



Spring Term 2026

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

Syllabus

This version: April 4, 2026

Module number: MO0204

Time and Location:

- Friday, February 27, 2026, 16:00–17:00, online (kick-off meeting)
- Tuesday, April 7, 2026, 13:00–17:00, room KOL-H-317
- Wednesday, April 8, 2026, 09:00–17:00, room KOL-H-317
- Thursday, April 9, 2026, 09:00–17:00, room KOL-H-317
- Friday, April 10, 2026, 09:00–17:00, room KOL-H-317

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

ECTS points: 6.0

Course homepage: <https://t.uzh.ch/1VA>

Registration: Number of participants limited due to Stata capacities. You need to register by sending your CV and current transcript of record by email to the lecturer until February 15th, 2026.

Target group: 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 or Advanced Microeconomics for Business Administration, Empirical Methods or Applied Empirical Methods for Business Administration

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 five empirical methods: Ordinary Least Squares, Fixed Effects, Difference-in-Differences, Instrumental Variables, and Regression Discontinuity Design. The lecturer will present each method throughout the seminar and familiarize students with its application in Stata. In groups of 2-3, students work on an assigned empirical paper, preparing written reports and presenting the paper in one of the April sessions. In an individual assignment, students practically apply the methods



covered in the seminar. Class participation and contribution to discussions are 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. (2025). *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.

Baruffaldi, S. H., Marino, M., & Visentin, F. (2020). Money to move: The effect on researchers of an international mobility grant. *Research Policy*, 49, 104077.

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.

Bronzini, R., & Iachini, E. (2014). Are incentives for R&D effective? Evidence from a regression discontinuity design. *American Economic Journal: Economic Policy*, 6, 100–134.

Buehler, A. F., Lehnert, P., & Backes-Gellner, U. (2024). Curriculum updates in vocational education and changes in graduates' skills and wages. *Journal of Education and Work*, 37, 458–482.



- Chu, T., & Wen, Q. (2019). Does college education promote entrepreneurship in China? *Journal of Labor Research*, 40, 463–486.
- Cinnirella, F., Hornung, E., & Koschnick, J. (2025). Flow of ideas: Economic societies and the rise of useful knowledge. *The Economic Journal*, 135, 1496–1535.
- 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.
- Eyles, A., & Machin, S. (2019). The introduction of academy schools to England's education. *Journal of the European Economic Association*, 17, 1107–1146.
- Fernandes, M., Hilber, S., Sturm, J.-E., & Walter, A. (2023). Closing the gender gap in academia? Evidence from an affirmative action program. *Research Policy*, 52, 104865.
- Hämäläinen, U., & Uusitalo, R. (2008). Signalling or human capital: Evidence from the Finnish polytechnic school reforms. *The Scandinavian Journal of Economics*, 110, 755–775.
- Hoisl, K. (2007). Tracing mobile inventors: The causality between inventor mobility and inventor productivity. *Research Policy*, 36, 619–63.
- Kämpfen, F., & Maurer, J. (2018). Does education help “old dogs” learn “new tricks”? The lasting impact of early-life education on technology use among older adults. *Research Policy*, 47, 1125–1132.
- Krieger, B. (2024). Heterogeneous university funding programs and regional firm innovation: An empirical analysis of the German Excellence Initiative. *Research Policy*, 53, 104995.
- 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.
- Meoli, A., Piva, E., & Righi, H. (2024). Missing women in STEM occupations: The impact of university education on the gender gap in graduates' transition to work. *Research Policy*, 53, 105072.
- Moretti, E. (2004). Estimating the social return to higher education: Evidence from longitudinal and repeated cross-sectional data. *Journal of Econometrics*, 121, 175–212.
- Muehleemann, S. (2025). Artificial intelligence adoption and workplace training. *Journal of Economic Behavior & Organization*, 238, 107206.
- 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.
- Pellegrini, G., Terribile, F., Tarola, O., Muccigrosso, T., & Busillo, F. (2013). Measuring the effects of European regional policy on economic growth: A regression discontinuity approach. *Papers in Regional Science*, 92, 217–233.
- Pertuze, J. A., Reyes, T., Vassolo, R. S., & Olivares, N. (2019). Political uncertainty and innovation : The relative effects of national leaders' education levels and regime systems on firm-level patent applications. *Research Policy*, 48, 103808.
- Pfister, C., Koomen, M., Harhoff, D., & Backes-Gellner, U. (2021). Regional innovation effects of applied research institutions. *Research Policy*, 50, 104197.



- Ramírez, S., Gallego, J., & Tamayo, M. (2020). Human capital, innovation and productivity in Colombian enterprises: A structural approach using instrumental variables. *Economics of Innovation and New Technology*, 29, 625–642
- Shu, L., & Wang, W. (2023). Human capital and trademarks: Evidence from higher education expansion in China. *Research Policy*, 52, 104869.
- Steinberg, F. (2014). Does greater autonomy improve school performance? Evidence from a regression discontinuity analysis in Chicago. *Education Finance and Policy*, 9, 1–35.
- 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.
- 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.
- Yang, C.-H. (2022). How artificial intelligence technology affects productivity and employment: Firm-level evidence from Taiwan. *Research Policy*, 51, 104536.

WWF statutory course 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.