

Earnings Quality and Fundamental Analysis, B8008, Fall 2016**Course Syllabus**
*This Draft: July 6, 2016***I. CONTACT DETAILS**

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II. COURSE DESCRIPTION

Financial reporting provides a window into the operational and financial workings of a company. However, translating this information into actionable insights is anything but straightforward. It requires an understanding of Generally Accepted Accounting Principles (GAAP), the quality of financial information, and the adjustments and analyses required to accurately measure and evaluate profitability, exposures, growth prospects, and value.

The course starts with a review of financial reporting and then focuses on various modules of fundamental analysis, including performance evaluation, risk assessment, forecasting, and valuation (this is the “Fundamental Analysis” part of the course; for a detailed outline, please see topics 1 through 4 in Section VII below). The second part of the course is devoted to a systematic study of GAAP, earnings quality, and related analyses, utilizing many actual financial disclosures and cases of accounting abuses (this is the “Earnings Quality” part of the course; for a detailed outline, please see topic 5 in Section VII below).

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.

The primary objective of the course is to acquire a deep understanding of accounting information and how to intelligently use it in making investment, credit, and similar resource allocation decisions. Such knowledge is required of executives, consultants, bankers, analysts, investment managers, and other users of financial information.

<p>In a review conducted in 2011, the committee for evaluating elective courses concluded that “this is an excellent, carefully constructed course which provides students with valuable insights and lasting concepts.” In the same year, Professor Nissim won the “Dean’s Award for Teaching Excellence” for developing and teaching this course.</p>

III. COURSE ADMINISTRATION

Class Material

The course material consists of detailed class notes, presentations, practice exercises, problem sets, and optional readings. These items cover all the course content. For those interested in additional readings, Section V provides a text recommendation. 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 optional readings elaborate on some of the analyses and are provided for those interested in research (both practitioner and academic); this material will not be required for the exam.

All items will be made available electronically before class, saved in an acrobat version that allows for the addition of comments to the electronic documents. You may use a laptop or tablet 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/tablet 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 five assigned problem sets to be handed in:

<u>Problem Set</u>	<u>Class Due</u>
1. Review of financial reporting	September 26
2. Ratio analysis	October 10
3. Valuation	October 31
4. Earnings quality: Revenue recognition and operating capacity	November 14
5. Earnings quality: Fixed, estimated, and residual (equity) claims	December 7

Class Meetings

<u>Section</u>	<u>Days</u>	<u>Time</u>	<u>Room</u>
B8008-01	M, W	9:00-10:30	Uris 333
B8008-02	M, W	10:45-12:15	Uris 333

First class meeting: *September 7*; last class meeting: *December 12*. Project due date: *December 12* (hard copy to be handed in in class). No class on *October 26* and *November 21*; a three hours make up class will be held on *October 11* from 6:00-9:00pm in [TBD] Uris Hall; a video of the makeup class will be made available on Canvas. Final exam: *December 16*, 2:00-5:00pm.

Class attendance is not required, but if you do attend, you are expected to arrive to class on time and behave in a way that does not distract your peers.

Grade

The course grade will be based on **problem sets** (5 problem sets; 5% each, subject to a 20% ceiling), a **project** (30%), and an open-book **Final** exam (50%) (open books: including laptop, but laptop use is restricted to accessing electronic copies of course material; no communication or listening devices). Grading of the problem sets will be based on effort only. Finals from previous classes are available on Canvas.

Course Project

The project can be either individual or group (up to four participants). Individual projects should be between 4 and 8 pages (including exhibits; single line space). Group projects should be proportionally longer, depending on the number of members. The project can focus on one company or a small group of comparable companies. The analysis should emphasize earnings quality and fundamentals-related aspects, and should demonstrate a deep understanding of how accounting fundamentals inform on economic performance and value. The structure of the project is flexible. Examples of projects from previous classes are available on Canvas. Potential analyses include:

Estimating the value of a company using fundamentals-based relative valuation – The project should include a discussion of the comparability of the peers (selection, evaluations, tiering), the fundamentals used, the value measures used, the multiples, and how the different value estimates were weighted to obtain a final value measure.

Estimating the value of a company using fundamentals-based DCF – The project should include a short discussion of reformulation adjustments to the financial statements, primary inputs (e.g., WACC, steady-state assumptions), forecasting assumptions, the steps from DCF value to value per share, and sensitivity and scenario analyses.

Evaluating the quality of specific accounts and the likelihood and implications of earnings management – for example, “channel stuffing;” “gains trading;” understatement of provisions (e.g., for bad debt or warranty); LIFO liquidation; over-production to inflate reported income; capitalization of operating expenditures; effects of impairment losses; distortions related to accounting for postretirement benefits; business combination gains, losses, and other adjustments; manipulation of income tax reserves and allowances; and the impact of treasury stock transactions on EPS growth.

Adjusting the financial statements to correct or mitigate accounting distortions – for example, capitalizing operating leases; discounting deferred taxes; capitalizing expensed economic investments such as start-up costs, advertising, or research and development; converting the inventory cost flow assumption from LIFO to FIFO; excluding transitory effects from the gross margin (holding gains/losses on inventory, abnormal production); adjusting PP&E-related items for inflation; undoing securitization transactions; undoing the effects of interest capitalization; undoing excess capitalization of expenditures; consolidating significant associates or unconsolidated VIEs/SPEs; distinguishing between operating and financing items (e.g., excess liquid funds, provisions); distinguishing between recurring and transitory income and expense components; adjusting EBITDA for changes in capitalized depreciation; and reclassifying some cash flows in the cash flow statement.

Conducting comprehensive ratio analysis – for example, analyzing profitability, examining measures of overall earnings quality, distinguishing the effects of organic versus acquired growth, forecasting revenue or earnings using fundamental analysis, conducting fundamentals-based risk analysis, and relating value ratios to fundamentals. In addition to calculating relevant ratios, there should be a discussion of inferences from the analysis and their implications for valuation analyses.

Assignment Designation

The project is classified as Type B according to the Columbia MBA 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

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IV. CONNECTION WITH THE CORE AND OTHER ELECTIVES

This course builds on knowledge from the core courses Financial Accounting (B6000) and Corporate Finance (B6300), which introduce students to basic financial reporting and analysis concepts. In particular, B8008 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

In B8008, students acquire a deep understanding of accounting information and how to intelligently use it in making investment, credit, and similar resource allocation decisions.

V. RECOMMENDED TEXT

Valuation: Measuring and Managing the Value of Companies, Wiley Finance, 6th Edition.

VI. OPTIONAL READINGS

1. Nissim, D. and S. Penman. 2001. Ratio analysis and equity valuation: From research to practice. *Review of Accounting Studies* 6: 109-154.
2. Nissim, D. and S. Penman. 2003. Financial statement analysis of leverage and how it informs about profitability and price-to-book ratios. *Review of Accounting Studies* 8: 531-560.
3. Nissim D. and A. Ziv. 2001. Dividend Changes and Future Profitability. *Journal of Finance* 56(6): 2111-2133.
4. Chan, K., L. Chan, N. Jegadeesh and J. Lakonishok. 2006. Earnings Quality and Stock Returns. *Journal of Business* 79(3): 1041-1082.

5. Lev, B. and D. Nissim. 2006. The persistence of the accruals anomaly. *Contemporary Accounting Research* 23(1): 193-226.
6. Lev, B. and D. Nissim. 2004. Taxable income, future earnings, and equity values. *The Accounting Review* 79(4): 1039-1074.
7. Chan, L., J. Karceski and J. Lakonishok. 2003. The Level and Persistence of Growth Rates. *Journal of Finance* 58(2): 644-684.
8. Liu, J., D. Nissim, and J. Thomas. 2007. Is cash flow king in valuations? *Financial Analysts Journal* 63(2): 56-68.

VII. COURSE OUTLINE AND SUMMARY OF CONTENT

- **Review of financial reporting** (topic #1; Chapter #1; Presentation #1)
 - Primary financial statements
 - The balance sheet (statement of financial position)
 - The income statement (statement of profit or loss/earnings/operations)
 - The cash flow statement
 - Secondary financial statements
 - Statement of equity (statement of changes in equity)
 - Statement of comprehensive income
 - The relationships among the different financial statements
 - Other disclosures: Notes, MD&A, Risk Factors, Market Risk, ...
 - Underlying accounting concepts
 - Asset and liability recognition and measurement
 - Internally-developed versus acquired intangible assets
 - Executory contracts (e.g., employment, purchase commitments, leases)
 - Contingencies (e.g., pending law suits)
 - Historical cost versus fair value
 - Accounting conservatism (e.g., assets are written down when impaired but are not revalued when they increase in value)
 - Revenue recognition: Realization principle
 - Expense recognition: Matching principle
 - Limitations and distortions of the financial statements, and implications for fundamental analysis and valuation
 - Understated assets and equity due to: the omission of internally-developed intangibles, historical cost accounting, conservative accounting practices, and the realization principle
 - Overstated earnings due to historical cost accounting (e.g., depreciation based on historical cost is smaller than economic depreciation)
 - Overstated profitability (relative to economic profitability) due to the above distortions
 - Hidden risks: omission of executory contracts and some loss contingencies, 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 and other uncertainties)
 - Summary of line-specific GAAP and differences relative to IFRS
 - The concepts of earnings management and earnings quality

- **Ratio analysis** (topic #2; chapter #2; presentation #2)
 - Introduction
 - Reformulating the financial statements
 - Operating versus financing versus “other” activities
 - Recurring versus transitory items
 - Analyzing profitability
 - Controlling versus non-controlling profitability
 - Recurring versus transitory profitability
 - Operating profitability versus financial leverage effects versus the impact of “net other assets”
 - Drivers of operating profitability: profit margin, asset turnover, operations funding ratio (leverage from operating credit)
 - Turnover and expense ratios
 - Drivers of the financial leverage effect on profitability: financial leverage, financial spread (operating profitability minus net borrowing cost)
 - Drivers of the impact of “net other assets” on profitability
 - Evaluating earnings quality
 - Qualitative analysis
 - “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, payables 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), ...
 - Risk analysis
 - Qualitative analysis
 - Quantitative analysis
 - Capital structure
 - Debt service ratios
 - Coverage ratios
 - Level and volatility of operating profitability
 - Size
 - Liquidity
- **Relative valuation** (topic #3; presentation #3)
 - Price multiples
 - $\text{Value} = \text{Fundamental} \times \text{Multiple}$
 - Fundamental = The firm’s earnings, book value, cash flow, sales, or other financial metric
 - Multiple = Average of (Price / Fundamental) for a group of comparable companies

- Assumptions
 - Value is proportional to the fundamental used
 - A similar proportionality holds for “comparable” companies, that is, firms from the same industry and/or with similar characteristics (e.g., size, leverage, expected growth)
 - Comparable firms are, on average, fairly priced
- Linking price multiples to fundamentals
- Implementing relative valuation
 - Which fundamental to use (e.g., EPS, EBITDA, BVPS, revenue) and how to measure it (e.g., net versus recurring, actual versus forecast, annual versus trailing)
 - Which value measure to use (e.g., price per share, equity value, enterprise value)
 - How to select peers (e.g., industry classification, relevant characteristics, tiering)
 - How to calculate the multiple (mean versus median versus harmonic mean; dealing with outliers)
- Conditional price multiples
 - For example, P/B conditional on ROE
- Uses of relative valuation
 - As the primary method of valuation
 - Common in sell-side but less so in buy-side
 - As an alternative valuation approach
 - Quite common – given the many assumptions involved in DCF, it is important to conduct a price-multiple analysis as a reality check for the DCF valuation
 - Method of choice in sum-of-the-parts valuation
 - For example, by business or geographic segment
 - Integrated into DCF
 - To calculate the terminal value or as a check on the reasonableness of the terminal value (“exit multiple” or “terminal multiple”)
 - To value investments in associates (equity method investees) or non-controlling interests
- **DCF valuation** (topic #4; presentation #4)
 - 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
 - Measuring 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
 - Synopsis of the model
 - Enterprise value = Present value of free cash flow (FCF) discounted at the weighted average cost of capital (WACC) + value of non-operating/non-financial assets (e.g., investments in unconsolidated affiliated companies, real estate not used in operations)
 - Equity value = enterprise value – value of net debt
 - From equity value to value per share: parent equity versus non-controlling interests, common equity versus contingent claims (options, conversion features of convertibles)

- Deriving the model
 - Required assumption – the following ratios are assumed to remain constant over time: The required rate of return on debt, the corporate tax rate, the required rate of return on equity, and the leverage ratio (measured using market values)
 - Implications for measuring the discount rate
- Defining and measuring FCF and cash flows to the various claim holders (equity holders, debt holders, other stakeholders)
 - $FCF = NOPAT - \Delta \text{Net operating assets}$
 - Measuring FCF as $EBIT \times (1-t) + \text{Dep\&Amort} - \text{capex} - \Delta \text{working capital}$, as is often done, results in a biased FCF measure
 - Operating assets other than working capital and cash-acquired fixed assets
 - Operating liabilities other than working capital liabilities
- Template for DCF valuation
 - Calculating the PV of FCF: Explicit forecasts, steady-state assumptions, transition/convergence forecasts, WACC, and terminal value
 - From DCF value to value per share
- Forecasting FCF
 - Information for forecasting
 - Forecasting revenue
 - Extrapolating from past growth rates
 - Time-series models
 - Asset growth effects
 - Contracted future revenue
 - Sales-generating units: Stores, drugs, ships, ...
 - Firm characteristics
 - Analysts' forecasts
 - Growth decomposition
 - Segment disclosures and related analyses
 - Non-financial metrics: employee turnover, employee headcount, customer satisfaction, customer retention, patents count, governance structure, ...
 - Forecasting expenses
 - Extrapolating from past margins
 - Considering peer information
 - Analysts' forecasts
 - Forecasting expense line items
 - Earnings quality indicators
 - Cost structure implications
 - Growth implications
 - Macro predictors
 - Forecasting assets
 - Extrapolating from past turnover
 - Considering peer information
 - Forecasting asset line items
 - Macro predictors
 - Firm characteristics

- Forecasting operating liabilities
 - Extrapolating from past operations funding ratios (net operating assets / operating assets)
 - Considering peer information
 - Predicting operating liabilities line items
- Steady-state ratios
 - Steady-state growth
 - Steady-state profitability
- Estimating WACC
 - Sources of financing (equity, debt, hybrid equity/debt, operating credit, leasing and other off-balance sheet financing)
 - Debt versus operating credit
 - Gross versus net debt
 - Market versus book leverage
 - 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 versus holding cash and other liquid funds
 - The effects of leverage on operations
 - Fundamental risk measures
 - Risk management
 - Special issues: WACC and investments in unconsolidated affiliates, WACC in segment DCF, Inflation and the cost of capital
 - Forecasting financing activities and constructing pro forma financial statements
- Terminal value
 - Constant growth (Gordon) formula
 - Exit multiples
- From DCF value to value per share
 - From DCF value to enterprise value
 - From enterprise value to equity value
 - From equity value to parent equity value
 - From parent equity value to value per share
- Sensitivity and scenario analyses
 - How sensitive is the intrinsic value estimate to changes in key assumptions?
 - How much loss would be incurred if the “bad” scenario materializes?
 - How big are the potential gains if the “good” scenario occurs?
 - How significant is the value effect of real options?
 - What are the likely value effects of alternative courses of actions?

- **Advanced topics in financial reporting and related analyses** (topic #5)
 - Objective: For each key line item from the financial statements, we will conduct an advanced level study of GAAP, earnings quality issues, red flags, and related analyses. We will also review the primary differences between International Financial Reporting Standards (IFRS) and US GAAP, and discuss many real world examples of financial disclosures and accounting abuses.
 - Revenue and receivable (Chapter #3; Presentation #5)
 - Operating capacity: Inventory, PP&E, intangible assets, other assets (Chapter #4; Presentation #6)
 - Fixed claims: Investments in debt securities, debt, leases, derivatives (Chapter #5; Presentation #7)
 - Estimated claims: Pension and other postretirement benefits, income taxes, contingencies, other accrued liabilities (Chapter #6; Presentation #8)
 - Equity claims: Investments in equity securities, business combinations, consolidation, shareholders' equity, share-based payments, EPS (Chapter #7; Presentation #9)