

Analytics in Accounting

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The course considers the use of accounting information for incentive purposes and performance evaluation (decision-influencing role of accounting information). We will study seminal papers on incentives, performance measurement, and how incentives and performance measurement affect the assignment of authority in hierarchies.

The objectives of this course include:

1. To introduce students to the theoretical foundations of the decision-influencing role of accounting information.
2. To introduce students to structuring and solving choice problems related to incentives and performance measurement.
3. To facilitate the application or development of theory for research projects in accounting.

Each topic will have a set of required readings (indicated with a “*”). All students are expected to have read these papers thoroughly. For each paper, please consider the following issues:

- What are the insights of the paper?
- What are the main assumptions of the analysis?
- In which settings does (not) the model apply?
- How can one empirically test the results of the paper?

We will tackle each topic using a combination of lectures, exercises, and discussions. We will begin with a lecture to introduce the topics, characterize the choice problems, and ways to formally structure the problems. Then, students will work on simple exercises to apply the theory and present their results. Finally, students will work on operationalizing the conceptual variables and suggest ways to test the results. We will close with a discussion of unresolved issues.

Research proposal

Upon completion of the course, students are expected to develop a research proposal related to the topics addressed in the course. Specifically, students are expected to briefly provide motivation for their study, discuss theoretical arguments supporting the expected relations, and introduce an empirical approach such as ideas for measuring key variables.

A. Incentives

a) Finite action and outcome space

Grossman, S.J., and O.D. Hart (1983), “An analysis of the principal-agent problem.” *Econometrica* 51(1): 7-45.

Wilson, R. (1968), “The theory of syndicates.” *Econometrica* 36(1): 119-132.

b) Convex action and outcome space

Hemmer, T., O. Kim, and R.E. Verrecchia (1999), “Introducing convexity into optimal compensation contracts.” *Journal of Accounting and Economics* 28(3): 307-327.*

Hofmann, C., S. Huddart, and T. Pfeiffer (2023), “An analysis of net-outcome contracting with applications to equity-based compensation.” *Review of Accounting Studies* 28(3): 1657-1689.

Holmström, B. (1979), “Moral hazard and observability.” *The Bell Journal of Economics* 10(1): 74-91.*

c) Agent limited liability

Innes, R.D. (1990), “Limited liability and incentive contracting with ex-ante action choices.” *Journal of Economic Theory* 52(1): 45–67.

Kim, S.K. (1997), “Limited liability and bonus contracts.” *Journal of Economics and Management Strategy* 6(4): 899–913.

d) Linear contracts

Chen, H., and F. Leng (2004), “Pay-performance sensitivity in a heterogeneous managerial labor market.” *Journal of Management Accounting Research* 16: 19-33.*

Holmstrom, B., and P. Milgrom (1987), “Aggregation and linearity in the provision of intertemporal incentives.” *Econometrica* 55(2): 303-328.*

e) Empirical compensation studies

Demski, J.S., and D.E.M. Sappington (1999), “Summarization with errors: A perspective on empirical investigations of agency relationships.” *Management Accounting Research* 10(1): 21-37.*

B. Performance measurement

a) Controllability principle

Antle, R., and J.S. Demski (1988), “The controllability principle in responsibility accounting.” *The Accounting Review* 63(4): 700-718.*

b) Aggregation of performance measures

Amershi, A.H., R.D. Banker, and S.M. Datar (1990), “Economic sufficiency and statistical sufficiency in the aggregation of accounting signals.” *The Accounting Review* 65(1): 113-130.

Arya, A. and J.C. Glover (2014), “On the upsides of aggregation.” *Journal of Management Accounting Research* 26 (2): 151-166.

Arya, A., J. Glover, B. Mittendorf, and L. Ye (2005), “On the use of customized versus standardized performance measures.” *Journal of Management Accounting Research* 17: 7-21.

Arya, A., J.C. Fellingham, and D.A. Schroeder (2004), “Aggregation and measurement errors in performance evaluation.” *Journal of Management Accounting Research* 16: 93-105.

Banker, R.D., and S.M. Datar (1989), “Sensitivity, precision, and linear aggregation of signals for performance evaluation.” *Journal of Accounting Research* 27(1): 21-39.*

Core, J.E., W.R. Guay, and R.E. Verrecchia (2003), “Price versus non-price performance measures in optimal CEO compensation contracts.” *The Accounting Review* 78(4): 957-981.

Lambert, R.A., and D.F. Larcker (1987), “An analysis of the use of accounting and market measures of performance in executive compensation contracts.” *Journal of Accounting Research* 25: 85-125.

c) Performance measure congruity

Bouwens, J., and L. van Lent (2006), “Performance measure properties and the effect of incentive contracts.” *Journal of Management Accounting Research* 18(1): 55-75.

Bushman, R.M., and R.J. Indjejikian (1993), “Stewardship value of “distorted” accounting disclosures.” *The Accounting Review* 68(4): 765-782.

Datar, S.M., S.C. Kulp, and R.A. Lambert (2001), “Balancing performance measures.” *Journal of Accounting Research* 39(1): 75-92.

Feltham, G.A., and J. Xie (1994), “Performance measure congruity and diversity in multi-task principal/agent relations.” *The Accounting Review* 69(3): 429-453.*

Holmstrom, B., and P. Milgrom (1991), "Multitask principal-agent analyses: Incentive contracts, asset ownership, and job design." *Journal of Law, Economics, & Organization* 7(special issue): 24-52.

Lambert, R.A. (1993), "The use of accounting and security price measures of performance in managerial compensation contracts: a discussion." *Journal of Accounting and Economics* 16(1-3): 101-123.

Sabac, F., and J. Yoo (2018), "Performance measure aggregation in multi-task agencies." *Contemporary Accounting Research* 35(2): 716-733.

d) Relative performance evaluation

Aggarwal, R.K., and A.A. Samwick (1999), "Executive compensation, strategic competition, and relative performance evaluation: Theory and evidence." *The Journal of Finance* 54(6): 1999-2043.

Albuquerque, A. (2009), "Peer firms in relative performance evaluation." *Journal of Accounting and Economics* 48(1): 69-89.

Antle, R., and A. Smith (1986), "An empirical investigation of the relative performance evaluation of corporate executives." *Journal of Accounting Research* 24(1): 1-39.

Asseburg, H., and C. Hofmann (2010), "Relative performance evaluation and contract externalities." *OR Spectrum* 32(1): 1-20.

Black, D.E., S.S. Dikolli, C. Hofmann, and T. Pfeiffer (2023). "Estimating the sensitivity of CEO compensation to gross versus net accounting performance." *Contemporary Accounting Research* forthcoming.

Dikolli, S.S., V. Diser, C. Hofmann, and T. Pfeiffer (2018), "CEO power and relative performance evaluation." *Contemporary Accounting Research* 35(3): 1279-1296.

Dikolli, S.S., C. Hofmann, and T. Pfeiffer (2013), "Relative performance evaluation and peer-performance summarization errors." *Review of Accounting Studies* 18(1): 34-65.*

Fischer, P.E. (1999), "Managing employee compensation risk." *Review of Accounting Studies* 4(1): 45-60.

Holmstrom, B. (1982), "Moral hazard in teams." *The Bell Journal of Economics* 13(2): 324-340.*

Maug, E. (2000), "The relative performance puzzle." *Schmalenbach Business Review* 52.

Janakiraman, S.N., R.A. Lambert, and D.F. Larcker (1992), "An empirical investigation of the relative performance evaluation hypothesis." *Journal of Accounting Research* 30(1): 53-69.*

e) Subjective performance evaluation

- Baker, G., R. Gibbons, and K. Murphy (1994), “Subjective performance measures in optimal incentive contracts.” *Quarterly Journal of Economics* 109: 1125-1156.
- Budde, J., and C. Hofmann (2023), “Dynamic Bonus Pools.” *The Accounting Review* forthcoming.
- Ederhof, M. (2010), “Discretion in bonus plans.” *The Accounting Review* 85(6): 1921–1949.
- MacLeod, B. (2003), “Optimal contracting with subjective evaluation.” *American Economic Review* 93(1): 216–240.*
- Rajan, M.V. and S. Reichelstein (2006), “Subjective performance indicators and discretionary bonus pools.” *Journal of Accounting Research* 44(3): 585–618.
- Rajan, M.V. and S. Reichelstein (2009), “Objective versus subjective indicators of managerial performance.” *The Accounting Review* 84(1): 209–237.

C. Hierarchies

a) Performance measure spillovers

- Bouwens, J., C. Hofmann, and L. van Lent (2018), “Performance measures and intra-firm spillovers: Theory and Evidence.” *Journal of Management Accounting Research* 30(3): 117-144.
- Bushman, R.M., R.J. Indjejikian, and A. Smith (1995), “Aggregate performance measures in business unit manager compensation: The role of intrafirm interdependencies.” *Journal of Accounting Research* 33: 101-128.*
- Keating, A.S. (1997), “Determinants of divisional performance evaluation practices.” *Journal of Accounting and Economics* 24(3): 243-273.

b) Collusion

- Feltham, G.A., and C. Hofmann (2007), “Limited commitment in multi-agent contracting.” *Contemporary Accounting Research* 24(2): 345-375.
- Feltham, G.A., and C. Hofmann (2012), “Information suppression in multi-agent contracting.” *Review of Accounting Studies* 17(2): 254-278.

c) Management authority

- Feltham, G.A., C. Hofmann, and R.J. Indjejikian (2016), “Performance aggregation and decentralized contracting.” *The Accounting Review* 91(1): 99-117.

Hofmann, C., and R. Indjejikian (2018), “Authority and accountability in hierarchies.” *Foundations and Trends in Accounting* 12(4): 298-403.*

Hofmann, C., and R. Indjejikian (2021), “Authority, monitoring, and incentives in hierarchies.” *Contemporary Accounting Research* 38(3): 1643-1678.*

Hofmann, C., and R. Indjejikian (2024), “Transparency in hierarchies.” *Journal of Accounting Research* 62(1): 411-445.

Hughes, J.S., L. Zhang, and J.-Z. J. Xie (2005), “Production externalities, congruity of aggregate signals, and optimal task assignments.” *Contemporary Accounting Research* 22(2): 393-408.

Maskin, E., Y. Qian, and C. Xu (2000), “Incentives, information, and organizational form.” *The Review of Economic Studies* 67(2): 359-378.

d) Organizational structure

Löffler, C., and C. Schmid (2023), “Task assignment and pay dispersion under moral hazard.” *Management Accounting Research* forthcoming.

Flassak, K., and C. Hofmann (2021), “The effect of career concerns on team assignment.” Working paper.

Reichmann, S., and A. Rohlfig-Bastian (2014), “Decentralized task assignment and centralized contracting: On the optimal allocation of authority.” *Journal of Management Accounting Research* 26(1): 33-55.

Schöndube-Pirchegger, B., and J.R. Schöndube (2019). “Optimal delegation choices in the presence of an incongruent performance measure and double moral hazard.” *Managerial and Decision Economics* 40(4): 414-424.

e) Other-regarding preferences

Abernethy, M.A., J. Bouwens, C. Hofmann, and L. van Lent (2023), “Altruism, social norms, and incentive contract design.” *Review of Accounting Studies* 28(2), 570-614.

Carlin, I.B., and S. Gervais (2009), “Work ethic, employment contracts, and firm value.” *The Journal of Finance* 64(2): 785-821.

Fischer, P., and S. Huddart (2008), “Optimal contracting with endogenous social norms.” *The American Economic Review* 98(4): 1459-1475.*

Heinle, M.S., C. Hofmann, and A.H. Kunz (2012), “Identity, incentives, and the value of information.” *The Accounting Review* 87(4): 1309-1334.

[required readings are indicated with a “*”]

Basic readings

Christensen, J.A., and J. Demski (2002), *Accounting theory*. Irwin/McGraw-Hill.

Christensen, P.O., and G. A. Feltham (2006), *Economics of accounting: performance evaluation*. Vol. 2. Springer Science & Business Media.

Demski, J. (2013), *Managerial uses of accounting information*. 2nd edition, Springer Science & Business Media, 2013.

Lambert, R.A. (2001), “Contracting theory and accounting.” *Journal of Accounting and Economics* 32(1): 3-87.

[Basic readings are textbooks or review articles that provide an overview of the topics.]