

# Noah Stegehuis

**Address:** President Steynstraat, 7-1, Amsterdam, The Netherlands

**Tel:** +31628136276

**Email:** [noahjstegehuis@gmail.com](mailto:noahjstegehuis@gmail.com)

**Citizenship:** Dutch

**Date of Birth:** 03/08/1997

**Placement director:** Prof. Eric Bartelsman

[e.j.bartelsman@vu.nl](mailto:e.j.bartelsman@vu.nl)

**Placement assistant:** Christina Månsson

[c.mansson@tinbergen.nl](mailto:c.mansson@tinbergen.nl)

## EDUCATION

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- 2020-2025    **Vrije Universiteit Amsterdam and Tinbergen Institute**  
Ph.D. Econometrics and Data Science. Expected completion: March 2025.  
Contributor to project of F. Blasques “Econometric Methods for Incorrect Models” (Grant nr: Vidi.195.099).  
Supervisors: Prof. Francisco Blasques, Prof. Siem Jan Koopman and Assoc. Prof. Paolo Gorgi.
- 2019-2020    **Vrije Universiteit Amsterdam**  
MSc Econometric Theory (Honours Programme), *Cum Laude*.
- 2015-2018    **Maastricht University**  
BSc Econometrics & Operations Research (Honours Programme), *Cum Laude*. Exchange Semester Econometrics at Hong Kong University of Science and Technology (HKUST).

## RESEARCH FIELDS

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Primary fields: Econometrics, Causal Inference

Secondary fields: Time series analysis, Macroeconometrics

## REFERENCES

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Prof. Francisco Blasques, Vrije Universiteit Amsterdam, [f.blasques@vu.nl](mailto:f.blasques@vu.nl)

Prof. Siem Jan Koopman, Vrije Universiteit Amsterdam, [s.j.koopman@vu.nl](mailto:s.j.koopman@vu.nl)

Assoc. Prof. Paolo Gorgi, Vrije Universiteit Amsterdam, [p.gorgi@vu.nl](mailto:p.gorgi@vu.nl)

## TEACHING EXPERIENCE

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- 2020-2024    **Teaching Assistant**, Vrije Universiteit Amsterdam, Advanced Econometrics (Msc Econometrics & Data Science)
- 2020-2024    **Teaching Assistant**, Vrije Universiteit Amsterdam, Business Statistics (BSc International Business Administration)
- 2020-2024    **Thesis Supervisor** (BSc, MSc Econometrics & Data Science)

## OTHER PROFESSIONAL EXPERIENCE

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- 2021-2022     **Churned AI, Research Data Scientist**  
Building the Churned Analytics Engine that automatically performs estimation and testing of econometric and machine learning models
- 2018-2019     **Logex Healthcare Analytics, Work Student**  
Providing Dutch hospitals and the National Healthcare Authority (NZA) with reports on relative operation performance of medical specialists compared to a national benchmark
- 2018           **Accenture, Bachelor Thesis Intern**  
Consultancy project: Forecasting the sales for fan shop of a Dutch premier league football club in the Netherlands

## RESEARCH PAPERS

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*A Score-Driven Filter for Causal Regression Models with Time-Varying Parameters and Endogenous Regressors* (with F. Blasques) [**Job market paper**]

Abstract: This paper proposes a score-driven model for filtering time-varying causal parameters using instrumental variables. In the presence of suitable instruments, we show that we can uncover dynamic causal relations between variables, even in the presence of regressor endogeneity which may arise because of simultaneity, omitted variables, or measurement errors. Due to the observation-driven nature of score models, the filtering method is simple and practical to implement. We establish the asymptotic properties of the maximum likelihood estimator and show that the instrumental-variable score-driven filter converges to the unique unknown causal path of the true parameter. We further analyze the finite sample properties of the filtered causal parameter in a comprehensive Monte Carlo exercise. Finally, we reveal the empirical relevance of this method in an application to aggregate consumption in macroeconomic data and we provide a time-varying estimate of price elasticity of demand for a dataset on recorded market prices.

*Mitigating Estimation Risk: A Data-Driven Fusion of Experimental and Observational Data* (with F. Blasques, S.J. Koopman, P. Gorgi) [**Working paper**]

Abstract: The identification of causal effects of marketing campaigns (advertisements, discounts, promotions, loyalty programs) require the collection of experimental data. Such data sets frequently suffer from limited sample sizes due to constraints (time, budget) which can result in imprecise estimators and inconclusive outcomes. At the same time, companies passively accumulate observational data which oftentimes cannot be used to measure causal effects of marketing campaigns due to endogeneity issues. In this paper we show how estimation uncertainty of causal effects can be reduced by combining the two data sources by employing a self-regulatory weighting scheme that adapts to the underlying bias and variance. We also introduce an instrument-free exogeneity test designed to assess whether the observational data is significantly endogenous and experimentation is necessary. To demonstrate the effectiveness of our approach, we implement the combined estimator for a real-life data set in which returning customers were awarded with a discount. We demonstrate how the indecisive result of the experimental data alone can be improved by our weighted estimator and arrive to the conclusion that the loyalty discount has a notably negative effect on net sales.

## RESEARCH IN PROGRESS

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*Extending Generalised Synthetic Control: Total Effect Estimation in the Presence of Mediators*  
(with F. Blasques)

## CONFERENCES AND SEMINARS

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2024 Netherlands Econometrics Study Group, Maastricht  
2023 International Association for Applied Econometrics (IAAE) in Oslo  
2023 International Conference on Econometrics and Statistics (EcoSta) in  
Tokyo, Japan  
2023 Netherlands Econometrics Study Group, Rotterdam  
2021 VU seminar, Econometrics department

## MISCELLANEOUS

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**Programming skills:** Python (object oriented), R, SQL, Matlab, LaTeX, MS Excel (VBA), Git

**Languages:** English (fluent), Dutch (native), French (intermediate), Spanish (pre-intermediate)

**Hobbies and interests:** Reading, ballet, film, art, architecture, travelling, baking