

Terri van der Zwan

Erasmus University Rotterdam
Erasmus School of Economics, Econometric Institute; Tinbergen Institute

Update: December 2023

Email address: t.vanderzwan@ese.eur.nl

Personal website: <https://sites.google.com/view/terrivanderzwan/>

Research interests: financial econometrics, time series econometrics, asset pricing, empirical macroeconomics, and machine learning methods.

Placement director: Prof. Eric Bartelsman e.j.bartelsman@vu.nl

Placement assistant: Christina Mansson c.mansson@tinbergen.nl

Education

Erasmus University Rotterdam

Sept. 2019 – Present
Rotterdam, The Netherlands

Ph.D. candidate in Financial Econometrics

Job market paper: “Multiple Shock Impulse Response Functions”.

Academic advisors: Prof. Dr. Michel van der Wel and Prof. Dr. Erik Kole.

University of California San Diego

Sept. 2022 – Dec. 2022
San Diego, CA, United States

Research visit

Funded by a **Fulbright Award**, hosted by Prof. Dr. Allan Timmermann.

Project: “Machine Learning in Equity Premium Prediction”, with Prof. Dr. Allan Timmermann and Yanki Kalfa.

Fudan University

Sept. 2018 – Aug. 2019
Shanghai, People’s Republic of China

Advanced Language and Culture Program in Mandarin Chinese

Funded by a **Sino-Dutch Scholarship**.

Erasmus University Rotterdam

Sept. 2016 – Feb. 2018
Rotterdam, The Netherlands

M.Sc. Econometrics and Management Science

Cum laude distinction, Majoring in Quantitative Finance, GPA: 8.4/10.

Thesis: “Macro or Fundamental? Comparing the Drivers of Equity Returns” (Graded: 9.2/10).

Erasmus University Rotterdam

Sept. 2013 – Aug. 2016
Rotterdam, The Netherlands

B.Sc. Econometrics and Operations Research

Majoring in Quantitative Finance, GPA: 7.7/10.

Thesis: “Macroeconomic, Demographic, and Geographic Factors Impacting Mortgage Credit Risk” (Graded: 8.5/10).

Exchange semester: Shanghai University of Finance and Economics (Fall 2015).

Research

Job market paper: Multiple Shock Impulse Response Functions

Terri van der Zwan

Winner Ph.D. Paper Competition of the European Central Bank Conference on Forecasting Techniques (2023)

This paper introduces multiple shock impulse response functions, which consider the cumulative effects of simultaneous shocks within one period. The concept generalizes individual shock impulse response functions, accounts for the dependence between shocks, and is applicable to various multivariate time series models. It is relevant for identifying underlying primitive structural shocks and using regional shocks as global structural proxies. Simulation studies highlight its necessity for accurately interpreting the total effect of shocks and mitigating potential temporal aggregation issues. Applied to a global vector autoregression framework for France, Germany, Italy, and Spain, multiple shock impulse response

functions offer insights into monetary policy dynamics during uncertainty spikes and serve as a stress test. For area-wide equity shocks, they align more closely with long-term theoretical expectations than the traditional GDP-weighted method, highlighting their ability in capturing economic dynamics.

Heterogeneous Macro and Financial Effects of ECB Asset Purchase Programs

jointly with Erik Kole and Michel van der Wel (2023) – Tinbergen Institute Discussion Paper 2021-109/III (R&R at Journal of International Money and Finance)

Best Paper (with co-authors) Award at the Early-Career Scholars Conference of the Society for Financial Econometrics (SoFiE) (2022)

Like other central banks, the ECB resorted to asset purchase programs (APPs) to replace conventional policy measures. We examine their impact on the Euro area with a focus on the heterogeneity among its constituents and across financial markets. Our analysis combines a Bayesian structural VAR with an identification scheme based on market surprises at the announcement time, effectively capturing structural dynamics. At the Euro area level, APPs stimulate the economy, lower government bond yields, elevate stock prices, and reduce corporate and sovereign stress. The impact shows heterogeneity in the stock market with a widened value-growth spread in stocks and varying sector impacts, particularly favoring financial stocks, and across countries with stronger effects on southern Euro area countries. Our results show strong spillover effects between countries, indicating challenges in the precise targeting of APPs.

Equity Risk Factors for the Long and Short Run: Pricing and Performance at Different Frequencies

jointly with Erik Hennink and Patrick Tuijp (2023) – Tinbergen Institute Discussion Paper 2021-062/III (submitted)

This paper introduces a general linear multifactor asset pricing methodology that integrates systematic risk measured at different frequencies into a single pricing equation. Our setup allows investors with different investment horizons to experience varying levels of systematic risk, potentially due to delayed stock price reactions to systematic factor news. We find that the outperformance of Fama-French factors compared to macroeconomic factors in the cross-sectional fit of expected returns disappears when accounting for these horizon effects. The results show that different factors are priced at different horizons and that optimal portfolio compositions are horizon-dependent.

Work in progress

Predicting the Equity Risk Premium using Machine Learning Techniques

jointly with Yanki S. Kalfa and Allan Timmermann

Presentations

Invited talks: Fall Macro Seminar of University of Houston, November 14, 2022.

Given talks at international conferences and seminars, poster session marked with *.

2024 ASSA Annual meeting (AEA)*, San Antonio, Texas, US (scheduled)

2023 European Winter Meeting of the Econometric Society, Manchester, UK (scheduled)

*Lustrum event of TopQuants**, Amsterdam

*12th European Central Bank Conference on Forecasting Techniques**, Frankfurt, Germany

ASSA Annual meeting (AFA)*, New Orleans, Louisiana, US

2022 Midwest Econometrics Group 2022 Conference, Lansing, Michigan, US

Seminar at Rady School of Management, San Diego, California, US

Annual Congress of the European Economic Association (EEA-ESEM), Milan, Italy

Annual Meeting of the Society for Financial Econometrics (SoFiE),

Young Scholar Post-Conference, Cambridge, UK

8th Annual Conference of the International Association of Applied Econometrics (IAAE), London, UK

4th International Conference Quantitative Finance and Financial Econometrics (QFFE), Marseilles, France

Annual Society of Non-linear Dynamics Symposium (SNDE), hosted online

Econometric Institute PhD conference, Rotterdam

2021 *8th Annual Conference of the International Association for Applied Econometrics (IAAE)*, hosted online
European Meeting of the Econometric Society (EEA-ESEM), ESEM part, hosted online
ESE Female Network Event of Erasmus University Rotterdam, hosted online
Econometric Institute seminar, hosted online

2018-2021 *11th Financial Risks International Forum of the Louis Bachelier Institute*, Paris, France
2nd International Conference on Econometrics and Statistics (EcoSta), Hong Kong
Netspar International Pension workshop, Leiden
Finance seminar University of Amsterdam, Amsterdam
ERIM Seminar, Rotterdam

Professional Experience

ABN AMRO Bank

Jan. 2018 – June 2018

Global Markets Intern (27 hrs/wk) – C&IB, Trading and Quantitative Analysis dept. Amsterdam, The Netherlands

- Quantitative analyst working with Trading and Quantitative Analysis department to enhance Credit Value Adjustments (CVA) for equity derivatives.
- Came up with a model that exploits industry-specific counterparty risk in Python, adhering to Basel III requirements, resulting in more accurate default risk assessments.
- Analyzed PNL risk sensitivity to counterparty default metrics, and briefed Global Capital Markets stakeholders.

Ortec Finance

Apr. 2017 – June 2018

Quantitative Research Intern (9 mo. fulltime, 6 mo. 18 hrs/wk) Rotterdam, The Netherlands

- Derived and implemented a spectral framework to identify the drivers of equity returns in factor models on varying investment horizons.
- Methods used: principal component analysis, dynamic factor models. US equity portfolio resulted in -30% volatility over a 10 year horizon.

Awards, Grants and Achievements

Winner Ph.D. Paper Competition of the European Central Bank Conference 2023

Fulbright Doctoral Award (*selected by NWO and Fulbright Commission*) 2022

SoFiE Early-Career Scholars Prize, runner-up (*paper joint with Van der Wel and Kole*) 2022

Travel Scholarship Awards (*AFA, IAAE, Society of Financial Econometrics; SoFiE*) 2022

STOER Trust Fund (*funding for summer school and research visit*) 2021, 2022

Econometric Game, finalist and team captain (*University of Amsterdam, VSAE*) 2021

Sino-Dutch Scholarship of NUFFIC's Excellence and Exchange Program 2018

Teaching

2022: *Seminar in Applied Econometrics* (M.Sc. Econometrics).

Supervising 4 groups of 3-5 students working for 12 weeks on an empirical econometric problem.

2021 – 2022: *Introductory Seminar Case Studies Econometrics and Operations Research* (B.Sc. Econometrics).

Supervising 20+ groups of 3-5 students working for 2 weeks on a financial case.

2019 – present: *Thesis supervision and co-reading* (B.Sc. and M.Sc. Econometrics).

2019 – 2021: *Seminar in Financial Econometrics* (B.Sc. Econometrics).

Supervising 4 groups of 3-5 students working for 8 weeks on an empirical econometric problem

2019 – 2021: *Asset Pricing* (M.Sc. Econometrics/Financial Economics).

2019 – 2020: *Academic Skills* (B.Sc. Econometrics).

2016 – 2017: *Teaching assistant Mathematics 2* (B.Sc. Economics and Business Economics).

2016 – 2017: *Teaching assistant Statistics* (B.Sc. Econometrics).

2016 – 2017: *Teaching assistant Operations Management* (B.Sc. International Business Administration).

Proficiencies

Programming Languages and Cloud: Python, Matlab, R, Bash, SQL, Java, SLURM (distributed computing).

Data Gathering: Eikon/Datastream, Bloomberg, various APIs.

Software: L^AT_EX, MS Office, Adobe Illustrator

Languages: Dutch (native), English (fluent), Mandarin Chinese (B2), German (B2).

Extracurricular activities

Member of the ESE School Council

Sept. 2021 – Aug. 2023

- Elected staff member of the Erasmus School of Economics School Council.

13th Board Chinese Student Association EUR

July 2016 – Aug. 2017

Board Member, Internal Relations Manager and Head of Cultural Events (16 hrs/wk)

- Managed 35 active members, secured funding, and executed events on a limited budget.
- Founded the Cultural Events committee (5 members), organized 8 events + a city trip for 40 students.

Professional activities

Refereeing: International Journal of Forecasting.

Organizing: Co-organisator TI Econometrics Lecture Series (2023).

References

Prof. Michel van der Wel. (*Email:* `vanderwel@ese.eur.nl`).

Professor Econometrics of Macro-Finance and Vice Dean of Education at the Econometric Institute, Erasmus School of Economics, Erasmus University Rotterdam.

Prof. Robin L. Lumsdaine. (*Email:* `robin.lumsdaine@american.edu`).

Crown Prince of Bahrain Chair in International Finance at Kogod School of Business, American University.

Professor of Applied Econometrics at Erasmus University Rotterdam.

Prof. Allan Timmermann. (*Email:* `atimmermann@ucsd.edu`).

Distinguished Professor of Finance at University of California, San Diego.

Dr. Harry M. Markowitz Endowed Chair in Finance and Investing.

Prof. Erik Kole. (*Email:* `kole@ese.eur.nl`).

Assistant Professor at the Econometric Institute, Erasmus School of Economics, Erasmus University Rotterdam.