Dresden University of Technology

Technische Universität Dresden | Helmholtzstr. 10, 01069 Dresden

National Bureau of Economic Research
Selection Committee - NBER Innovation
Research Boot Camp 2026
1050 Massachusetts Avenue
Cambridge, MA 02138

Chair of Business Administration, esp. Finance and Financial Technology

Daniel Vrankar
PhD Candidate

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Application for the NBER Innovation Research Boot Camp 2026

Dear Members of the Selection Committee,

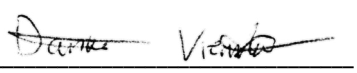
I am writing to apply for the NBER Innovation Research Boot Camp 2026. My research examines how innovation patterns and spillovers in the space economy are changing as the sector becomes more commercialized, and how policymakers can guide this transformation. For this reason, participating in the NBER Innovation Research Boot Camp 2026 as well as the NBER Summer Institute Innovation Policy meeting would be an excellent fit for my research agenda.

I have attached my CV, which includes a list of completed PhD courses. In addition to completing the four required courses at TU Dresden, I completed additional master's-level coursework at TU Dresden and the University of Bremen, which enabled me to enter a fast-track PhD without a master's degree.

I have also attached the requested one-page essay. A letter of recommendation will be sent directly by my PhD supervisor, Prof. Lars Hornuf (lars.hornuf@tu-dresden.de).

Thank you for your consideration. I would be grateful for the opportunity to participate in the NBER Innovation Research Boot Camp 2026.

Sincerely,



07 February 2026, Dresden, Daniel Vrankar

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DRESDEN concept

TUD is a founding partner in the DRESDEN-concept alliance.

Daniel Vrankar

PhD Student in Business Administration | TU Dresden | Certified Derivatives Trader (Eurex)
Faculty of Business & Economics · Chair of Business Administration · Helmholtzstr. 10, 01069 Dresden (Germany)

Email	daniel.vrankar@tu-dresden.de
Languages	German (native), English (TOEFL iBT: 114/120), French (A1.2)
Programming	Stata, Python, MATLAB

Google Scholar · LinkedIn · ORCID

Education

2023– **PhD Student in Business Administration** | TU Dresden (Germany)
Chair of Business Administration, esp. Finance and Financial Technology · Expected completion by July 2026

2022–2023 **Fast-Track PhD Student in Business Administration** | University of Bremen (Germany)
Chair of Business Administration, esp. Financial Services and Financial Technology

2020 **Fulbright Scholarship** | Louisiana State University (United States)
Fulbright Special Program "Leaders in Entrepreneurship"

2018–2021 **B.Sc. in Management and Production Engineering** | University of Bremen (Germany)
Grade: 1.1 (3.9/4.0 GPA) · With distinction · Top 2% · Specialization: Production engineering in the aerospace industry · Thesis: *Development of a disinfection process for the airlock of an experimental Mars base*

Research Output

Publications

1. Fehrler, S., Hornuf, L., & **Vrankar, D.** (2025). What do citizens expect from space? *Acta Astronautica, 235*, 660–669. 10.1016/j.actaastro.2025.05.056.
2. Hornuf, L., Klerner, J., Schweizer, D., & **Vrankar, D.** (2025). Forecasting mine output using satellite data. *Finance Research Letters, 81*, 107433. 10.1016/j.frl.2025.107433.
3. Behrmann, V., Hornuf, L., **Vrankar, D.**, & Zimmermann, J. (2025). The deregulation of quarterly reporting and its effects on information asymmetry and firm value. *Review of Quantitative Finance and Accounting, 64*, 1221–1259. 10.1007/s11156-024-01338-5.
4. **Vrankar, D.**, Verseux, C., & Heinicke, C. (2023). An airlock concept to reduce contamination risks during the human exploration of Mars. *npj Microgravity, 9*, 81. 10.1038/s41526-023-00329-5.
5. Hillebrand, K., Hornuf, L., Müller, B., & **Vrankar, D.** (2023). The social dilemma of big data: Donating personal data to promote social welfare. *Information and Organization, 33*(1), 100452. 10.1016/j.infoandorg.2023.100452.
6. Hornuf, L., & **Vrankar, D.** (2022). Hourly wages in crowdworking: A meta-analysis. *Business & Information Systems Engineering, 64*(5), 553–573. 10.1007/s12599-022-00769-5.

Working Papers

1. Hornuf, L., & **Vrankar, D.** (2025). How new business models shape innovation spillovers: Insights from the new space economy. SSRN working paper.
2. Hornuf, L., & **Vrankar, D.** (2025). How geopolitical competition and commercialization shape public support for space funding. Available at seminar website.
3. **Vrankar, D.** (2024). The use of satellite data in financial markets. Conference abstract.

Work in Progress

1. Payson, D., Hornuf, L., & **Vrankar, D.** (2026). Something spatial: Assessing public perception of the existential value of human spaceflight.
2. **Vrankar, D.** (2026). The economics of a German small satellite launch platform.

Research Interests

Political Economy of Space Innovation and Commercialization; Societal and Financial Impacts of Technology; Citizen-Centered Space Policy

Awards & Distinctions

2025 Best Paper Award – European Centre for Space Economy and Commerce (ECSECO)
Category: "Space Business and Commerce" · ECSECO is affiliated with the European Space Agency (ESA)

2025 Participant – 8th Lindau Nobel Meeting in Economic Sciences (Germany)
Nominated by TU Dresden · Selected through Lindau's two-stage review

2025 2nd place – 9th CASSINI Hackathon "Space for Healthcare" (Finland)
€1,500 · Three-day hackathon with a 4-person team · Developed a prototype health app using EU satellite data

2023 Best exam at University of Bremen – Eurex Derivatives Trader (Germany)
€1,200 · Sponsored by the Bremen Stock Exchange Foundation

2020 Scholarship – German Academic Scholarship Foundation (Studienstiftung des deutschen Volkes)
Chosen after faculty endorsement and a two-day selection seminar · Awarded to fewer than 0.5% of German students for outstanding academic promise and societal contribution

2020 Scholarship – Friedrich-Ebert-Stiftung e. V.
Chosen after two faculty references and selection interviews · Scholarship recognizing academic merit and public engagement

Presentations

2025 ECSECO Award Presentation at Space Tech Expo (*Bremen*) · Harvard Business School & ESPI Space Economics Seminar Series (*Online*) · AMD Paper Development Workshop (*Berlin*) · AMD Paper Development Workshop (*Turin*)
2024 75th IAC (*Milan*) · AMJ Paper Development Workshop (*Darmstadt*)
2023 74th IAC (*Baku*) · Brownbag Seminar (*Dresden*) · Diginomics Brownbag Seminar (*Bremen*)

Referee Activities

Journals
Information and Organization · Acta Astronautica
Conferences
WI23 (18th International Conference on Business Informatics) · ECIS 2023 (31st European Conference on Information Systems)

Grants & Third-Party Funding

2022 ESA Network of Resources Sponsorship
€2,123 in funding for procuring satellite data

Teaching

TU Dresden

2024– Space Economics (*Master*, 50 students, lecture)
2023– Financial Derivatives (*Master*, 30 students, tutorial)
2023– Research Methods & Scientific Writing in Finance (*Bachelor*, seminar)

University of Bremen

2021–2022 Game Theory (*Master*, 30 students, tutorial)
2022–2023 Preparatory course for the Eurex Derivatives Trader Exam (*Master*, 20 students, tutorial)
2020 Statistics (*Bachelor*, 40 students, tutorial)
2019 Accounting and Accounts (*Bachelor*, 40 students, tutorial)

PhD Coursework

Doctoral Seminars (Faculty-recognized, without grade)

2025 Artificial Intelligence in Corporate Finance
2024 Gathering Open Data: Web Scraping and APIs
2023 Basic Methods of Causal Inference Using Stata and Python
2023 Introduction to R: Analysis and Programming
2023 The Research Process in Technology-Oriented Business Administration

Eligibility Assessment for Fast-Track PhD

2023–2024 TU Dresden

Value-Based Management (4.0/4.0 GPA) · Financial Crises (4.0/4.0 GPA) · Exchange Rates (4.0/4.0 GPA) · Financial Stability and Regulation of Financial Markets (4.0/4.0 GPA) · International Financial Markets (4.0/4.0 GPA) · Evaluation of Health Services (4.0/4.0 GPA)

2021–2022 University of Bremen

Applied Econometrics Using Stata (4.0/4.0 GPA) · Game Theory (3.7/4.0 GPA)· Financial Derivatives and Options (3.0/4.0 GPA)· Econometrics (3.7/4.0 GPA)· Seminar: Academic Research with MATLAB/R/Python and Specialized Databases in Economics and Business (4.0/4.0 GPA)

Further Education

2025 **Entry Level Course on IP Management** | European Patent Academy (Online)
Grade: 90% · 75 hours · Course: UV01-2025 Create - Protect - Innovate: Bringing Ideas to Market (Entry level)

2024 **CubeSat Summer School** | ESA Academy (Belgium & Online)
Two-week hybrid summer school (Online & ESA ESEC-Galaxia) on space business and commercialization

2023 **New Space Economy Course** | MIT Professional Education (Online)
Pass (no grade) · 72 hours · Course: New Space Economy: Technologies, Products, Services, and Business Models

2022 **Data Train Starter Track** | U Bremen Research Alliance (Online)
Participated in multiple training sessions for Research Data Management and Data Science

Volunteering & Honorary Work

2025– Treasurer – Association for the Promotion of the Subject Economics at the TU Dresden
Board member · Donation-funded association supporting special faculty projects

2023– Co-Head – Dresden alumni chapter of the German Academic Scholarship Foundation
Chapter coordination · Event organization · Connecting alumni with current scholarship recipients

2021–2023 Course Leader – University-wide Handball Technique & Fitness course
Coordinated and taught a weekly, campus-wide Handball course for the student sports association

University of Bremen

2020–2022 Member – Hiring Committee for a Professor in Technical Mechanics
2019–2022 Member – Study Commission, Department of Production Engineering
2018–2022 Elected member – Student council

References

Lars Hornuf
Professor of Finance
TU Dresden
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Christiane Heinicke
Scientific Coordinator
ZARM – Center of Applied Space Technology and Microgravity
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Professor of Economics
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During my undergraduate studies in engineering, I was always fascinated by technical innovations and their implications for the economy and society. However, I soon realized that innovation is often constrained less by technology than by policy. The space economy is a particularly good example: for long periods, innovation in space was not limited by scientific feasibility, but by institutional design, procurement structures, and regulation. This observation now defines my research agenda, as my work centers on the political economy of space innovation and commercialization. With my research, I want to answer two questions. First, how are innovation patterns and spillovers in the space economy changing as the sector becomes more commercialized? Second, how can policymakers guide this transformation, based on the outcomes of past interventions? To answer these questions, I combine, for example, patent data with network analysis to study changing innovation dynamics in the (new) space economy, leading to my award-winning paper, *How New Business Models Shape Innovation Spillovers: Insights from the New Space Economy*. Beyond space, the findings of this paper show how policy frameworks shape technological trajectories across high-tech industries. In another working paper, I take a more holistic perspective by studying citizens' responses to private firms introducing cost-saving innovations, while still relying on public funding and potentially draining knowledge from public institutions.

Building on my current findings, my future research will expand this work by focusing more directly on the effectiveness of different policy tools in shaping innovation. I am currently working with a large U.S. spending dataset uniquely matched to high-tech aerospace firms to investigate how innovation performance translates into financial performance. Additionally, I will utilize this dataset to identify which types of procurement are more likely to generate marketable innovations and related spillovers in a high-tech environment such as the space economy. I am also collecting data for a project on dual-use ecosystems, focusing on how ecosystem formation differs when security-related regulation is heavily intertwined with commercialization incentives. In parallel, I study the societal and financial spillovers of emerging technologies, including innovative applications of satellite data in financial markets. Overall, my research objective is consistent across current and future work: to understand how policy fosters high-tech innovation and translates it into broader spillover applications.

I believe that the NBER Innovation Research Boot Camp 2026 is an exceptional fit for this agenda. For example, Ben Jones's research on shifting channels and patterns of innovation directly guides my work on innovation pathways between commercial and state-linked firms in the new space economy. Additionally, Kyle Myers's work on spillovers and firm outcomes speaks directly to my goal of linking innovation to business performance, while Pierre Azoulay's work on life cycles of innovators is important for understanding capability development and retention in frontier sectors like the space economy. Furthermore, Heidi Williams's expertise in intellectual property and policy evaluation is equally relevant, especially given my strong interest in patent-linked innovation and policy effects. Therefore, I expect to learn a lot about innovation and spillover dynamics through the lectures of these excellent scholars. Reviewing last year's reading list reinforced this fit. While I was already familiar with several of the papers, many introduced perspectives that broadened my approach to ongoing projects. Furthermore, attending the NBER Summer Institute Innovation Policy meeting during the boot camp is especially valuable for me, given my research focus on the effectiveness of innovation and procurement policy. Finally, beyond the structured academic program, I am highly motivated by the opportunity to meet and connect with fellow innovation scholars across the globe. In my experience, the most lasting impact of programs of this kind comes from exchanges with peers and informal conversations with senior scholars such as those mentioned above. For these reasons, I believe the boot camp is not only an excellent match for my current work but also a meaningful accelerator for my future research trajectory.