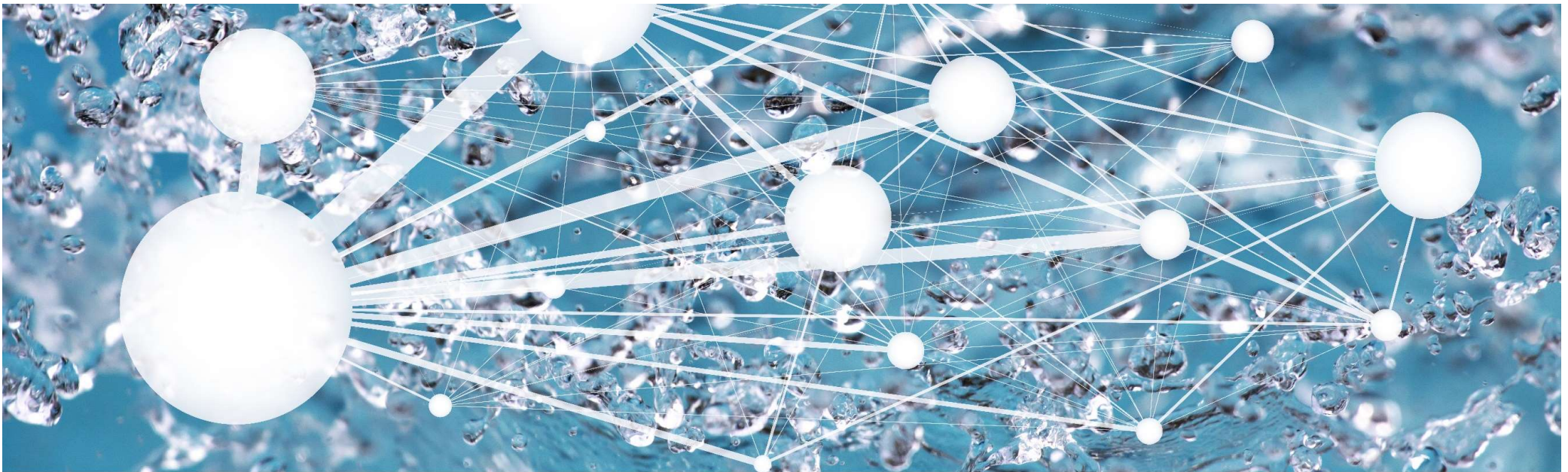

THE MACROECONOMIC IMPACT OF FRAUNHOFER: A COMBINED REGIONAL-ECONOMETRIC-CGE APPROACH

Professor Dr. Torben Schubert, Fraunhofer ISI

CONCORDi conference, November 25th, 2021



Scope and Goal

- Estimate the economic effects of the Fraunhofer-Gesellschaft on German GDP following the methodology applied in Frietsch et al. (2016)
- Extend the results of the first impact study (data until 2014) with most recent and completely updated data until 2017
- Serving as a parameterization of the CGE-model developed by the University of Strathclyde



METHODOLOGY

- Matching of regional statistical economic data with data on Fraunhofer activities matched on NUTS3 level
- Analysis of the effects of Fraunhofer on regional GDP
- Use of a variety of panel data and time series models to update old results and to show robustness
- Structural model:

$$\frac{GDP_{it}}{POP_{it}} = x_{it}\beta + \vartheta \frac{FhG_{it}}{POP_{it}} + u_{it}$$

- Different assumptions on u_{it} determine the estimation procedures (fixed effects, entropy balancing, panel cointegration, dynamic panel structures,...)
- Modelling of a demand side effect using a microparemeterized CGE-model

Summary

■ Key findings:

- €1 in total Fraunhofer budgets increases GDP by ~€21
- Results are robust with respect to a great variety of specification choices and never fall below €18.9
- From the CGE-model: (Scenario 1 shock: € 410 million additional private funding)
 - employment effects of 0.21% (92,000 jobs)
 - Long-run GDP-effect of 0.31% (€ 8.43 billion)
 - Government revenue of 0.21% (€ 2.70 billion)
 - Most benefitted sectors: motor vehicles, electronics, machinery, chemicals and pharmaceuticals

Thank you for your attention!

Prof. Dr. Torben Schubert

Deputy head of the Competence Center Innovation and Knowledge Economy

Fraunhofer Institute for Systems and Innovation Research ISI

torben.schubert@isi.fraunhofer.de