Fundamental analysis

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CERN Finance Club

c.laner@cern.ch
Introduction

Let’s cover the two main types of investment analysis used in ‘traditional’ investing

- Today: Fundamental analysis
- Next time: Technical analysis

Warren Buffet “Oracle of Omaha”, one of the most successful investors of all time, uses simple concepts from fundamental analysis

Later: Quantitative analysis

- Used in quantitative/systematic/algorithmic trading
- “Searching for patterns”
<table>
<thead>
<tr>
<th><strong>Fundamental analysis</strong></th>
<th><strong>Technical analysis</strong></th>
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<tbody>
<tr>
<td><strong>Assumption:</strong> markets may misprice a security in the short run but the “correct” price will eventually be reached</td>
<td><strong>Assumption:</strong> all information is factored into the price</td>
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<tr>
<td>Determine price by looking at “fundamentals”</td>
<td><strong>Study past market data, primarily price and volume</strong></td>
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<tr>
<td><strong>Example measures:</strong></td>
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<tr>
<td>► Equities: company’s financial statements</td>
<td>► Trend lines</td>
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<tr>
<td>► Bonds: credit ratings</td>
<td>► Moving averages</td>
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<td>► Currencies: interest rates</td>
<td>► Many, many more</td>
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Long and short

- **Long** ("going long"): Buying a security

- **Short** ("short selling"): Selling a security when you don’t own it
  - Borrow security and sell it
  - Some time later close out position by buying back security and returning to lender

- In summary:
  - Long: make money if the price goes up
  - Short: make money if the price goes down
What is fundamental analysis?

Definition: Fundamental analysis involves analysing a business, its industry/competitors and the economy in order to make financial forecasts.

1. Analyse the underlying factors
2. Determine the intrinsic value
3. Compare the intrinsic value to the current market price

- Market price < Intrinsic value: BUY
- Market price > Intrinsic value: SELL

The various fundamental factors can be grouped into two categories:
- Qualitative factors – e.g. quality of management, brand-name
- Quantitative factors – e.g. revenues, profits
Qualitative factors (1)

► Business model
  ► What exactly does the company do?
  ► The business model is how a company makes money

► Market share & Competition
  ► How large of a player is the company in its market?
  ► Does it have a competitive edge (“economic moat”) over others in the industry?
  ► How big is its customer base?

► Industry growth
  ► Is the industry relatively new? Mature? Growing? Declining?

► Regulation
  ► Certain industries are heavily regulated because of the importance/severity of the product (e.g. the drug industry)
Management
- Management team of a company executes the business plan
- To get an idea of the quality of management can look at:
  - Conference calls (where analysts ask questions)
  - Management Discussion and Analysis (MD&A) section in the annual report

Corporate governance
- Describes the policies in place for the rights and responsibilities of management, directors and stakeholders
- Good corporate governance is where a company:
  - Complies with all of its governance policies and government regulations
  - Looks out for the interests of the company's stakeholders
Three of the most important financial statements are:

- Balance Sheet
- Income Statement
- Cash Flow Statement
Income statement

- a.k.a. Profit and Loss Account
- Measures company’s performance over certain period

- Revenue/Sales

- Expenses
  - Cost of goods sold (COGS)
    - e.g. cost of raw materials
  - Selling, General & Administrative (SG&A)
    - e.g. marketing, salaries, utility bills

- Profit = Revenue – Expenses
# Income Statement

Revenue / Turnover / Sales
- COGS
  = Gross Profit

- SG&A
  = Earnings Before Interest, Tax, Depreciation & Amortisation (EBITDA)

- Depreciation & Amortisation
  = Operating Profit / Earnings Before Interest & Tax (EBIT)

- Interest Payments & Tax
  = Net Profit

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<th>$XX.XX</th>
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<tbody>
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<td>/ Turnover / Sales</td>
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<td>COGS</td>
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<td>Amortisation</td>
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<td>Interest &amp; Tax</td>
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<tr>
<td>= Net Profit</td>
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Cash flow statement

- Shows how much cash comes in and out of the company over a certain period
- Shows how a company is able to pay for its operations and future growth
- Three sections: cash flow from operations, financing and investing

- Similar to income statement but is not based on accrual accounting
  - Income statement records transactions regardless of whether cash flows have been transferred
  - Cash flow statement records only cash flows that have taken place
## Cash Flow Statement

**Cash Flow From Operating Activities**  
Revenue from sales, payment of wages, interest payments, taxes

**Cash Flow From Investing Activities**  
Capital expenditure on machinery, acquisitions, etc.

**Cash Flow From Financing Activities**  
Cash received for issued shares or bonds, dividend payments

**Net Cash Flow**

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<table>
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<td>Cash Flow From Operating Activities</td>
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<tr>
<td><strong>Net Cash Flow</strong></td>
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Balance sheet

- a.k.a. Statement of Financial Position
- Provides a snapshot of a company’s financial situation

- **Assets**
  - Something of value to a company
  - Tangible and intangible
  - Current and non-current

- **Liabilities**
  - Debt, something it owes/has borrowed
  - Current and non-current

- **Equity = Assets – Liabilities**
<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>Amount</th>
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<tbody>
<tr>
<td><strong>Current assets</strong></td>
<td>Cash, receivables, inventory, and other assets that will be liquidated within a year</td>
<td>$XX.XX</td>
</tr>
<tr>
<td><strong>Non-current assets</strong></td>
<td>Machinery, buildings, and other assets that will not be liquidated within a year</td>
<td>$XX.XX</td>
</tr>
<tr>
<td><strong>Total assets</strong></td>
<td></td>
<td>$XX.XX</td>
</tr>
<tr>
<td><strong>Current liabilities</strong></td>
<td>Short-term debt, payables, tax, and other liabilities that will be served within a year</td>
<td>$XX.XX</td>
</tr>
<tr>
<td><strong>Non-current liabilities</strong></td>
<td>Long-term debt and other liabilities that will be served in a year or more</td>
<td>$XX.XX</td>
</tr>
<tr>
<td><strong>Total liabilities</strong></td>
<td></td>
<td>$XX.XX</td>
</tr>
<tr>
<td><strong>Share capital</strong></td>
<td>Capital received from issuing shares on primary market</td>
<td>$XX.XX</td>
</tr>
<tr>
<td><strong>Retained earnings</strong></td>
<td>Net profit minus dividends</td>
<td>$XX.XX</td>
</tr>
<tr>
<td><strong>Total equity</strong></td>
<td></td>
<td>$XX.XX</td>
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Financial ratios

- Let’s put the three financial statements to use

- Financial ratios are a simple and consistent method of evaluating the financial condition of a firm

- Standardised comparisons can be made between firms

- Only the starting point for analysis. Need to consider the “bigger picture” beyond ratios!

- Consider four categories: **profitability, debt, liquidity, valuation**
Profitability ratios

- **Profit margin**
  - Indicates how much every dollar of sales is kept in earnings
  - e.g. 20% profit margin: company has an income of $0.20 for every $1 of revenue
  - Gives an indication of how well costs and operating expenses are being managed

\[
\text{Gross Profit Margin} = \frac{\text{Gross Profit}}{\text{Revenue}}
\]

\[
\text{Operating Profit Margin} = \frac{\text{Operating Profit}}{\text{Revenue}}
\]
Profitability ratios

► Return on assets (ROA)
   ▶ Indicates how efficient management is at using its assets to generate profit

\[
\text{Return On Assets} = \frac{\text{Net Profit}}{\text{Assets}}
\]

► Return on equity (ROE)
   ▶ Indicates how efficient management is at using the money invested by shareholders to generate profit
   ▶ Warning: large debt $\rightarrow$ large ROE

\[
\text{Return On Equity} = \frac{\text{Net Profit}}{\text{Equity}}
\]
Debt ratios

► Help to quantify risk of bankruptcy of the firm and the debt load it carries

► Debt ratio
  ► Gives a quick evaluation of the riskiness of the firm, high ratio = highly leveraged = more risky

Debt Ratio = \( \frac{\text{Liabilities}}{\text{Assets}} \)

► Debt-to-equity ratio
  ► Measure of financial leverage
  ► Not atypical for the value to be significantly above 1 for large firms

Debt Equity Ratio = \( \frac{\text{Liabilities}}{\text{Equity}} \)
Liquidity ratios

- Does the firm have sufficient cash and liquid assets to pay off its obligations?
- Affects its reputation, credit rating and therefore future borrowing costs

**Current ratio**
- A larger value indicates that the firm is able to pay off its short term liabilities
- Low values may not be a problem if inventory turnover is high and horizon of accounts receivable is short

\[
\text{Current Ratio} = \frac{\text{Current assets}}{\text{Current liabilities}}
\]

**Quick ratio** (“acid test”)
- Adjusts current ratio by excluding assets that take longer to convert into cash (e.g. inventory), and including only the most liquid assets (e.g. cash, short-term investments)

\[
\text{Quick Ratio} = \frac{\text{Current assets} - \text{Inventory}}{\text{Current liabilities}}
\]
Valuation ratios

► Price-to-Book (P/B) ratio
  ► Used to see if a stock is relatively cheap to buy (“value stock”)
  ► Compares market price to “book value” (shareholder’s equity)

\[
PB \text{ Ratio} = \frac{\text{Stock price per share}}{\text{Equity per share}}
\]

► Price-Earnings (P/E) ratio
  ► Best known and most widely used financial ratio
  ► Price of stock per dollar of earnings
  ► High PE ratio = expectation of large earnings growth (“growth stock”)
  ► Useful to compare companies in the same sector

\[
PE \text{ Ratio} = \frac{\text{Stock price per share}}{\text{Earnings per share (EPS)}}
\]
Summary

► Covered the basics of fundamental analysis (next time technical analysis)

► Qualitative factors
  ► Business model, market share, competition, industry, regulation, management, corporate governance

► Quantitative factors
  ► Financial statements: balance sheet, income statement, cash flow statement
  ► Financial ratios: profitability, debt, liquidity, valuation

► This talk was educational only, don’t use it as investment advice!