

# Terri van der Zwan

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

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

**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 c.mansson@tinbergen.nl

## Education

### Erasmus University Rotterdam

*Ph.D. candidate in Financial Econometrics*

Sept. 2019 – Present  
Rotterdam, The Netherlands

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

*Research visit*

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

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.

### Erasmus University Rotterdam

*M.Sc. Econometrics and Management Science*

Sept. 2016 – Feb. 2018  
Rotterdam, The Netherlands

**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

*B.Sc. Econometrics and Operations Research*

Sept. 2013 – Aug. 2016  
Rotterdam, The Netherlands

Majoring in Quantitative Finance, GPA: 7.7/10.

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

## Research

### Job market paper: Multiple Shock Impulse Response Functions

*Van der Zwan, T.*

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.

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

### 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 (submitted)*

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.

*Runner-up at the Early-Career Scholars Conference of the Society for Financial Econometrics (2022)*

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

*jointly with Erik Hennink and Patrick Tuijpp (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 S. Y. Kalfa and A. Timmermann*

## **Presentations**

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

International conferences and seminars, poster session marked with \*.

- 2023** ASSA Annual meeting (AEA)\*, San Antonio, Texas, US (scheduled)  
 European Winter Meeting of the Econometric Society, Manchester, UK (scheduled)  
 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

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### 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

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**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

## Other Relevant Education

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### Fudan University

July 2018 – Aug. 2019

*Sino-Dutch Advanced Language Scholarship student* Shanghai, China

- One year advanced Mandarin Chinese Language and Culture Program.

### Shanghai University of Finance and Economics

Aug. 2015 – Dec. 2015

*Exchange student* Shanghai, China

- Exchange program, part of the B.Sc. Econometrics and Management Science.

## Teaching

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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

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

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

**Software:** L<sup>A</sup>T<sub>E</sub>X, MS Office, Adobe Illustrator

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

## Extracurricular activities

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### 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.

## References

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**Prof. Dr. 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. Dr. Robin 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. Dr. 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.

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

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