Fundamental Analysis, B7021, Spring 2016

Course Syllabus

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I. CONTACT DETAILS

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Office hours (604 Uris): by appointment

II. COURSE DESCRIPTION

Fundamental analysis, conducted using quantities derived from financial reports and other sources, is used in performance evaluation, risk assessment, forecasting, and valuation, as well as for other purposes. B7021 covers various modules of fundamental analysis, focusing on equity valuation. This half-semester course is related to the full-semester course “Earnings Quality and Fundamental Analysis (B7008), but it is different from B7008 not only in its length. While B7008 emphasizes GAAP and earnings quality, B7021 focuses on fundamental analysis, with earnings quality discussed only to the extent that it is part of fundamental analysis.

The course covers four topics: Financial reporting, ratio analysis, fundamental-based relative valuation, and fundamental valuation. Please see Section VII for course outline and summary of content.

While the course covers the theoretical underpinning of the various analyses, it focuses on implementation and practical uses. Many real-world examples will be analyzed, including using Excel tools that will be provided to the students.

III. COURSE ADMINISTRATION

Class Material

The course material consists of detailed class notes, presentations, practice exercises, problem sets, text book (please see Section V), and optional readings. A good preparation for each class would be to read the class notes and skim through the presentation. Reviewing the presentation carefully after class and solving the practice exercises and problem sets would help reinforce the material. This is important especially because for some topics we will not have sufficient class time to discuss all the points and examples contained in the class notes and presentations. The text book and optional readings elaborate on the discussion and analyses.
All items (other than the text book) will be made available electronically before class, saved in an Acrobat version that allows for the addition of comments to the electronic documents. You will also receive hard copies of the text book, class notes, presentations, and practice exercises. You may use a laptop or iPad during class to help you follow the discussion, to take notes, or to add comments to the electronic documents as needed (please use the laptop/iPad for those purposes only – otherwise, it may negatively impact your learning experience and that of your peers). One objective of the class is that you will each obtain a detailed, familiar, and customized (through your additions) set of notes that you will be able to use in your careers.

There will be three assigned problem sets to be handed in:

<table>
<thead>
<tr>
<th>Problem Set</th>
<th>Class Due</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Financial reporting</td>
<td>Third class</td>
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<tr>
<td>2. Ratio analysis and relative valuation</td>
<td>Fifth class</td>
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<tr>
<td>3. Fundamental valuation</td>
<td>One week after 6th class</td>
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</tbody>
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**Grade and Course Project**

The course grade will be based on problem sets (3 problem sets; 10% each) and a project (70%). Grading of the problem sets will be based on effort only. The project can be either individual or group (up to four participants). Individual projects should be between 8 and 12 pages (including exhibits; single line space). Group projects should be proportionally longer, depending on the number of members. The objective of the project is to estimate the value of a company using fundamental analysis, including both relative and absolute valuation. The due date for the project is one week after the last (6th) class.

**Assignment Designation**

The project is classified as Type B according to the Columbia EMBA Class Assignment Descriptions. This means that you may discuss concepts of the project with other students, but the submitted project must be your own individual (or group) work.

**Teaching Assistants**

TBD

**IV. CONNECTION WITH THE CORE AND OTHER ELECTIVES**

This course builds on the core courses Financial Accounting (B5000) and Corporate Finance (B5300), which introduce students to basic financial reporting and financial analysis concepts. In particular, Fundamental Analysis (B7021) requires a basic understanding of the following:

- Financial statements, including the balance sheet, income statement, and cash flow statement
- How accrual accounting differs from cash accounting, including revenue recognition (realization principle), expense recognition (matching principle), and asset and liability measurement (historical cost, selective fair value)
- Time value of money and present value calculations
V. TEXT


VI. OPTIONAL READINGS


VII. COURSE OUTLINE AND SUMMARY OF CONTENT

- Financial reporting (Topic #1, approximately 6 class hours)
  - Primary financial statements
    - The balance sheet (statement of financial position)
    - The income statement (statement of earnings, statement of operations)
    - The cash flow statement
  - Secondary financial statements
    - Statement of equity
    - Statement of comprehensive income
  - Underlying accounting concepts
    - Asset and liability measurement: Historical cost versus fair value
    - Accounting conservatism
    - Revenue recognition: Realization principle
    - Expense recognition: Matching principle
  - The relationships among the different financial statements
  - Limitations and distortions of the financial statements, and implications for fundamental analysis
    - Understated assets and equity due to: omission of internally developed intangibles, historical cost accounting, and conservative accounting practices
    - Overstated earnings due to historical cost accounting
    - Overstated profitability (relative to economic profitability) due to the above distortions
- Hidden risks: omission of executory contracts and some loss contingencies, and other off-balance sheet exposures (e.g., borrowing through associated companies, exposure to unconsolidated variable interest entities)
- Expense recognition inconsistent with matching (e.g., R&D, advertising, impairment, restructuring, resolution of contingencies)
- Summary of line-specific GAAP and differences relative to IFRS

- Ratio analysis (topic #2, approximately 4.5 class hours)
  - Introduction
  - Reformulating the financial statements
    - Operating versus financing versus “other” activities
    - Recurring versus transitory items
  - Analyzing profitability
    - Recurring versus transitory profitability
    - Operating profitability versus financial leverage effects
    - Drivers of operating profitability: profit margin, asset turnover, leverage from operating credit
  - Evaluating earnings quality
    - “Big picture” indicators of earnings quality: cash flows versus accruals, net operating assets relative to sales, discretionary expenses relative to sales
    - Key line-item-related indicators of earnings quality; for example,
      - Revenue recognition: receivables relative to sales, deferred revenue relative to sales, revenue mix, gross margin, …
      - Inventory and related expenses: inventory relative to cost of goods sold, production costs relative to cost of goods sold, payable relative to operating expenditures, …
      - Fixed assets and related expenses: estimated useful life and average age of fixed assets, asset replacement ratio (capex relative to depreciation), net income relative to free cash flow, …
  - Assessing growth prospects
    - Historical growth rates
    - Investment analysis
    - Various decompositions of sales and sales growth rates
    - Non-financial and industry-specific growth drivers
    - Macro factors
  - Risk analysis
    - Capital structure
    - Debt service ratios
    - Coverage ratios
    - Liquidity

- Fundamental-based relative valuation (topic #3, approximately 1.5 class hours)
  - Price multiples
  - Linking price multiples to fundamentals
  - Conditional price multiples
- Fundamental valuation (topic #4, approximately 6 hours)
  - Basics of fundamental valuation
    - The value of any investment or asset (e.g., project, business, company, stock, bond) is the present value of the net cash flow that the asset is expected to generate or save
    - Identifying and forecasting the net cash flow
    - Estimating the discount rate
    - The dividend discount model as an example
  - The discounted cash flow (DCF) model for equity valuation
    - Deriving the model
      - DCF value = present value of free cash flow (FCF) discounted at the weighted average cost of capital (WACC)
      - Enterprise value = DCF value + value of non-operating assets (e.g., investments in associates)
    - Equity value = enterprise value – value of net debt
  - Defining and measuring FCF and cash flows to the various claim holders (equity holders, debt holders, other stakeholders)
    - FCF = NOPAT - ΔNet operating assets
    - Measuring FCF as EBIT×(1-t) + Dep&Amort – capex - Δworking capital, as is often done, results in a biased FCF measure
      - Operating assets other than working capital and fixed assets acquired in cash transactions
      - Operating liabilities other than working capital liabilities
  - Forecasting FCF
    - Drivers of FCF
      - Revenue growth
      - Operating profit margin (profit/revenue – ability to translate revenue to profit that flows to the providers of capital)
      - Operating assets turnover (revenue/assets – reflecting the investment in operating assets required to generate the revenue)
      - Net operating assets ratio (net assets/assets – reflecting leverage from operating creditors that help fund operating assets)
    - Analysis and forecasting of the drivers of FCF and their components
      - Explicit forecasts, transition/convergence forecasts, and steady-state assumptions
  - Estimating WACC
    - Sources of financing (equity, debt, hybrid equity/debt, operating credit, leasing and other off-balance sheet financing)
      - Capital versus operating credit
      - Gross versus net capital
      - Current versus long-term or target leverage
    - Determinants of the availability and cost of the various financing sources
      - Pretax cost of debt
      - Tax rate on interest expense
      - Cost of equity capital
      - Earnings retention and payout policy (dividends, share repurchases)
      - Short- versus long-term debt
- Asset-backed financing
- Lines of credit vs. cash and other liquid funds
- The effects of leverage on operations
  - Risk management
  - Forecasting financing activities and constructing pro forma financial statements
    - Terminal value
      - Constant growth (Gordon) formula
      - Exit multiples
    - From DCF value to value per share
    - Scenario and sensitivity analyses
    - Scenario-based valuation