

Guided Tour of Machine Learning in Finance

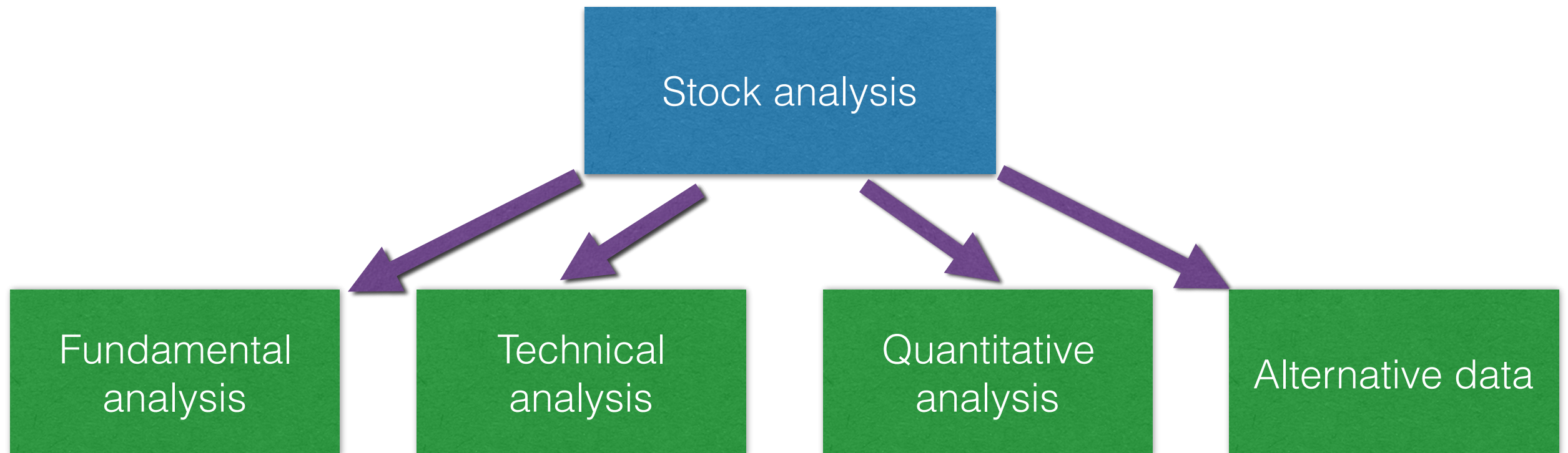
Week 2-Lesson 2-part 1: Fundamental Analysis for Investment Decisions

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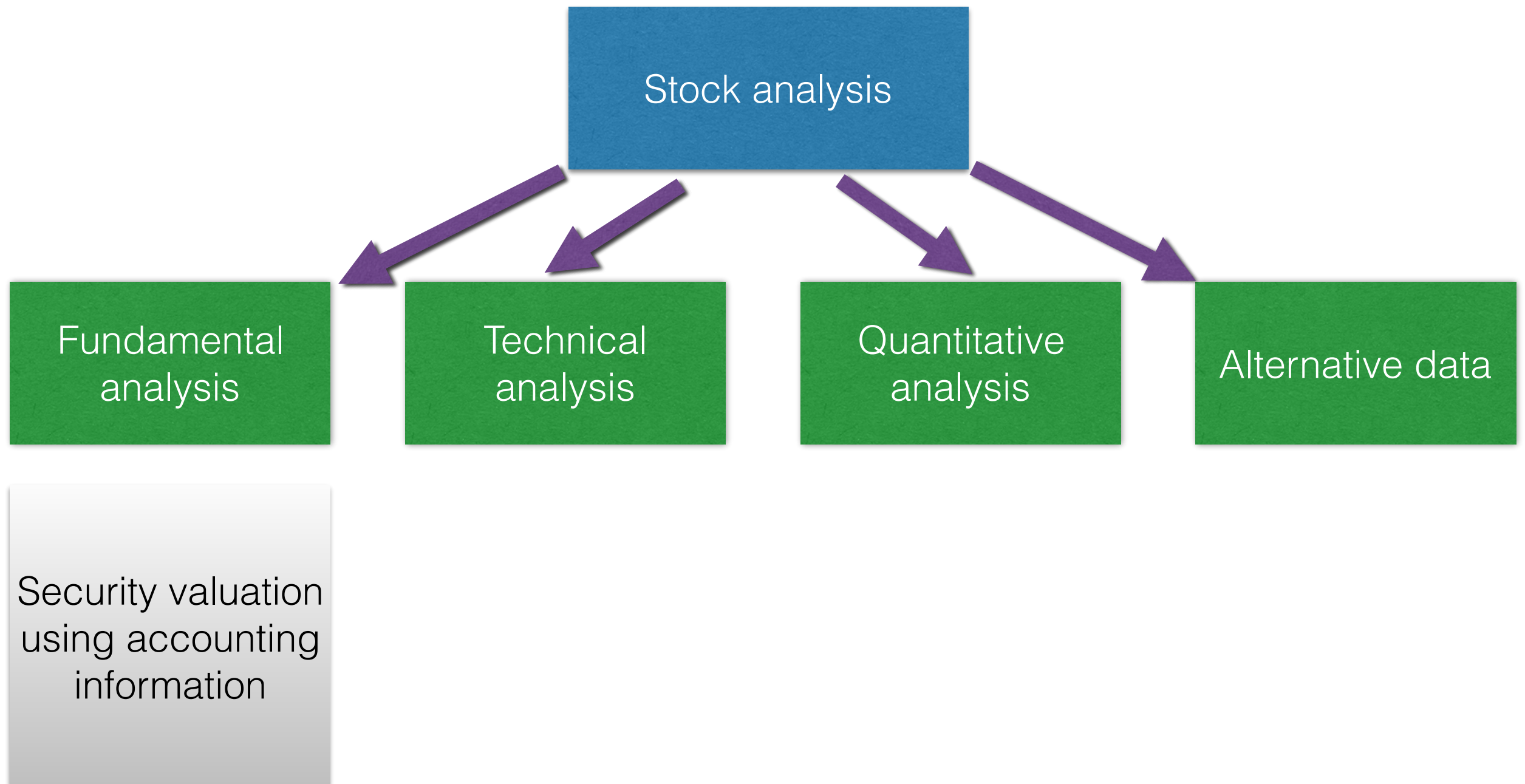
Types of stock analysis

Tools for long-term investment decisions



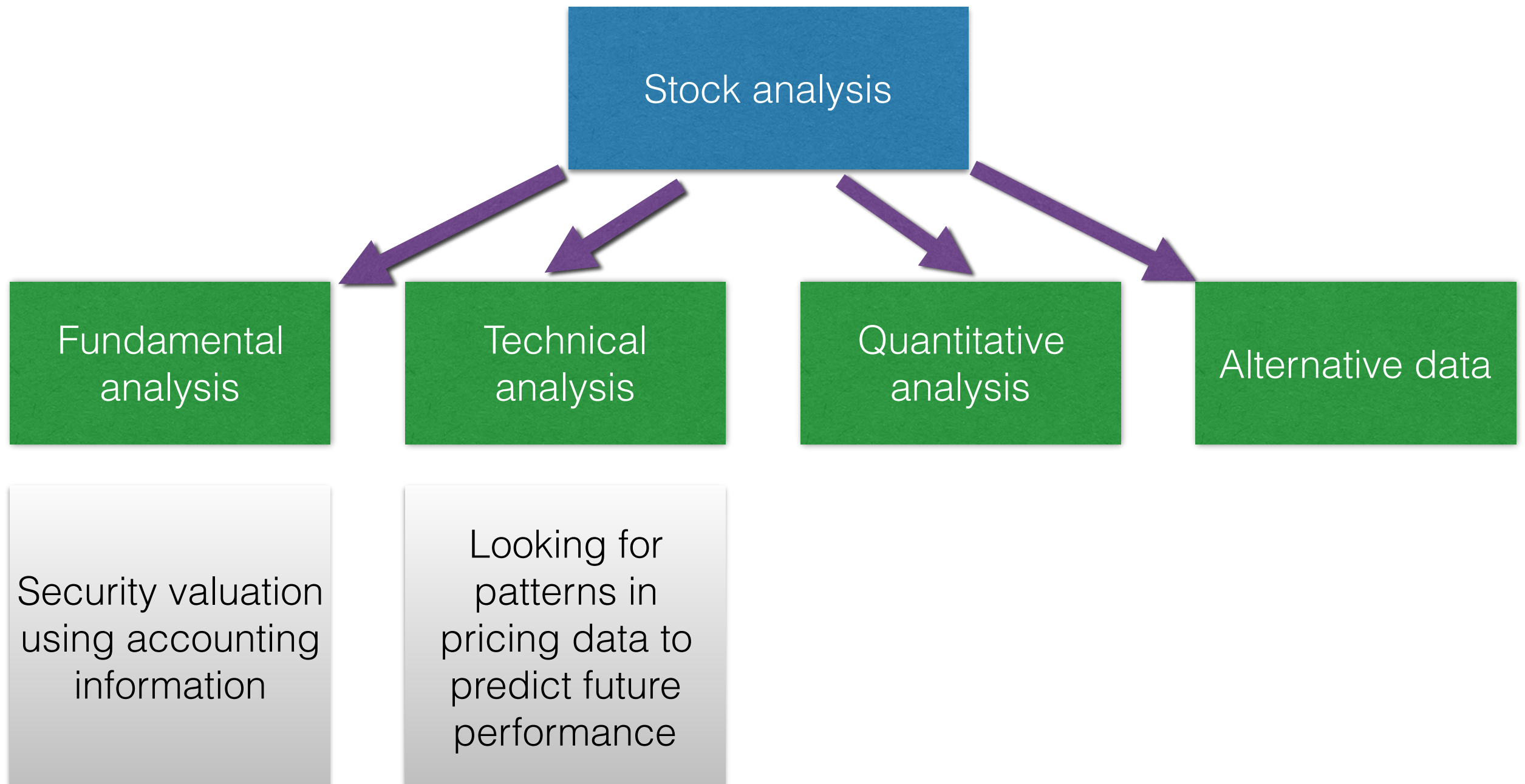
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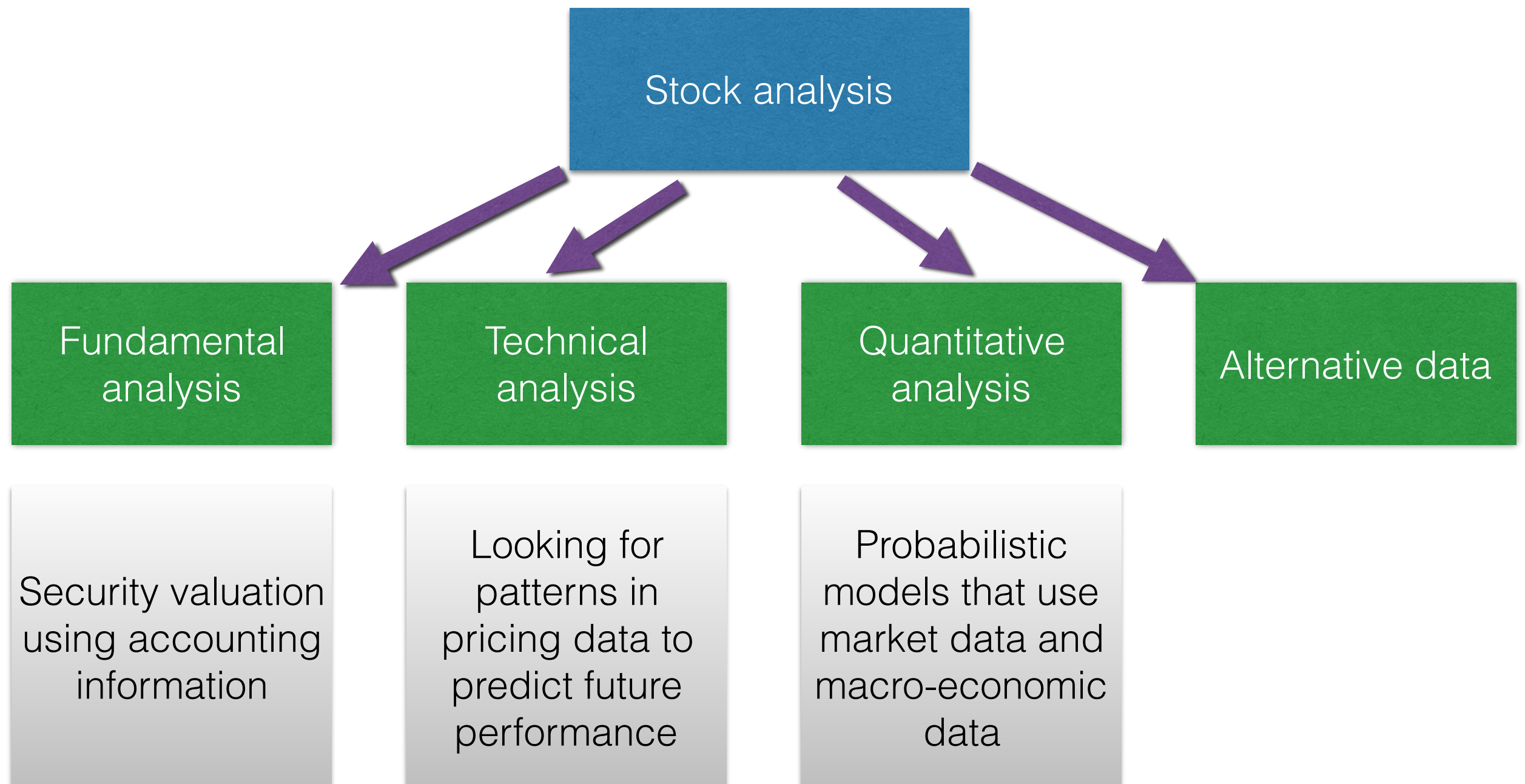
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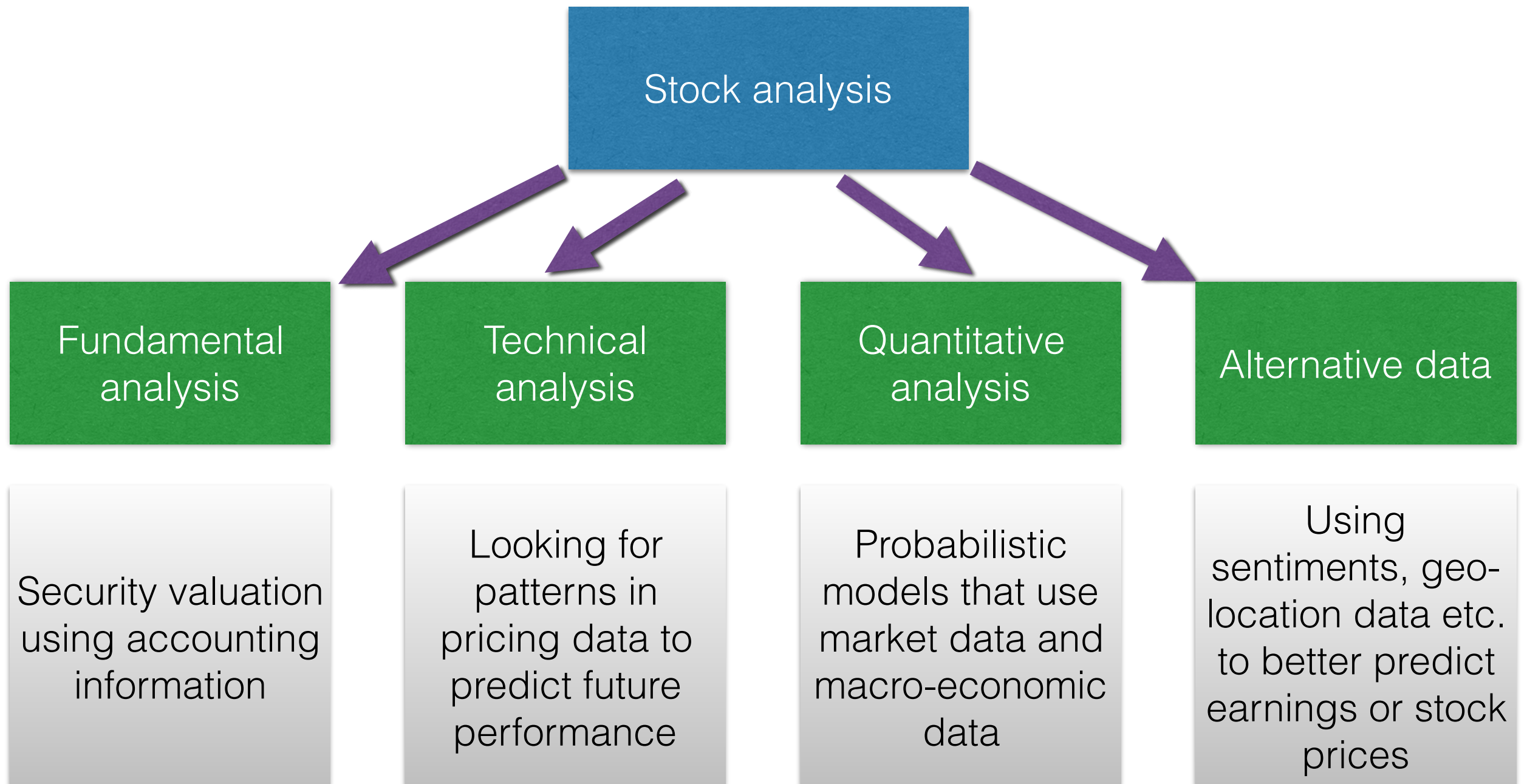
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Control question

Q: Select all correct statements:

1. Alternative data is a different name for out-of-sample data.
2. Fundamental analysis is named so because its predictions are more important for trading and asset management than predictions based on any other approach.
3. Quantitative Analysis deals with probabilistic models that predict performance of securities and portfolios using pricing (market) data, as well as other data such as macro-economic data.
4. All types of Equity Analysis can be formulated in Machine Learning terms as problems of Regression, Classification, or density estimation.

Correct answers: 3, 4.

Fundamental Analysis

- Focuses on “valuation of securities from available information, with a particular emphasis on accounting information” (Penman, “Return to Fundamentals”, Journal of Accounting, Auditing and Finance, 7, 1992, pp.465-483).
- Two uses: predict market prices or predict Earning Per Share (EPS)
- Accounting information: (see e.g. <https://www.sec.gov/fast-answers/answerscompanyinfohtm.html>).

Income statements	Balance sheet
Sales/revenues	Cash & Cash Equivalents
Cost of goods sold	Receivables
Sales, General and Admin expenses	Current Assets
Operating Income after Depreciation	Total Assets
Net Income	Current Liabilities
Capital Expenditures	Total Liabilities
Dividends	Long-Term Debt
Common shares outstanding	Preferred stocks
Price Per Share	Shareholder Equity

Forecasting Earning Per Share (EPS)

EPS forecast is used:

- By outside investors to inform the choice of profitable investment portfolios
- Inside the firms: to plan operations, capital investments, resource allocations
- What firm-specific variables drive the next-quarter EPS?
 - Past EPSs
 - “Fundamental accounting variables” (Abarbanell & Bushee, 1997):
 - INV: Inventory
 - AR: Accounts receivables
 - CAPX: Capital expenditure
 - GM: Gross Margin = Sales - Cost of goods sold
 - SA: Selling and administrative expenses
 - ETR: Effective tax rate

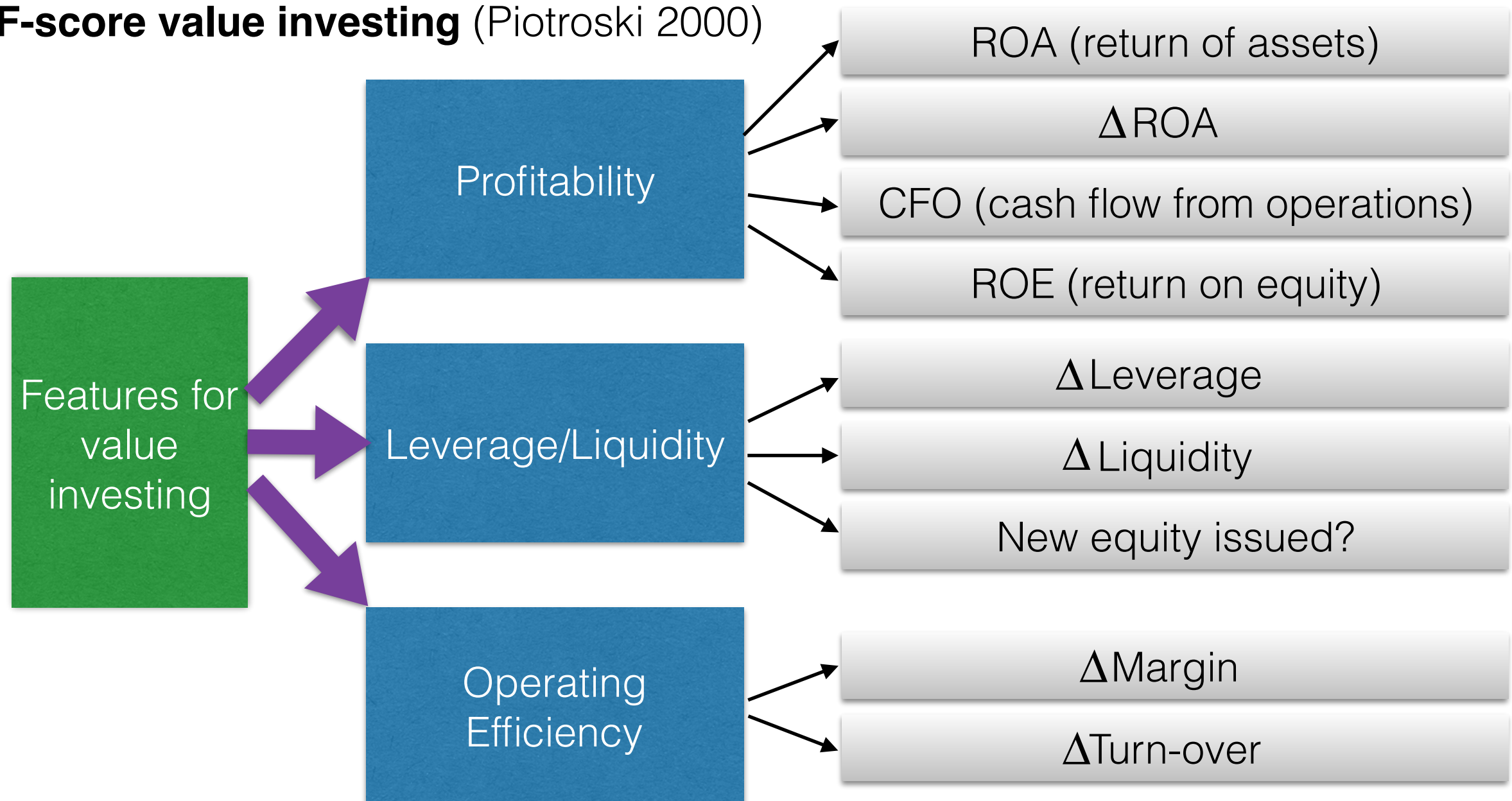
Variable Selection for Value Investing

Value investing (Fama and French 1992):

Under-valued stocks have:

- High Book-to-Market Equity (B/M) ($B = \text{Tangible Assets} - \text{Depreciation Liabilities}$)
- High Earnings-to-Price (E/P)
- High Cash flow-to-Price (C/P)

F-score value investing (Piotroski 2000)



Control question

Q: Select all correct statements:

1. Fundamental accounting variables include, among other variables, quarterly stock returns.
2. Gross Margin is equal to Sales minus Cost of Goods Sold (COGS).
3. There are three major categories of features for Value investing: Profitability, Leverage/Liquidity, and Operating Efficiency.
4. Firms with a high the Book-to-Market Equity (B/M) ratio are less attractive for investing than firms with a low B/M ratio.

Correct answers: 2, 3.