# RATIO ANALYSIS: PROFITABILITY AND TURNOVER RATIOS

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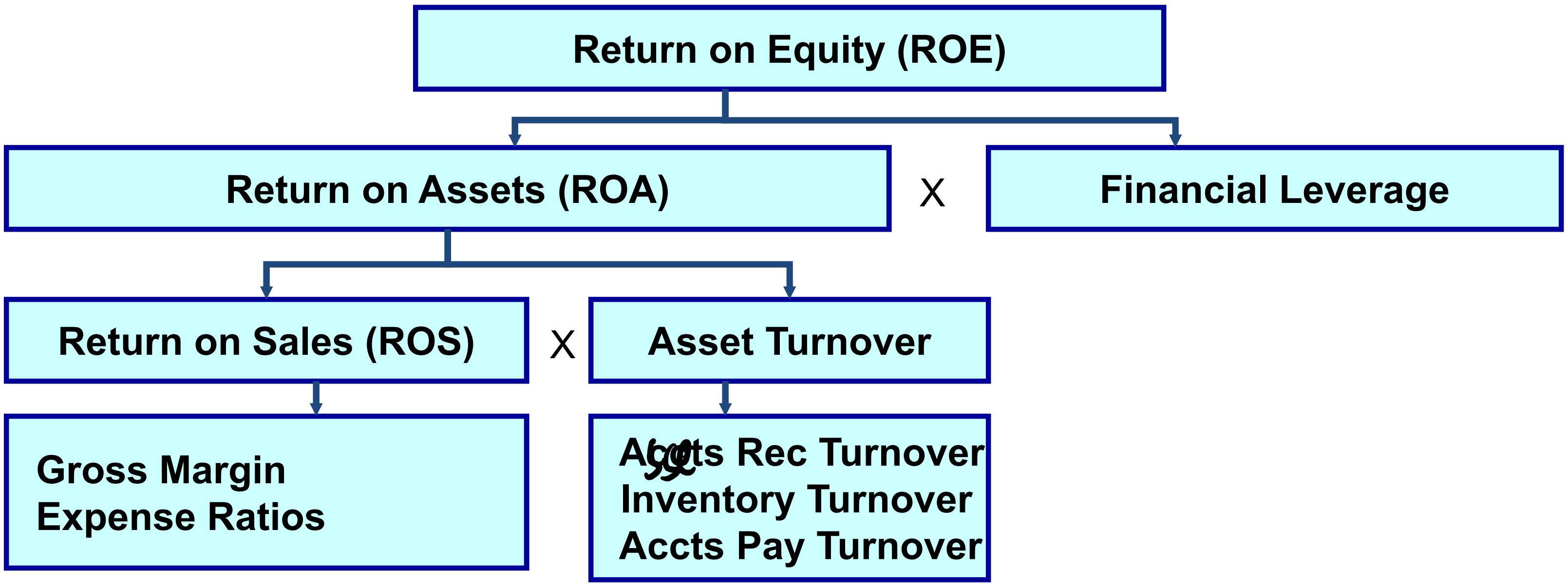
## DuPont Ratio Analysis Framework




ROE = Net Income/Sales x Sales/Assets x Assets/Equity

= Profitability x Efficiency x Leverage

## Profit Margin Ratios

- **What are the drivers of profitability?**
  - **Decompose Return on Sales by income statement line item**

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- **Gross Margin = (Sales - Cost of Goods Sold) / Sales**
- **SG&A-to-Sales = SG&A Expense / Sales**
- **Operating Margin = Operating Income / Sales**
- **Interest Expense-to-Sales = Interest Expense / Sales**
- **Effective Tax Rate = Income Taxes / Pre-tax Income**

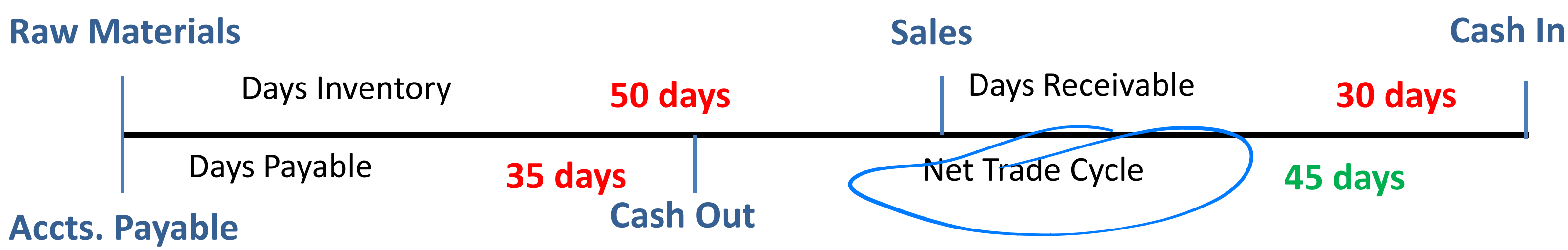
## Asset Turnover Ratios

- **How many times per year do we cycle through accounts?**
  - **Example: Inventory Turnover of 8 means that we build and sell Inventory 8 times per year, on average.**
- **Accounts Receivable Turnover = Sales / Average A/R**
- **Inventory Turnover = Cost of Goods Sold / Average Inventory**
- **Accounts Payable Turnover = Purchases / Average Accounts Payable**
  - **(Purchases = Ending Inventory + COGS – Beginning Inventory)**
- **Fixed Asset Turnover = Sales / Avg. Net PP&E** property plant and equipment

| Woof Junction | | | | | | |
|---|---|---|---|---|---|---|
| Ratio Analysis | 2012 | 2013 | 2014 | 2015 | **Avg** | |
| **Return on Equity** | 27.0% | 31.9% | 36.1% | 40.2% | **33.8%** | Return on Equity = Net Income / Avg. Stockholders' Equity |
| Return on Assets | 16.6% | 18.8% | 21.5% | 24.2% | **20.3%** | Return on Assets = De-levered Net Income / Avg. Total Assets |
| Financial Leverage | 1.67 | 1.73 | 1.69 | 1.68 | **1.69** | Financial Leverage = Avg. Total Assets / Avg. Stockholders' Equity |
| Correction Factor | 0.98 | 0.98 | 1.00 | 0.99 | **0.99** | Correction Factor = Net Income / De-levered Net Income |
| **Return on Assets** | | | | | | |
| Return on Sales | 6.1% | 6.3% | 7.5% | 9.2% | **7.3%** | Return on Sales = De-levered Net Income / Sales |
| Asset turnover | 2.74 | 2.99 | 2.85 | 2.62 | **2.80** | Asset turnover = Sales / Avg. Total Assets |
| **Profitability** | | | | | | |
| Gross margin | 35.0% | 36.4% | 38.5% | 40.5% | **37.6%** | Gross Margin = (Sales - Cost of Goods Sold) / Sales |
| SG&A as % of Sales | 21.6% | 22.9% | 23.5% | 22.9% | **22.7%** | SG&A as a % of Sales = SG&A Expense / Sales |
| Operating Margin | 10.9% | 11.1% | 12.3% | 14.8% | **12.3%** | Operating Margin = Operating Income / Sales |
| Interest Expense as % of Sales | 0.2% | 0.2% | 0.1% | 0.2% | **0.2%** | Interest Expense as % of Sales = Interest Expense / Sales |
| Effective Tax Rate | 41.3% | 39.9% | 38.8% | 38.0% | **39.5%** | Effective Tax Rate = Income Taxes / Pre-tax Income |

## Days Outstanding Ratios

- **How many days, on average, are accounts outstanding?**
  - **Example: Days Inventory of 45 means that it takes 45 days, on average, from the time we start building Inventory until we sell it**
- **Days Receivable (Sales) Outstanding = 365 * (Average A/R / Sales)**
- **Days Inventory = 365 * (Average Inventory / Cost of Goods Sold)**
- **Days Payable = 365 * (Average Accounts Payable / Purchases)**
- **Net Trade Cycle = Days Receivable + Days Inventory - Days Payable**
  - **Net Trade Cycle represents the gap between cash outflows and cash inflows that we have to bridge with short-term borrowing**



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