Fall Term 2016 (HS 2016)

Doctoral Seminar
"Fundamentals of Financial Accounting Theory: Communication and Markets, with Applications to Theory-Based Estimation"

Course schedule and reading list

1) Session and exercise schedule

Session	Day	Time	Room
1	Wednesday, 11.01.2017	9:00 – 10:30	KOL-G-212
2	Wednesday, 11.01.2017	11:00 – 12:30	KOL-G-212
3	Wednesday, 11.01.2017	14:00 – 15:30	KOL-G-212
4	Wednesday, 11.01.2017	16:00 – 17:30	KOL-G-212
5	Thursday, 12.01.2017	9:00 – 10:30	KOL-G-212
6	Thursday, 12.01.2017	11:00 – 12:30	KOL-G-212
7	Thursday, 12.01.2017	14:00 – 15:30	KOL-G-212
8	Thursday, 12.01.2017	16:00 – 17:30	KOL-G-212
9	Friday, 13.01.2017	9:00 – 10:30	KOL-G-212
10	Friday, 13.01.2017	11:00 – 12:30	KOL-G-212
11	Friday, 13.01.2017	14:00 – 15:30	KOL-G-212
12	Friday, 13.01.2017	16:00 – 17:30	KOL-G-212

On Tuesday 10.01.2017, 16:15-17:45 Prof. Bertomeu and Prof. Cheynel will present their latest research paper in the IBW's Research Seminar in Accounting, Auditing & Governance (AAG), the seminar participants are encouraged to participate.
→ www.business.uzh.ch/professorships/managerialaccounting/lehre/aag.html

2) Seminar content

The aim of this course is to provide you with tools to understand and build rigorous models relevant to behavioral, theoretical and empirical research in accounting. I will present four classic paradigms commonly-used in existing research:

(1) Disclosure theory (aka, persuasion): What news do firms voluntarily release, when their objective is to increase investors' beliefs about future cash flows?

(2) Earnings management (aka, Spence signaling): Why do managers manipulate earnings if, under rational expectations, investors correct for their anticipated level of manipulation?

(3) Markets (aka, rational expectations): How much information do investors recover from observed price about other investors' private information?

(4) Accounting standards and real effects (aka, bayesian persuasion): What kinds of information systems should firms pre-commit to, to maximize production efficiency?

My objective is to lay out foundations for reading, and *writing*, theory. At the end of the course, you should be able to answer, when conceiving a research design: What minimal assumptions do I need to make to make a particular prediction/hypothesis? How do these assumptions imply the prediction that I am making? Which core frameworks do my hypotheses borrow from?

Throughout the course, I will offer an elementary introduction to theory-based estimation, defined as an approach that uses economic models to guide the econometric specification. This will be achieved by way of examples that connect to particular theory, rather than a complete econometrics course, but is meant to open the door to further your interests in a new area of accounting research. Specifically, I will cover the definition and properties of an econometric model and widely-used estimation procedures (such as generalized method of moments and maximum likelihood). Theory-based estimation offers several advantages over descriptive statistics (e.g., ordinary least squares) in that it identifies hidden/latent causal effects and offers tools to quantify policy counter-factuals.

Course Requirements

I expect all students to have taken microeconomics (graduate) with some elementary coverage of game theory, and be familiar with basic calculus and probability topics, such as Lagrange multipliers, differentiation/integration and conditional expectations which would be covered in any math-for-econ refresher course.

Required Readings

I believe in reading few papers but reading them well so, for the most part, you will be given one reading per session. I expect you (1) to pay special attention to appropriate writing of theory, (2) be able to summarize the assumptions of a model, (3) state the main result, (4) conduct, with plan language but as logically as possible, the argument that underlies the main result. Readings may be parallel or complementary to a course module.

Software

Although not required, I suggest that you obtain access to the following software.

TeX. Assignments must be submitted in pdf done with TeX. Unfortunately, the limitations of MS Equation editor make it impossible to conduct any serious theory work with other software. I do accept assignments in Scientific Word although I do not recommend it because it is not compatible with other TeX editors. I recommend the (free) online TeX editor overleaf, and you can create an account on

www.overleaf.com. There are also many other good options for running LaTeX offline such as winedt.com and texnic.com.

Mathematica. Mathematica is a great help to (i) quickly run otherwise completely uninteresting algebraic steps and minimize potential for error, and (ii) guide steps for proofs. Note that Mathematica is NOT a substitute for proofs, unless the steps used by Mathematica are entirely straightforward and reproducible.

Matlab. Matlab is an easy-to-use tool for numerical analysis. Unfortunately, fast computing on Mathematica requires more advanced knowledge of the language and, by contrast, Matlab relies principally on elementary knowledge of linear algebra to achieve reasonable computing speeds. I will conduct one session that makes use of Matlab.

Sessions 1-4: Voluntary Disclosure

Session 1: Disclosure theory I
Instructor: E. Cheynel

The module will take the form of an extended introduction to disclosure theory. This includes a subclass of models of communication in which an informed which information to reveal or withhold in order to affect a receiver's belief (or persuade). We will prove the classic Viscusi-Milgrom-Grossman-Hart unravelling theorem and, then, break the unraveling property in the presence of disclosure frictions: (a) the Dye-Jung-Kwon model of uncertain information endowment and (b) the Jovanovic-Verrecchia model of costly disclosure.

Required reading:

Jung, Woon-Oh, and Young K. Kwon. "Disclosure when the market is unsure of information endowment of managers." *Journal of Accounting Research* (1988): 146-153.

Supplementary readings:

1. Suijs, J., 2007. Voluntary disclosure of information when firms are uncertain of investor response. *Journal of Accounting and Economics*, *43*(2), pp.391-410.
   ➔ An alternative approach to breaking the unraveling theorem.

2. Hughes, J. and Pae, S., 2007. Voluntary disclosure of precision information. *Journal of Accounting and Economics*, *37*(2), pp.261-289.
   ➔ An application of disclosure theory to other types of information.

3. Bertomeu, J. and Cianciaruso, D., 2015. Verifiable Disclosure. *Available at SSRN 2649651.*.
   ➔ A unified framework for all disclosure models.

Session 2: Disclosure theory II
Instructor: E. Cheynel

This module will cover extended topics in disclosure theory, along three extensions of the model. First, we relax the assumption of a single period and present the Einhorn-Ziv model of sticky disclosure, which offers a simple multi-period extension of the Dye-Jung-Kwon model. Second, we relax the assumption of truthful disclosure and develop properties of reports and prices in the Marinovic model of uncertain truthfulness. Third, we relax the assumption of exogenous disclosure costs, and develop the basic insights of the Lizzeri model of strategic certification.

Required reading:

Einhorn, E. and Ziv, A., 2008. Intertemporal dynamics of corporate voluntary disclosures. *Journal of Accounting Research*, *46*(3), pp.567-589.

Supplementary readings:

1. Beyer, A. and Dye, R.A., 2012. Reputation management and the disclosure of earnings forecasts. Review of Accounting Studies, 17(4), pp.877-912.
   → Dynamic disclosure theory when managers also weight future prices.

2. Marinovic, I. and Varas, F., 2016. No News Is Good News: Voluntary Disclosure in the Face of Litigation, Rand Journal of Economics, forthcoming.
   → Disclosure theory in the presence of litigation.

3. Guttman, I., Kremer, I. and Skrzypacz, A., 2014. Not only what but also when: A theory of dynamic voluntary disclosure. The American Economic Review, 104(8), pp.2400-2420.
   → Strategic timing of disclosure.

Session 3: Introduction to theory-based estimation
Instructor: J. Bertomeu

This module will be a quick econometrics refresher to methods and results useful to conduct non-linear estimation. We will start with a definition of an econometric model, identification and empirical content. Then, we shall present two commonly-used estimators: generalized method of moments and maximum likelihood, and present alternative methods to recover standard-errors on parameter estimates and conduct various tests.

Required reading:

Matzkin, R.L., 2007. Nonparametric identification. *Handbook of Econometrics, 6*, pp.5307-5368.
(**chapters 2 and 3 only**).

Supplementary readings:

1. Gayle, G.L. and Miller, R.A., 2015. Identifying and testing models of managerial compensation. The Review of Economic Studies.
   ➔ An example of identification and estimation in an agency problem.

2. Gayle, G.L. and Miller, R.A., 2015. Theory Based Estimation: A Primer. Presentation at the Jr. Accounting Theory Conference 2015, available at: http://www.accountingtheory.org/, JATC 2015.
   ➔ Brief introduction and various examples.

3. Hayashi, F., 2000. Econometrics. 2000. Princeton University Press. **Chapter 7, Extremum Estimators**.
   ➔ Extensive coverage of the properties of MLE and GMM.

Session 4: Estimation of disclosure models
Instructor: J. Bertomeu

This module will conclude the three sessions, using the theory and econometrics as a stepping board to conduct theory-based estimation using real data. Using a sample of management forecast data, we will implement in Matlab three approaches to derive consistent estimators of disclosure frictions: the Bertomeu, Beyer and Taylor estimator of disclosure costs, the Bertomeu, Ma and Marinovic estimator of information endowment, and the non-parametric Cheynel and Liu estimator of disclosure costs and information endowment.

Required reading:

Cheynel and Liu-Watts 2007. When Dye meets Verrecchia: Structural Estimation of Disclosure Theory, Columbia Business School Working Paper.

Supplementary readings:

1. Bertomeu, J., Ma, P. and Marinovic, I., 2016. How often do managers withhold information?. Stanford GSB Working paper.
   ➔ Parametric approach to estimating the probability of information endowment.

2. Bertomeu, J., Beyer, A. and Taylor, D.J., 2015. From Casual to Causal Inference in Accounting Research: The Need for Theoretical Foundations. Foundations and Trends in Accounting, **Chapter 4 Structural Estimation**.
   ➔ Parametric approach to estimating disclosure costs.

Note: I recommend to bring a laptop with Matlab for this session.

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Sessions 5-6: Earnings Management

Session 5: Session 1: Untruthful reporting
Instructor: J. Bertomeu

This module presents the classic Dye-Stein model of inter-temporal earnings manipulation, and we will establish proves that, in this framework, manipulation can persist despite being perfectly anticipated by investors. Then, we shall present the Fischer-Verrecchia model of uncertain price benefits and the Dye-Sridhar model of uncertain misreporting costs. Under these extended approaches, earnings management destroys some of the information contained in earnings.

Required reading:

Fischer, Paul E., and Robert E. Verrecchia. "Reporting bias." *The Accounting Review* 75, no. 2 (2000): 229-245.

Supplementary readings:

1. Morgan, J. and Stocken, P.C., 2003. An analysis of stock recommendations. RAND Journal of economics, pp.183-203.
   ➔ Communication without misreporting costs (i.e., cheap talk).

2. Dye, R.A. and Sridhar, S.S., 2008. A positive theory of flexibility in accounting standards. Journal of Accounting and Economics, 46(2), pp.312-333.
   ➔ Alternative approach to Fischer and Verrecchia (2000).

3. Guttman, I., Kadan, O. and Kandel, E., 2006. A rational expectations theory of kinks in financial reporting. The Accounting Review, 81(4), pp.811-848.
   ➔ Characterization of the set of semi-pooling equilibria in the Dye-Stein framework.

4. Arya, A., Glover, J. and Sunder, S., 1998. Earnings management and the revelation principle. Review of Accounting Studies, 3(1-2), pp.7-34.
   ➔ Issues relating to the interaction between contracts and earnings management.

Session 6: Theory-based estimation of manipulation
Instructor: J. Bertomeu

This module presents two approaches to derive implied manipulation from time-series or cross-sectional data about earnings. First, we shall see that restrictions on the distribution of unmanipulated earnings can identify the level of manipulation from data on earnings and prices. Second, extending the Fischer-Verrecchia to incorporate cash flows, we show that manipulation can be recovered from (suitably transformed) regression coefficients. We shall illustrate that both approaches require stronger assumptions that those implied by the theory.

Required reading:

Beyer, Anne, Ilan Guttman, and Iván Marinovic. "Earnings management and earnings quality: Theory and evidence." (2014).

Supplementary readings:

1. Gerakos, Joseph, and Andrei Kovrijnykh. "Performance shocks and misreporting." Journal of Accounting and Economics 56, no. 1 (2013): 57-72.2003.
   ➔ A theory-based test of manipulation.

2. Ewert, R. and Wagenhofer, A., 2015. Economic Relations Among Earnings Quality Measures. Abacus, 51(3), pp.311-355.
   ➔ Using theory to make sense of reduced-form accounting quality measures.

3. Bertomeu, J., Darrough, M.N. and Xue, W., 2015. Optimal conservatism with earnings manipulation. Contemporary Accounting Research, forthcoming.
   ➔ Testable hypotheses about the interaction between earnings management and accounting measurement.

Sessions 7-8 : Markets

Session 7: Capital asset pricing model
Instructor: E. Cheynel

This module will present the basic capital asset pricing model, and its primary implications for firm valuation. We shall also derive the effect of information on risk premia (or cost of capital), and extend these observations to settings involving information asymmetries between *managers* and investors, in particular relating to voluntary release of information prior to an investment and the design of optimal incentives.

Required reading:

Cheynel, E., 2013. A theory of voluntary disclosure and cost of capital. *Review of Accounting Studies*, *18*(4), pp.987-1020.

Supplementary readings:

1. Bertomeu, J. and Cheynel, E., 2014. Disclosure and the cost of capital: a survey of the theoretical literature. Columbia Business School Research Paper. Routledge Companion to Accounting Theory and Abacus, forthcoming.
   ➔ An overview of the literature about disclosure and the cost of capital in accounting.

2. Bertomeu, J., 2015. Incentive Contracts, Market Risk, and Cost of Capital. Contemporary Accounting Research, 32(4), pp.1337-1352.
   ➔ Effect of agency problems on the cost of capital.

3. Gao, Pingyang. "Disclosure quality, cost of capital, and investor welfare." The Accounting Review 85, no. 1 (2010): 1-29.and Xue, W., 2015.
   ➔ Normative implications of the empirical relationships between information and cost of capital.

Session 8: Information asymmetries between investors
Instructor: E. Cheynel

This module presents extensions of the market model in situations involving information asymmetries between investors. We shall present the noisy rational expectations model of Grossman and Stiglitz, and discuss its (poorly-understood) implications for information and the cost of capital. Then, we shall briefly present the Kyle model of strategic trading, and consider situations in which information can reduce the dilution by issuers.

Required reading:

Bertomeu, J., Beyer, A. and Dye, R.A., 2011. Capital structure, cost of capital, and voluntary disclosures. *The Accounting Review, 86*(3), pp.857-886.
  ➔ A theory emphasizing adverse selection in informed markets.

Supplementary readings:

1. Caskey, J., Hughes, J.S. and Liu, J., 2015. Strategic informed trades, diversification, and expected returns. The Accounting Review, 90(5), pp.1811-1837.
   ➔ The argument that asymmetric information does not affect cost of capital..

2. Taylor, D.J. and Verrecchia, R.E., 2015. Delegated trade and the pricing of public and private information. Journal of Accounting and Economics, 60(2), pp.8-32.
   ➔ .. and an alternative view.

Sessions 9-12: Accounting standards and real effects

Session 9: Bayesian persuasion
Instructor: E. Cheynel

This module presents a standard treatment of the choice of an information system as a mechanism design problem, in the sense of a control problem over posterior beliefs. As applications, we shall use bayesian persuasion to solve for the optimal accounting standards in the collateral measurement problem of Goex and Wagenhofer.

Required reading:

Goex, R.F. and Wagenhofer, A., 2009. Optimal impairment rules. *Journal of Accounting and Economics*, *48*(1), pp.2-16.

Supplementary readings:

1. Bertomeu, J. and Cheynel, E., 2015. Asset measurement in imperfect credit markets. Journal of Accounting Research, 53(5), pp.965-984.
   → Optimal measurement with efficient liquidations.

2. Kamenica, E. and Gentzkow, M., 2011. Bayesian persuasion. The American Economic Review, 101(6), pp.2590-2615
   → A presentation of the complete theory of bayesian persuasion.

Session 10: Bayesian persuasion in product markets
Instructor: E. Cheynel

This module adapts the tools of bayesian persuasion, solving for optimal reporting mechanisms in product markets. We derive the reporting mechanism preferred by a monopoly facing potential entry or facing an existing set of uninformed competitors. We will also illustrate how (i) whether managers maximize current prices or ex-post cash flows, or (ii) whether managers can commit to a persuasion mechanism has critical consequences on the information system.

Required reading:

Chen, H. and Jorgensen, B., 2016. Firm Exit Through Bankruptcy–The Effect of Accounting Bias on Product Market Competition. *Management Science, forth.*

Supplementary readings:

1. Suijs, J. and Wielhouwer, J.L., 2014. Disclosure regulation in duopoly markets: Proprietary costs and social welfare. *European Accounting Review*, *23*(2), pp.227-255.
   → Value of information in product markets.

2. Arya, A. and Mittendorf, B., 2007. The interaction among disclosure, competition between firms, and analyst following. Journal of Accounting and Economics, 43(2), pp.321-339.
   ➔ Product market informational interactions.

3. Bertomeu, Jeremy, John Evans, Mei Feng, and Ayung Tseng. "Tacit collusion and voluntary disclosure: Theory and evidence from the US automotive industry." Available at SSRN 2613970 (2015).
   ➔ Theory and tests of a product-market Bayesian persuasion model.

Session 11: Political pressures in standard-setting
Instructor: J. Bertomeu

This model covers basic models that involve social choice over accounting standards, such that self-interested firms with a reporting objective collectively choose which standards they prefer. We shall first introduce the Bertomeu and Magee model of accounting choice with macro shocks to the set of project opportunities and formally derive how (and why) politically-driven standard-setting can contribute to financial crisis. Then, we extend this approach to endogenous standard-setting cycles, and show that political pressures can cause accounting standards to be unstable, especially when a standard-setter values transparency as an objective.

Required reading:

Bertomeu, Jeremy, and Robert P. Magee. "From low-quality reporting to financial crises: Politics of disclosure regulation along the economic cycle." *Journal of Accounting and Economics* 52, no. 2 (2011): 209-227.

Supplementary readings:

1. Friedman, H.L. and Heinle, M.S., 2016. Lobbying and uniform disclosure regulation. Journal of Accounting Research, 54(3), pp.863-893.
   ➔ A model of costly lobbying.

2. Friedman, H.L. and Heinle, M.S., 2016. Influence activities, coalitions, and uniform policies, Purdue Theory Conference.
   ➔ On the formation of lobbies.

3. Bertomeu, J. and Magee, R.P., 2015. Mandatory disclosure and asymmetry in financial reporting. Journal of Accounting and Economics, 59(2), pp.284-299.
   ➔ Asymmetries in measurement caused by political pressures.

Session 12: Real effects via distortionary signaling
Instructor: J. Bertomeu

We will conclude the course with a basic overview of the effect of information on investment signaling. A class of real effects models includes settings in which the firm may use its investment policy to signal its quality, thus distorting its choice of invest-

ments. Borrowing from the Kanodia, Singh and Spero model of imprecision, we derive how, in this framework, excessive information can be socially undesirable.

Required reading

Kanodia, C., 2007. *Accounting disclosure and real effects*. Foundations and Trends in Accounting.
Note: Focus on chapter 3.

Supplementary readings:

1. Kanodia, C. and Lee, D., 1998. Investment and disclosure: The disciplinary role of periodic performance reports. Journal of Accounting Research, 36(1), pp.33-55.
   ➔ A problem of managerial myopia in which a publicly observed investment is distorted as a function of the information conveyed by accounting reports.

2. Sapra, H., 2002. Do mandatory hedge disclosures discourage or encourage excessive speculation?. Journal of Accounting Research, pp.933-964.
   ➔ The effect of public disclosure on hedges over productive actions.

3. Jiang, X. and Zhang, G., 2016. Managerial Myopia, Measurement Rules and Investment Efficiency. Measurement Rules and Investment Efficiency, Working Paper.
   ➔ A rich framework to examine the consequences of information on investment.