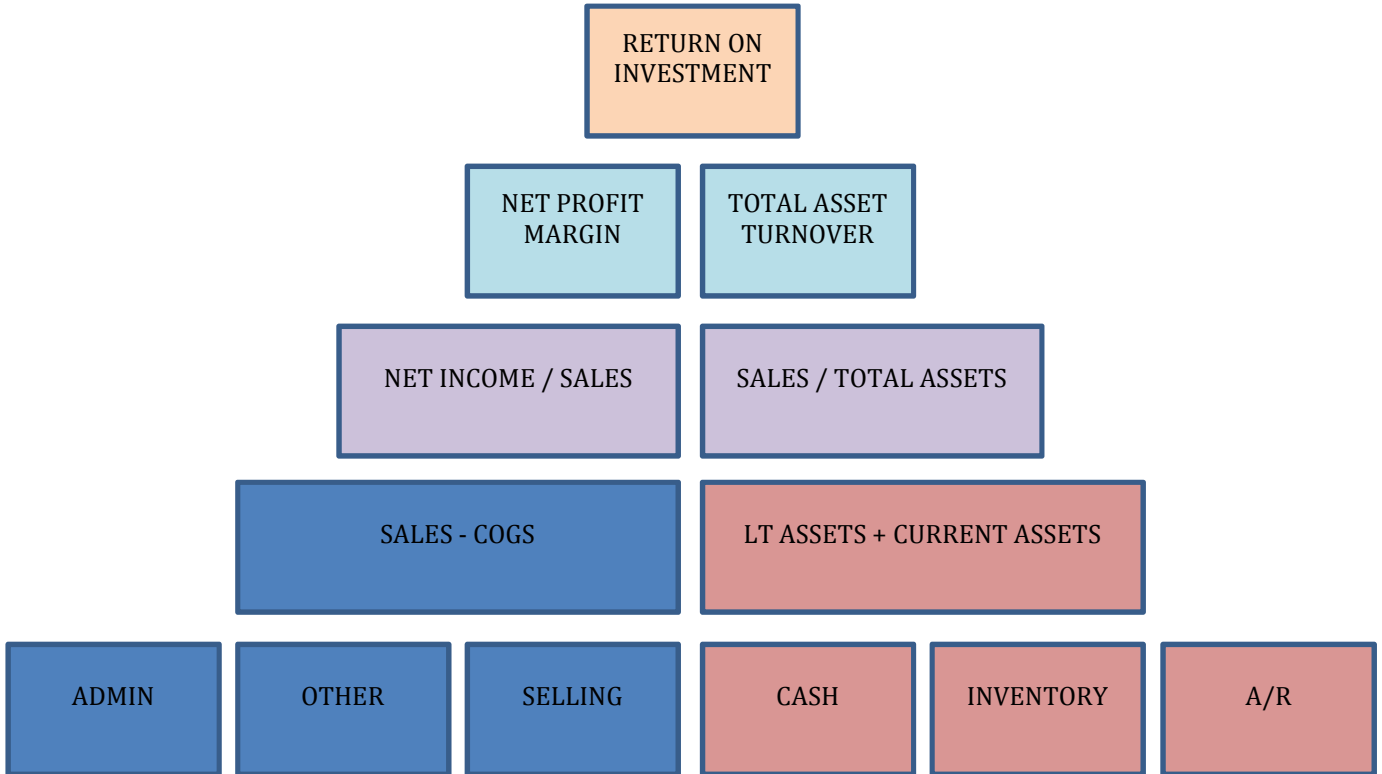
The DuPont pyramid of financial ratios is a well-known evaluation tool in the business world used by analysts to break down the financial statements of a company in order to assess its financial strength. The model combines the income statement and the balance sheet into two measures of profitability: Return on Investment (ROI) and Return on Equity (ROE). The financial ratios have a very explicit tiered structure.

By using the DuPont pyramid, an analyst can easily determine what processes the company performs well and what processes can be improved. ROI represents the profitability of funds invested by management into assets. All firms should attempt to make ROI as high as possible over the long run, but analysts should be aware that ROI can be inflated for the wrong reasons.

For example, ROI (defined as net income/total assets) can be increased by raising net income or lowering total assets. Businesses can lower total assets by choosing not to replace fixed assets when appropriate or by failing to replace inventory on a timely basis. Once again, ROI can be increased in the short run by forgetting that working capital assets are necessary for sustaining ongoing operations and investment in long-term assets is required to produce sustainable revenues.

Let us examine the DuPont pyramid on the following page, paying close attention to the blocks that support the pyramid:

## THE DUPONT PYRAMID FOR RETURN ON INVESTMENT



The lower level of the pyramid is split into two parts: the left side pulls information from the income statement whereas the right side pulls information from the balance sheet. This begs the question, does the lower level of financial metrics support the structure of the pyramid and if watched closely, can a company increase the strength of its ROI? Let us further explore how the pyramid is built.

The left side of the pyramid's lower level includes the basic costs of a company, which are selling, administrative, and other expenses. It follows that managers should pay careful attention to these metrics, i.e. cost of goods sold (COGS). Subtracting COGS from sales yields net income. Obviously, keeping expenses as low as possible will increase net income. Alternatively, using assets to increase sales will also increase net income. Dividing net income by sales equals net profit margin, a metric that all organizations should be closely monitoring.

The right side of the pyramid's lower level includes the basic current assets of a company such as cash, accounts receivable, and inventory, which support an organization's day to day activities. Adding the sum of the current assets to a company's noncurrent assets equals total assets. Total assets are the main structure of the support base of the sales of the organization. Dividing total assets into sales provides the total asset turnover of the company.

To reach the apex of the pyramid, one simply has to multiply the net profit margin by the total asset turnover to obtain the ROI. This is a very important metric in grading the management of an organization. If the assets are not being used efficiently, precious funds are being wasted that could have otherwise been allocated to different areas within the organization.

## **CAN THE PYRAMID BE STRENGTHED BY USING DIFFERENT BLOCKS IN THE BOTTOM LAYER?**

This paper has demonstrated the use of a pyramid structure to show what financial ratios are most revealing in the examination of the strength of an organization's ROI. The pyramid allows for individual analysis of the different components of return on investment, net profit margin and total asset turnover, to better understand why ROI behaves the way it does. It also allows an analyst to break down the net profit margin and total asset turnover into different base components (e.g. sales - COGS and current assets plus long term assets).

Can the pyramid be strengthened through the use of other financial metrics in the lower tier of the pyramid? Since the lowest level of financial information from the income statement and the balance sheet are expenses and current assets, it appears the bottom tier is composed of the correct building blocks. However, it might be possible to strengthen the bottom tier by using other ratios such as daily

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sales outstanding and inventory turnover because the strength of the bottom blocks could quietly deteriorate without obvious signs of weakness. Ultimately, keeping a watchful eye on expenses and the composition of the current assets of an enterprise will ensure a strong financial structure.