Limperg Instituut

COURSE SYLLABUS

Analytics in Accounting

Course objective and motivation

The course examines the use of accounting information for incentive provision and performance evaluation within organizational hierarchies. We will study seminal and contemporary research on incentives, performance measurement, and the role of these mechanisms in shaping the allocation of decision-making authority in organizations.

The objectives of this course are to:

1. Introduce students to the theoretical foundations of the decision-influencing role of accounting information.
2. Develop students' ability to structure and analyze incentive and performance measurement problems using economic theory.
3. Equip students to apply existing theories and develop new theoretical insights for research projects in management accounting.

Course planning

Day 1: Incentives
Day 2: Performance measurement: controllability principle, aggregation of performance information
Day 3: Performance measurement: performance measure congruity, relative performance evaluation, subjective performance evaluation
Day 4: Hierarchies: performance measure spillover, collusion, management authority
Day 5: Hierarchies: organizational structure, other-regarding preferences

Course setup

Each topic will be covered through a combination of lectures, exercises, and discussions. We will begin with a lecture introducing the topic, characterizing the underlying decision problem, and demonstrating how it can be formally modeled. Students will then work on exercises to apply the theoretical concepts and present their solutions. Building on these exercises, students will discuss how the conceptual constructs can be operationalized empirically and propose approaches for testing the theoretical predictions. Each session will conclude with a discussion of unresolved issues and promising directions for future research.

Course assessment

Upon completion of the course, students are expected to develop a research proposal related to one of the topics covered in the course. Specifically, the proposal should articulate the study's motivation, develop the theoretical arguments underlying the expected relationships, and outline a feasible empirical approach, including ideas for measuring the key constructs and testing the proposed hypotheses.

Setup of paper presentations

Each topic is accompanied by a set of required readings. Students are expected to read these papers carefully before class and be prepared to discuss them in depth. In particular, for each paper, consider the following questions:

- What are the paper's main findings and key insights?
- What are the key assumptions underlying the analysis?
- Under what conditions is the model applicable, and where might it not apply?
- How could the paper's theoretical predictions be tested empirically?

Detailed overview of topics and study material

A. Incentives

a) Finite action and outcome space
b) Convex action and outcome space
c) Agent limited liability
d) Linear contracts

B. Performance measurement

a) Controllability principle
b) Aggregation of performance measures
c) Performance measure congruity
d) Relative performance evaluation
e) Subjective performance evaluation

C. Hierarchies

a) Performance measure spillovers
b) Collusion
c) Management authority
d) Organizational structure
e) Other-regarding preferences

Credits

6 ECTS (European Credits)

References

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.

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.

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.

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.

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

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

Arya, A., and R.N.V. Ramanan (2024), “Team design and its implications for competition and disclosure.” Working paper.

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.

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

Baker, G., R. Gibbons, and K. Murphy (1994), “Subjective performance measures in optimal incentive contracts.” *Quarterly Journal of Economics* 109: 1125-1156.

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.*

Black, D.E., S.S. Dikolli, C. Hofmann, and T. Pfeiffer (2024). “Estimating the sensitivity of CEO compensation to gross versus net accounting performance.” *Contemporary Accounting Research* 41(1): 255-291.

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.

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.

Budde, J., and C. Hofmann (2024), “Dynamic bonus pools.” *The Accounting Review* 99(3): 37-57.

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

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.*

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

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

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.

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

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.*

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.*

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

Ederhof, M. (2010), “Discretion in bonus plans.” *The Accounting Review* 85(6): 1921–1949.

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.

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.*

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

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

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

Flassak, K., and C. Hofmann (2024), “Soft information, career concerns, and team design.” Working paper.

Glover, J., and E. Kim (2024), “On the value of demographic diversity in teams.” Working paper.

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

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

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., 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.

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.*

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

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

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.

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.

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

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.*

Keating, A.S. (1997), “Determinants of divisional performance evaluation practices.” *Journal of Accounting and Economics* 24(3): 243-273.

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

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.

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.

Löffler, C., and C. Schmid (2024), “Task assignment and pay dispersion under moral hazard.” *Management Accounting Research* 64.

MacLeod, B. (2003), “Optimal contracting with subjective evaluation.” *American Economic Review* 93(1): 216–240.*

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

Maug, E. (2000), “The relative performance puzzle.” *Schmalenbach Business Review* 52: 3-24.

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.

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

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

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.

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