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November 12, 2026

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Education

2022 to present	Ph.D. in Economics, Tilburg University (expected May 2027)
2020–2022	Research Master degree in Economics *with distinction*, Tilburg University
2019–2020	Master degree in Economics, University of Amsterdam
2016–2019	Bachelor's degree in Economics and Finance, *cum laude*, University of Amsterdam

Research Interests

Macroeconomics, Production Networks, Macro-Finance, Information Economics

Research Visits

Spring 2025 Princeton University. *Host: Prof. Markus K. Brunnermeier*

Job Market Paper

Capacity Utilization in Production Networks

This paper quantifies how capacity constraints shape the propagation of sectoral shocks through the production network and their long-run cost. I build a dynamic production network model in which output is capped by a capacity proportional to capital, solve it as a graphon mean-field game and calibrate it to 63 US industries. Capacity constraints lower GDP per unit of capital by about 10 per cent, mostly through wedges paid along every production chain, and dampen the propagation of sectoral shocks to about three quarters of the unconstrained response, most for upstream and tight sectors.

Publications

Labor Market Signals: The Role of Large Language Models (with G. Musillo, N. Zaccaria, and T. Wicker)
*Forthcoming, **Journal of Labor Economics**. DOI: 10.1086/744669*

Large Language Models (LLMs) are transforming the labor market, including hiring decisions. This paper examines their impact on the signals job-seekers send to potential employers through two field experiments focusing on cover letters. We find that LLMs enhance signal quality, especially benefiting lower-quality applicants, yet these gains do not boost interview invitations because they are concentrated in standardized, less influential sections of the cover letter. LLMs furthermore reduce the frequency of grammatical errors, but reduce the text's readability by using longer words. When recruiters learn of LLM usage, they place greater value on high-quality, human-crafted letters. Hence, LLMs reduce the informativeness of signals, potentially increasing inefficiencies in labor market matching. A calibrated structural model estimates the losses compared to a setting without LLMs.

Working Papers

Heterogeneous Beliefs, Learning and Multiplicity in Directed Technical Change

The adoption of new technologies occurs at vastly different rates, and is often accompanied by heterogeneous beliefs about their future productivity. Due to strategic complementarities in innovation, transitions to new substitute technologies also manifest as coordination problems with their inherent multiplicity. This paper explores the pivotal role of imperfect information and beliefs in technological change, emphasising the reciprocal relationship between innovation pace and beliefs. A tractable continuous-time two-sector directed technical change model

incorporating rational learning about the research productivity of new inventions reveals that belief heterogeneity leads to research misallocation, but it can also significantly influence the transition trajectory and equilibrium selection. A calibration to dirty versus clean technologies shows that with enough optimism about new (clean) technologies, the economy can transition away from otherwise locked-in old (dirty) technologies.

Work in Progress

AI at the Gate: Platform Answers and the Supply of News (with G. Musillo, N. Zaccaria, and T. Wicker)

How does generative AI affect competition and production in markets for information? We study this question through Google's AI Overviews, which provide AI-generated answers above search results. We combine weekly internet traffic data of major US and UK news outlets with the launch of AI Overviews to build a novel outlet-level measure of exposure to AI, the share of an outlet's articles containing no original reporting, and provide a causal estimate of the effect of generative AI on the market for information. We show that a one-standard-deviation increase in replaceability is associated with a 10.8% larger decline in visits after launch and an 8.7% decline in monthly unique visitors. We develop a general-equilibrium model in which AI platforms use news outlets' content to generate answers while competing with them for readers. We show that compensating outlets for lost traffic would mostly benefit producers of replaceable content, whose decline is largely efficient: generated answers supply the same information at a lower cost in readers' time. Instead, payments for the use of original reporting sustain the production of information that AI cannot reproduce, while preserving the time savings from AI-generated answers.

On the Dynamics of the Firm Size Distribution

The right tail of the US firm size distribution has thickened steadily since the late 1970s. This paper asks how much of this shift reflects changes in the parameters governing firm dynamics, as opposed to slow convergence to an unchanged steady state. I study a random growth model of firm entry, exit and growth in the style of Luttmer (2007) and, through a spectral decomposition of its Fokker–Planck operator, derive exact solutions for the transition of the firm size density. The speed of convergence is a closed-form sufficient statistic: it increases in growth volatility, entry and exit, decreases in mean growth, is unchanged for Pareto-shaped initial distributions, and is higher when firm size is bounded above. Volatility is the main stabilising force, smoothing local deviations from the steady state, which explains why multimodal size distributions are short-lived. Calibrated to US Census data, the model with constant parameters generates about 70 per cent of the observed speed of decline in the tail index through transition dynamics alone; a steady-state interpretation would instead require a counterfactual rise in firm growth volatility.

Teaching Experience

2022 to present	Teaching Assistant, *Macroeconomics I*, undergraduate level, Tilburg University
2023 to present	Teaching Assistant, *Sustainable Economic Growth*, master's level, Tilburg University
2023	Teaching Assistant, *Microeconomics III*, PhD level, Tilburg University
2018–2019	Teaching Assistant, *Principles of Economics and Business*, undergraduate level, University of Amsterdam
2018–2019	Teaching Assistant, *Research Project*, undergraduate level, University of Amsterdam
2017–2018	Exam Trainer, *Mathematics & Economics*, undergraduate level, University of Amsterdam

Grants, Scholarships, and Awards

2024	CentER Best Graduate Student Paper Prize, Tilburg University *for paper "Heterogeneous Beliefs, Learning and Multiplicity in Directed Technical Change"*
2024	OpenAI Researcher Access Program
2020–2022	Full scholarship, Research Master in Economics, Tilburg University
2019–2020	Full scholarship, MSc Economics, University of Amsterdam

Seminar & Conference Presentations

2026	Tilburg University
2025	Princeton University
2024	Tilburg University, Dutch Environmental and Resource Economics Day (Utrecht), Sustainable Resource Use and Economic Dynamics (Ascona)
2023	Tilburg University
2022	Tilburg University

Selected Training and Workshops

2023	*Macro-Finance Summer School* (online), Princeton University, by Markus Brunnermeier
2022	*Distributional Macroeconomics Workshop*, Tinbergen Institute, by Benjamin Moll
2021–2022	*Mastermath Partial Differential Equations*, Leiden University & VU Amsterdam, by Robert van der Vorst & Hermen Hupkes

Computer Skills

Julia, MATLAB, Stata, R, LaTeX

Languages and Citizenship

Languages: Persian (native), English (fluent), Dutch (advanced), Russian (intermediate)
Citizenship: Netherlands and Iran dual citizenship

References

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