Liquidity

- Liquidity refers to the firm’s ability to fund its current operations. There are two common measures used to analyze liquidity.

\[
Current Ratio = \frac{Current\ Assets}{Current\ Liabilities}
\]

where Current Assets include Cash, Marketable Securities, Inventory, Accounts Receivable, and Other Current Assets and Current Liabilities are liabilities due within the next year.

\[
Quick\ Ratio = \frac{Cash\ and\ Marketable\ Securities}{Current\ Liabilities}
\]

- For firms with negative earnings, the potential for cash flow problems can also be identified using the Cash Burn Rate:

\[
Cash\ Burn\ Rate = \frac{Cash}{EBITDA}\quad \text{where EBITDA}<0
\]

Leverage and Solvency

- To what extent is the firm using debt vs. equity financing and is the firm able to meet its debt obligations?

\[
Debt\ to\ Capital = \frac{Debt}{Debt+Equity} = 1 - \frac{1}{1 + \frac{Interest\ Expense}{EBIT}}
\]

\[
Debt\ to\ Equity = \frac{Debt}{Equity} = \frac{Debt\ to\ Capital}{1-Debt\ to\ Capital}
\]

\[
Times\ Interest\ Earned = \frac{EBIT}{Interest\ Expense}
\]
Liquidity and Leverage for Home Depot

- Calculate each of the liquidity and leverage measures using Home Depot’s Financial Statements (use beginning period or average balance sheet values when comparing income statement and balance sheet numbers).

**Liquidity:**

Current Ratio = \( \frac{18000}{12931} = 1.392 \)  
Quick Ratio = \( \frac{600 + 14}{12931} = 0.047 \)

**Leverage:**

Debt to Capital = \( \frac{11661}{11661 + 25030} = 31.78\% \)  
Debt to Equity = \( \frac{11661}{25030} = 46.59\% \)

Times Interest Earned = \( \frac{9673}{392} = 24.676 \)

Efficiency

- How effective is the firm in using its assets to generate sales and in turning sales into cash?

\[
\text{Inventory Turnover} = \frac{\text{Cost of Goods Sold}}{\text{Inventory}} \quad \text{Days in Inventory} = \frac{\text{Inventory}}{\text{Avg Daily COGS}} \times 365 = \text{Inv TO}
\]

\[
\text{Accts Rec Turnover} = \frac{\text{Sales}}{\text{Accts Rec}} \quad \text{Avg Collection Period} = \frac{\text{Accts Rec}}{\text{Avg Daily Sales}} = \frac{365}{\text{Accts Rec TO}}
\]

\[
\text{Total Asset Turnover} = \frac{\text{Sales}}{\text{Total Assets}} \quad \text{LT Operating Asset Turnover} = \frac{\text{Sales}}{\text{LT Operating Assets}}
\]

\[
\text{Total Capital Turnover} = \frac{\text{Sales}}{\text{Total Capital}} \quad \text{Working Capital Turnover} = \frac{\text{Sales}}{\text{Noncash Working Capital}}
\]
Efficiency for Home Depot

- Calculate each of the efficiency measures using Home Depot’s Financial Statements (use beginning period or average balance sheet values when comparing income statement and balance sheet numbers).

  
  \[
  \text{Inventory Turnover} = \frac{\text{610,054}}{\text{114,010}} = 5.355 \quad \text{Days in Inventory} = \frac{\text{365}}{\text{5.355}} = 68.159
  \]

  \[
  \text{Accounts Receivable Turnover} = \frac{\text{90,837}}{\text{23,986}} = 37.912 \quad \text{Average Collection Period} = \frac{\text{365}}{\text{37.912}} = 9.628
  \]

  \[
  \text{Total Asset Turnover} = \frac{\text{90,837}}{\text{44,482}} = 2.042 \quad \text{Long-Term Operating Asset Turnover} = \frac{\text{90,837}}{\text{24,901}} = 3.648
  \]

  \[
  \text{Total Capital Turnover} = \frac{\text{90,837}}{\text{51,951 + 26,909}} = 3.018 \quad \text{Working Capital Turnover} = \frac{\text{90,837}}{\text{14,559 - 11,488}} = 29.733
  \]

Profitability

- Profitability relative to sales:

  \[
  \text{Gross Profit Margin} = \frac{\text{Sales} - \text{COGS}}{\text{Sales}} \quad \text{Net Profit Margin} = \frac{\text{Net Income}}{\text{Sales}}
  \]

  \[
  \text{Operating Margin} = \frac{\text{Operating Profit}}{\text{Sales}} = \frac{\text{EBIT} \times (1 - T)}{\text{Sales}}
  \]

- Profitability relative to assets:

  \[
  \text{Return on Assets (ROA)} = \frac{\text{Net Income}}{\text{Total Assets}} \quad \text{or} \quad \frac{\text{EBIT} \times (1 - T)}{\text{Total Assets}}
  \]

  \[
  \text{Return on Equity (ROE)} = \frac{\text{Net Income}}{\text{Book Value of Equity}}
  \]

  \[
  \text{Return on Capital (ROC)} = \frac{\text{Net Operating Profit}}{\text{Operating Capital}} \times \frac{\text{EBIT} \times (1 - T)}{\text{Debt + Equity}}
  \]
Profitability (continued)

- Return on Capital can be decomposed as follows:

\[
\text{Return on Capital (ROC)} = \frac{\text{EBIT}(1 - T)}{\text{Book Value of Capital}} \times \frac{\text{Sales}}{\text{Book Value of Capital}}
\]

= After-tax Operating Margin \times \text{Capital Turnover Ratio}

- Return on Equity can be decomposed as follows:

\[
\text{Return on Equity (ROE)} = \frac{\text{Net Income}}{\text{Book Value of Equity}} \times \frac{\text{Sales}}{\text{Total Assets}} \times \frac{\text{Total Assets}}{\text{Equity}}
\]

= Profit Margin \times \text{Asset Turnover} \times \text{Financial Leverage}

\[
\text{Return on Equity (ROE)} = \frac{\text{Net Income}}{\text{Book Value of Equity}} = \text{ROC} + \frac{\text{Debt}}{\text{Equity}} \times \left( \text{ROE} - (1 - T) \right)
\]

= \text{ROC} + (\text{Leverage} \times \text{Spread})

Profitability for Home Depot

- Calculate Return on Capital and its components using Home Depot’s financial statements.

\[
\text{Return on Capital (ROC)} = \frac{9673(1 - .3811)}{3185 + 26909} \times \frac{9673(1 - .3811)}{90837} \times \frac{90837}{3185 + 26909}
\]

= 19.89% \times 6.59\% \times 3.018

- Calculate Return on Equity and its components using Home Depot’s financial statements.

\[
\text{Return on Equity (ROE)} = \frac{5761}{26909} \times \frac{5761}{90837} \times \frac{90837}{44482} \times \frac{44482}{26909}
\]

= 21.41\% \times 6.34\% \times 2.042 \times 1.653

\[
\text{Return on Equity (ROE)} = \frac{5761}{26909} \times \frac{3185}{26909} \times (19.89\% - 11.46\%(1 - .3811))
\]

= 21.41\% \times 19.89\% + 11.84\%(19.89\% - 7.09\%)