Joscha Duchscherer

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Personal Webpage

Research Interests

Sustainable Decision-Making, Climate Finance, Asset Pricing, Portfolio Theory, Heterogeneous Agents, Contract Theory

Education

Goethe University (GSEFM), Germany **Oct. 2021 –**
PhD in Financial Economics

- Thesis: *Essays in Sustainable Finance*

Goethe University (GSEFM), Germany **Oct. 2021 – Sep. 2024**
Master of Science in Quantitative Finance, Major: Financial Economics

- Thesis: *Continuous-Time Principal-Agent Models*
- Overall Grade: 1.2

University of Hagen, Germany **Oct. 2019 – Sep. 2022**
Master of Science in Economics, Major: Financial Markets

- Thesis: *Volatility of Interest Rates: Normal, Lognormal or Shifted Lognormal?*
- Overall Grade: 1.4

Ruprecht Karl University of Heidelberg, Germany **Oct. 2016 – Sep. 2019**
Master of Science in Physics, Major: Physics Beyond the Standard Model

- Thesis: *Mirror Dark Matter in 5D Linear Dilaton/Clockwork Model*
- Overall Grade: 1.2

Goethe University, Germany **Oct. 2013 – Sep. 2016**
Bachelor of Science in Physics, Major: Quantum Field Theory

- Thesis: *Lattice QCD in the Canonical Ensemble*
- Overall Grade: 1.0

Professional Experience

Supervision Analyst **Jan. 2026 – Sep. 2026**
ECB, Directorate General Systemic and International Banks of the ECB *Frankfurt, Germany*

Research Assistant **Sep. 2022 – Dec. 2025**
Chair of Asset Pricing, Goethe University *Frankfurt, Germany*

Working Student **Oct. 2019 – Sep. 2021**
OFB Projektentwicklung, Controlling Department *Frankfurt, Germany*

Tutor in Mathematics **Apr. 2014 – Sep. 2015**
Department of Computer Sciences and Mathematics, Goethe University *Frankfurt, Germany*

Papers

Sustainable Decisions
With Holger Kraft and Frank Seifried

Abstract: This paper rigorously defines sustainable decisions from first principles. A decision is sustainable if its performance (e.g., utility) constitutes at least a fair game. From a probabilistic point of view, this idea can be formalized by applying the concept of submartingales. Our approach allows us to establish the novel concept of sustainable optimization and leads to novel sustainable optimization and equilibrium

problems. It requires an extension of the classical dynamic-programming paradigm including a formal derivation of a sustainable Bellman principle. Our approach can be applied to a huge number of decision problems where potentially heterogeneous decision makers optimize some form of "well-being" (e.g., utility or costs). We demonstrate its usefulness by studying various problems from economics, finance, marketing, or engineering. We derive sustainable consumption-investment strategies with habit formation or recursive utility, sustainable advertising strategies, sustainable compensation contracts in a principal-agent framework, or a sustainable equilibrium in a two-agent endowment economy.

Working Papers

Sustainable Climate Policy under Disaster Risk

Abstract: This paper analyzes sustainable climate policy in the presence of disaster risk using a sustainability concept derived from first principles. The climate–economy system is modeled with Epstein–Zin preferences, and sustainability is defined as a submartingale condition on the social planner's value function, ensuring that future welfare is not expected to decline. The paper makes two main contributions. First, it embeds the sustainability condition into a recursive climate policy framework and derives implications for optimal mitigation and investment. Second, it evaluates the role of the sustainability condition across three disaster risk scenarios—no disaster risk, constant disaster risk, and state-dependent disaster risk—and under two institutional regimes: one in which the social planner is continuously required to act sustainably, and another in which sustainability is only enforced once a critical global temperature threshold of 1.5°C is exceeded. Results show that disaster risk alone induces some precautionary behavior, but a binding sustainability condition substantially amplifies mitigation and investment. Under the conditional regime, anticipation of future policy constraints further strengthens early abatement. These findings highlight how ethical constraints and climate risks jointly shape dynamic climate policy.

Sustainability vs. ESG: What's the Difference?

Abstract: I review the literature on the conceptual distinction between sustainability and ESG frameworks. While both aim to guide responsible decision-making, they differ in scope, temporal focus, and normative foundations. Sustainability is associated with intergenerational fairness and long-term well-being, whereas ESG emphasizes three specific pillars tied to short- and medium-term corporate performance. Sustainability reflects a holistic perspective on societal and environmental well-being, while ESG is primarily applied at the business and investment level.

Teaching Experience

Goethe University, Teaching Assistant

- PhD Courses: Advanced Financial Economics (2024, 2025)
- Master Courses: Credit Risk (2023, 2024, 2025), Advanced Capital Markets and Asset Pricing (2024, 2025)
- Supervision of Bachelor and Master theses since Oct. 2022

Achievements

- **Scholarships:** Deutschlandstipendium (2022-2024)
- **Fellowships:** GSEFM Funding for 1st year studies (2021-2022)

IT Skills

Python, Matlab, R, LaTeX and MS Office: Proficient

Languages

German: Native; **English:** Bilingual Proficiency

References

Holger Kraft
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Christian Schlag
Professor of Finance at Goethe University
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Uwe Walz
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