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Spring Term 2025

Education and Innovation: An Introduction to Empirical Foundations (S)

Syllabus

This version: January 24, 2025.

Module Number: MO0204

Lectures: From 08:00 – 12:00 at the following dates: 27.02.2025, 06.03.2025, 27.03.2025, 17.04.2025, 22.05.2025

Lecturer: Prof. Dr. Patrick Lehnert (patrick.lehnert@business.uzh.ch)

Curriculum classification: M: Core elective area: Organization and Human Resources (BWL3), M: Elective area WWF, M: Minor area: Managing Education (MEDU)

ECTS-Points: 6.0

Course homepage: https://t.uzh.ch/1IW

Registration: Number of participants limited due to Stata room capacities. You need to register by sending your CV and current transcript of record by email to the lecturer until February 15th, 2025.

Target groups: Master students with an interest in empirical foundations and Stata

Prerequisites: Bachelor's degree

Prior knowledge: Successful completion of the following modules (or equivalent ones): ME1: Personnel Economics, Advanced Microeconomics 1, Empirical Methods

Learning goals:

- Students know and understand important empirical methods used in economic research on education and innovation.
- Students become acquainted with empirical measures related to education and innovation.
- Students can use Stata to apply the empirical methods.
- Students can evaluate the suitability of the empirical methods in different contexts.
- Students can use Stata to prepare datasets for empirical analysis.

Concept:
The seminar covers four empirical methods: Ordinary Least Squares, Fixed Effects, Difference-in-Differences, and Instrumental Variables. The lecturer will present each method throughout the seminar and familiarize students with its application in Stata. For all methods, between seminar sessions students work on graded individual and group assignments that aim at practically applying these methods. In addition, each group of 2-3 students presents their assignment results for one of the methods in class. All students discuss these results in class. Class participation is also considered in the grading.

Infrastructure requirements:
Students need to bring their own laptops to class. Stata access will be provided.

Literature:

- **Resources on methods**

  Note: This list contains suggestions for books and other resources that students may find helpful for the seminar. Students are not expected to read all those resources and may consult other resources.

  Books

  Angrist, J. D., & Pischke, J.-S. (2009). *Mostly harmless econometrics: An empiricist's companion*. Princeton University Press.

  Cameron, A. C., & Trivedi, P. K. (2005). *Microeconometrics: Methods and applications*. Cambridge University Press.

  Cameron, A. C., & Trivedi, P. K. (2022). *Microeconometrics using Stata* (2nd ed.). Stata Press.

  Wooldridge, J. M. (2020). Introductory econometrics: A modern approach (7th ed.). Cengage Learning.

  Online resources

  StataCorp. (2023). *Stata 18 user's guide*. Stata Press. https://www.stata.com/manuals/u.pdf

  StataCorp. (2024). *Statalist: The Stata Forum*. https://www.statalist.org/

- **Empirical papers**

  Note: This list contains papers discussed in class and will be updated throughout the semester. Some of these papers are also part of the homework assignments.

  Andersson, R., Quigley, J. M., & Wilhelmsson, M. (2009). Urbanization, productivity, and innovation: Evidence from investment in higher education. *Journal of Urban Economics, 66*, 2–15.

  Andrews, M. J. (2023). How do institutions of higher education affect local invention? Evidence from the establishment of US colleges. *American Economic Journal: Economic Policy, 15*, 1–41.

  Backes-Gellner, U., Rupietta, C., & Tuor Sartore, S. N. (2017). Reverse educational spillovers at the firm level. *Evidence-based HRM: a Global Forum for Empirical Scholarship, 5*, 80–106.

  Beise, M., & Stahl, H. (1999). Public research and industrial innovations in Germany. *Research Policy, 28*, 397–422.

  Bianchi, N., & Giorcelli, M. (2022). The dynamics and spillovers of management interventions: Evidence from the training within industry program. *Journal of Political Economy, 130*, 1630–1675.

  Böckerman, P., Hämäläinen, U., & Uusitalo, R. (2009). Labour market effects of the polytechnic education reform: The Finnish experience. *Economics of Education Review, 28*, 672–681.

  Cinnirella, F., & Streb, J. (2017). The role of human capital and innovation in economic development: Evidence from post-Malthusian Prussia. *Journal of Economic Growth, 22*, 193–227.

  Cowan, R., & Zinovyeva, N. (2013). University effects on regional innovation. *Research Policy, 42*, 788–800.

  Falck, O., Heblich, S., & Kipar, S. (2010). Industrial innovation: Direct evidence from a cluster-oriented policy. *Regional Science and Urban Economics, 40*, 574–582.

  Hämäläinen, U., & Uusitalo, R. (2008). Signalling or human capital: Evidence from the Finnish polytechnic school reforms. *The Scandinavian Journal of Economics, 110*, 755–775.

  Kantor, S., & Whalley, A. (2019). Research proximity and productivity: Long-term evidence from agriculture. *Journal of Political Economy, 127*, 819–854.

  Krieger, B. (2024). Heterogeneous university funding programs and regional firm innovation: An empirical analysis of the German Excellence Initiative. *Research Policy, 53*, 104995.

Lehnert, P., Pfister, C., & Backes-Gellner, U. (2020). Employment of R&D personnel after an educational supply shock: Effects of the introduction of Universities of Applied Sciences in Switzerland. *Labour Economics, 66*, 101883.

Leten, B., Landoni, P., & Van Looy, B. (2014). Science or graduates? How do firms benefit from the proximity of universities? *Research Policy, 43*, 1398–1412.

Luo, C., & Xie, L. (2023). Regional intergenerational mobility and corporate innovation: Evidence from China. *PLoS One, 18*, e0283588.

Moretti, E. (2004). Estimating the social return to higher education: Evidence from longitudinal and repeated cross-sectional data. *Journal of Econometrics, 121*, 175–212.

Neidhöfer, G., Ciaschi, M., Gasparini, L., & Serrano, J. (2024). Social mobility and economic development. *Journal of Economic Growth, 29*, 327–359.

Palffy, P., Lehnert, P., & Backes-Gellner, U. (2023). Social norms and gendered occupational choices of men and women: Time to turn the tide? *Industrial Relations, 62*, 380–410.

Pfister, C., Koomen, M., Harhoff, D., & Backes-Gellner, U. (2021). Regional innovation effects of applied research institutions. *Research Policy, 50*, 104197.

Rong, Z., & Wu, B. (2020). Scientific personnel reallocation and firm innovation: Evidence from China's college expansion. *Journal of Comparative Economics, 48*, 709–728.

Rupietta, C., & Backes-Gellner, U. (2019). How firms' participation in apprenticeship training fosters knowledge diffusion and innovation. *Journal of Business Economics, 89*, 569–597.

Schlegel, T., Pfister, C., & Backes-Gellner, U. (2022). Tertiary education expansion and regional firm development. *Regional Studies, 56*, 1874–1887.

Shu, L., & Wang, W. (2023). Human capital and trademarks: Evidence from higher education expansion in China. *Research Policy, 52*, 104869.

Toivanen, O., & Väänänen, L. (2016). Education and invention. *The Review of Economics and Statistics, 98*, 382–396.

Valero, A., & Van Reenen, J. (2019). The economic impact of universities: Evidence from across the globe. *Economics of Education Review, 68*, 53–67.

Varsakelis, N. C. (2006). Education, political institutions and innovative activity: A cross-country empirical investigation. *Research Policy, 35*, 1083–1090

Waldinger, F. (2016). Bombs, brains, and science: The role of human and physical capital for the creation of scientific knowledge. *The Review of Economics and Statistics, 98*, 811–831.

WWF statutory cosurse policies:

According to WWF study regulations, all exam dates are *final* as published in the course catalogue. This means that the final exam dates and times are *not negotiable*. It will not be possible to take any exams on different dates.

Check your class schedule for possible *exam conflicts* at the beginning of the semester, as this is your own responsibility. If you want to avoid heavy workload and taking multiple exams in one day, you will have to rearrange your class schedule accordingly before the semester starts. Please arrange yourself by taking the respective classes only.

Academic dishonesty in any form will not be tolerated. Anyone caught cheating or engaging in unethical behavior will be reported to the Dean's Office according to the guidelines on academic dishonesty set forth by the University of Zurich.

Don't forget to *officially register* yourself using the registration tool (Modulbuchungstool) of the University of Zurich.

Note: The information in this syllabus supports the official information in the electronic university registration tool (VVZ – Vorlesungsverzeichnis – Course Catalogue). In cases of doubt, the official information in the course catalogue is decisive.