



Economics of Science, Innovation and Growth

Summer Semester 2023

Course Description

Continuous innovation is an essential determinant of long-term economic growth. This course is designed as an introduction to the implications of the economics of science and innovation for economic growth. It aims to introduce the well-established literature, accompanied by frontier research providing the students with tools to evaluate economic growth and to analyse the role of science and innovation, the implemented policies and the implications for the labour markets. After the course, the students will be familiar with the main theoretical and empirical tools in this research area to critically evaluate and discuss the advances and the limitations of the current state of literature.

Course Objectives

- To understand and critically analyse the fundamental concepts of the economic growth.
- To examine the role of science and innovation and the methods to promote these for economic growth.
- To evaluate the policy interventions to promote economic growth and discuss the advantages and limitations concerning different determinants of economic growth.
- To answer the following questions: How does science progress? How is innovation measured and incentivized and what are the long-run effects of these incentives? How well does the knowledge transfer from science to technology work? How does the (firm) innovation affect the labour market? What is the impact of innovation on inequality?

Instructors

Prof. Dr. A. Kemnitz: alexander.kemnitz@tu-dresden.de; OH: Tuesday 2:50-4:20 pm, SCH C 265, by appointment only

Olga Tcaci, M.Sc.: olga.tcaci@tu-dresden.de; OH: Wednesday 4:40-6:10 pm, SCH C 261, by appointment only

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Modules and Exams

BA-WW-VWL-2703 / D-WW-WIWI-2703, BA-IB-ID2, BA-IB-S, BA-IB-EF: Seminar paper (15 pages) and presentation (30 minutes).

MA-IB-ECG: Seminar paper (20 pages) and presentation (60 minutes). Presentations should demonstrate a sound knowledge of the causes and mechanisms of economic growth as taught in the course "Introduction to Economic Growth."

All examinations are conducted in English.

Structure of Graded Assignments and Submission Deadlines

Mid-term submission (15 points):

Submit a one-page preliminary draft of your seminar paper as a PDF file in the [OPAL course, Resources – mid-term submission](#) folder by **15.05.2023**. You should address the following questions: Why is the topic of the basic paper important? What research question(s) do its authors address and how do they answer it? What is your assessment (compliments & criticism) of the authors' research approach? How will you work on the research question in your seminar paper?

Final submission (45 points):

Bachelor students submit the final draft of the seminar paper by **10.06.2023**, and **Master** students submit by **30.06.2023**. The seminar paper should inform the economically educated reader on the topic. It should critically appreciate the primary paper's approach and discuss its results, drawing on other literature. Merely summarizing the primary paper is not sufficient. The seminar papers are to be uploaded as a PDF file in the [OPAL course, Resources – final submission](#) folder and handed over on time to the secretary of the chair (Mrs. Heike Becker, SCH C 264, OH 8:00 am -12:00 pm, wipo.office@tu-dresden.de)

Presentation (30 points):

Bachelor students upload the presentations by **13.06.2023**, and **Master** students upload the presentations by **04.07.2023**. Your presentation should focus on the questions raised in your preliminary draft as well as the analysis of the current state of literature, data and methodological approach(es), results and the implications of these for the developments in the specific research field. Information on the structure and design of the seminar paper can be found in the guidelines for academic work, which are available on the Chair's website.

Attendance and participation (10 points):

You are expected to attend regularly and actively participate in the class discussion.

Prerequisites

Knowledge of economics as taught in the modules Introduction to Economics (EVWL), Introduction to Microeconomics, Introduction to Macroeconomics and/or Public and International Economic Theory.

Course Format and Schedule

Kick-off meeting	03.04.2023, 3.DS; SCH A 118/H
Topic selection	10.04.-15.04.2023; OPAL
Mid-term submissions	15.05.2023, OPAL
Final submissions Bachelor	10.06.2023, OPAL & secretariat
Final submissions Master	30.06.2023, OPAL & secretariat
Upload presentations Bachelor	13.06.2023, OPAL
Upload presentations Master	04.07.2023, OPAL
Presentations Bachelor	16.06.2023 / 30.06.2023, time tbd
Presentations Master	07.07.2023, time tbd

I. Economics of Science

- 1.1 Incentives in Science:** Myers, Kyle. 2020. "The Elasticity of Science." *American Economic Journal: Applied Economics* 12(4): 103-134.
- 1.2 Knowledge Spillovers and Transfer:** Arora, Ashish, Sharon Belenzon, and Lia Sheer. 2021. "Knowledge Spillovers and Corporate Investment in Scientific Research." *American Economic Review*, 111(3): 871-98.
- 1.3 Resource Allocation in Science:** Azoulay, Pierre, Christian Fons-Rosen, and Joshua S. Graff Zivin. 2019. "Does Science Advance One Funeral at a Time?" *American Economic Review* 109(8): 2889-2920.
- 1.4 Knowledge Production:** Agarwal, Ruchir, and Patrick Gaule. 2020. "Invisible Geniuses: Could the Knowledge Frontier Advance Faster?" *American Economic Review: Insights*, 2(4): 409-24.
- 1.5 Ideas and Knowledge Diffusion:** Bilir, L. K., & Morales, E. (2020). Innovation in the global firm. *Journal of Political Economy*, 128(4), 1566-1625.

II. Economics of Innovation

- 2.1 Intellectual Property Rights (IPR) and Open Access:** Kevin A. Bryan and Yasin Ozcan (2021). "The Impact of Open Access Mandates on Invention". *The Review of Economics and Statistics*, 103 (5): 954-967.
- 2.2 Market Failures:** Cunningham, C., Ederer, F., & Ma, S. (2021). "Killer acquisitions". *Journal of Political Economy*, 129(3), 649-702.
- 2.3 Public Funded Innovation:** Myers, Kyle R., and Lauren Lanahan. 2022. "Estimating Spillovers from Publicly Funded R&D: Evidence from the US Department of Energy." *American Economic Review*, 112 (7): 2393-2423.
- 2.4 Private Innovation:** Budish, Eric, Benjamin Roin, and Heidi Williams. 2015. "Do firms underinvest in long-term research? Evidence from cancer clinical trials," *American Economic Review* 105(7): 2044-2085.

2.5 Innovation and Inequality: Xavier Jaravel (2019). "The Unequal Gains from Product Innovations: Evidence from the U.S. Retail Sector", *The Quarterly Journal of Economics*, 134(2): 715–783.

III. Policies

A. Demand-Side Policies: Innovation Funding

3.1 Taxation: Akcigit, U., Hanley, D., & Stantcheva, S. (2022). "Optimal taxation and R&D policies". *Econometrica*, 90(2), 645-684.

3.2 R&D Subsidies: Myers, Kyle R., and Lauren Lanahan. 2022. "Estimating Spillovers from Publicly Funded R&D: Evidence from the US Department of Energy." *American Economic Review*, 112 (7): 2393-2423.

3.3 Grants: Moretti, E., Steinwender, C., & Van Reenen, J. (2019). "The intellectual spoils of war? Defense r&d, productivity and international spillovers". *National Bureau of Economic Research*, No. w26483.

B. Supply-Side Policies: Labor Market Policies

3.4 Immigration: Doran, K., Gelber, A. and Isen, A., 2022. "The effects of high-skilled immigration policy on firms: Evidence from visa lotteries". *Journal of Political Economy*.

3.5 Gender Differences: Lisa D. Cook, Janet Gerson, and Jennifer Kuan, 2022 "Closing the Innovation Gap in Pink and Black". *Entrepreneurship and Innovation Policy and the Economy* 1, 43-66

3.6 Regulation: Aghion, P., Bergeaud, A., & Van Reenen, J. (2021). "The impact of regulation on innovation". *National Bureau of Economic Research*, No. w28381.