

Betydningen av næringsstruktur i makromodeller

19/6 - 2019. MODELL OG METODEUTVALGET, FINANSDEPARTEMENTET



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Hvor mange næringer burde modellen ha?



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Hva skal modellen brukes til?



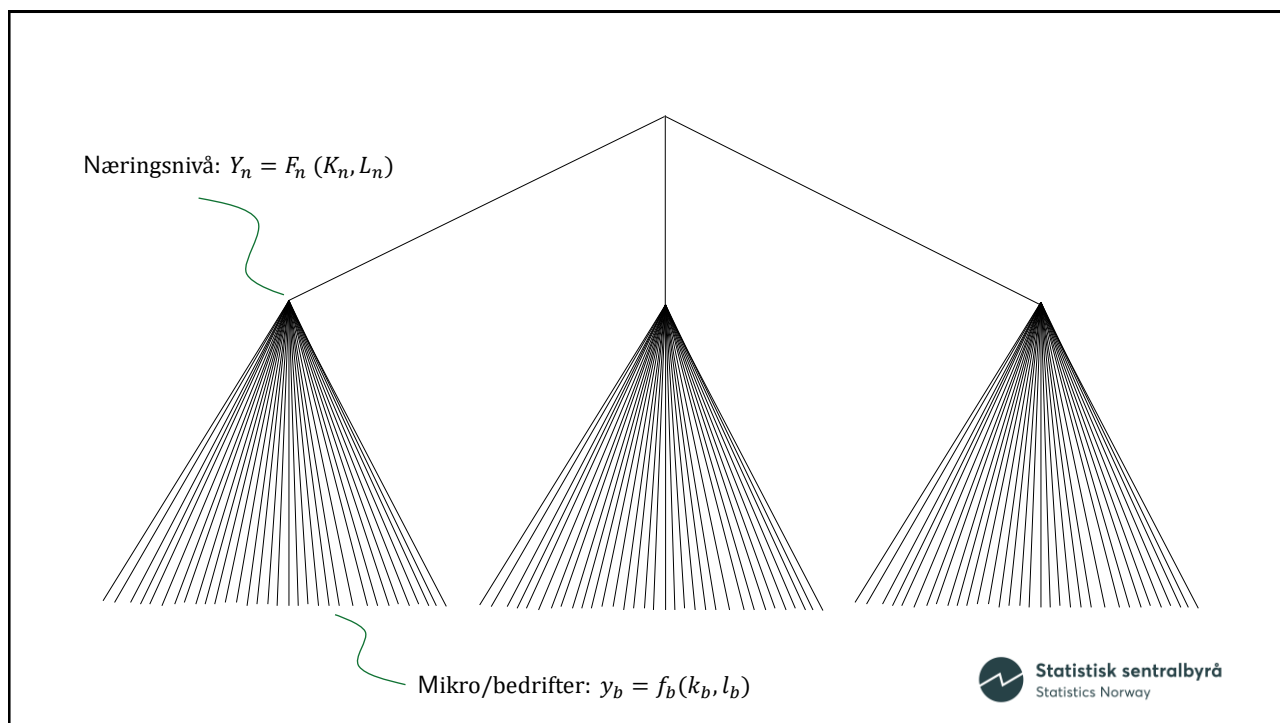
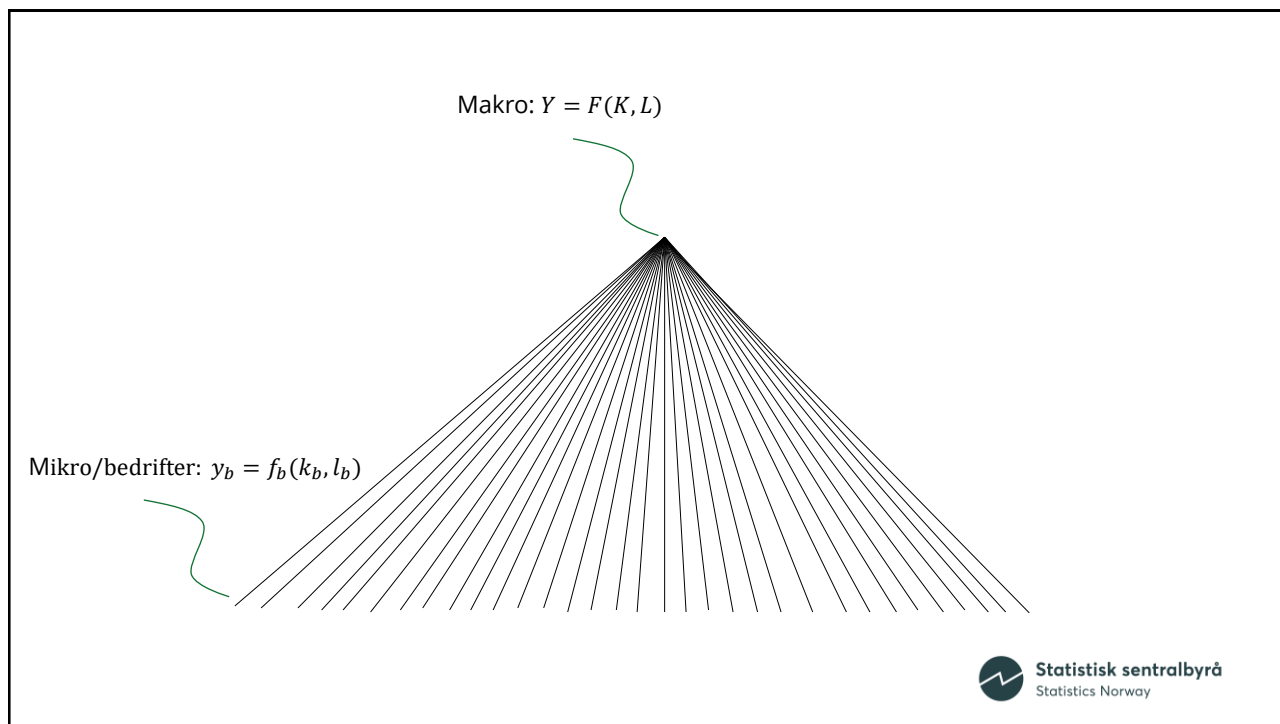
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En autonom relasjon er en relasjon som holder gjennom ild og vann

Trygve Haavelmo



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Nataf (1948)

Anta at alle bedrifter har produksjonsfunksjonen: $y_b = f_b(k_b, l_b)$. Under hvilke betingelser kan den aggregerte produksjonsfunksjonen for næringen skrives som:

$$Y_n = \sum y_b = F_n(K_n, L_n)$$

Nataf (1948) viste at bedriftens produksjonsfunksjon må være additivt separabel for at konsistent aggregering gjelder, dvs:

$$y_b = f_b(k_b, l_b) = \theta k_b + \omega l_b,$$

noe som gir den aggregerte produksjonsfunksjonen: $Y_n = K_n + L_n$



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The concept of an economically meaningful aggregate production function requires very strong and highly implausible conditions

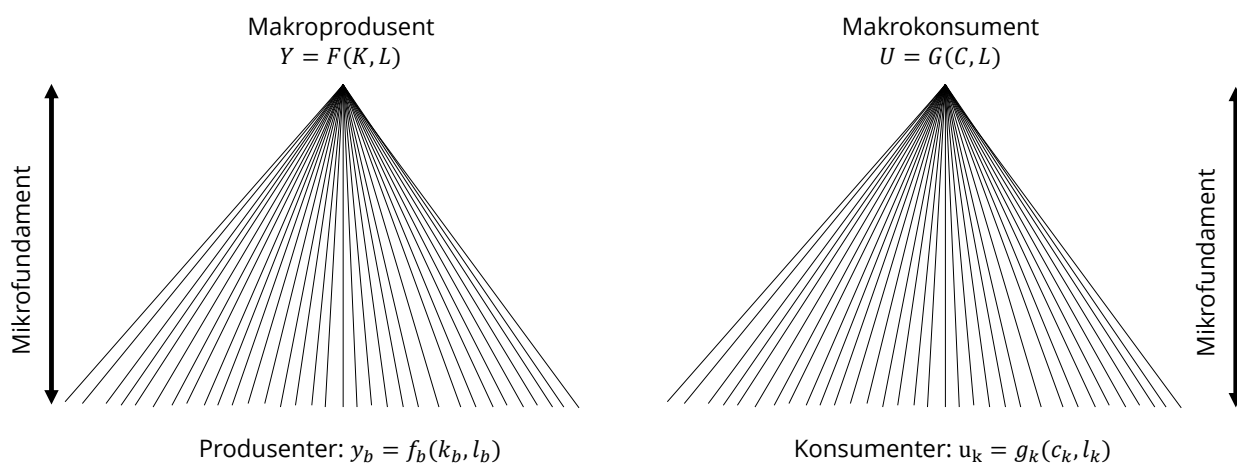
Mark Blaug (1985)

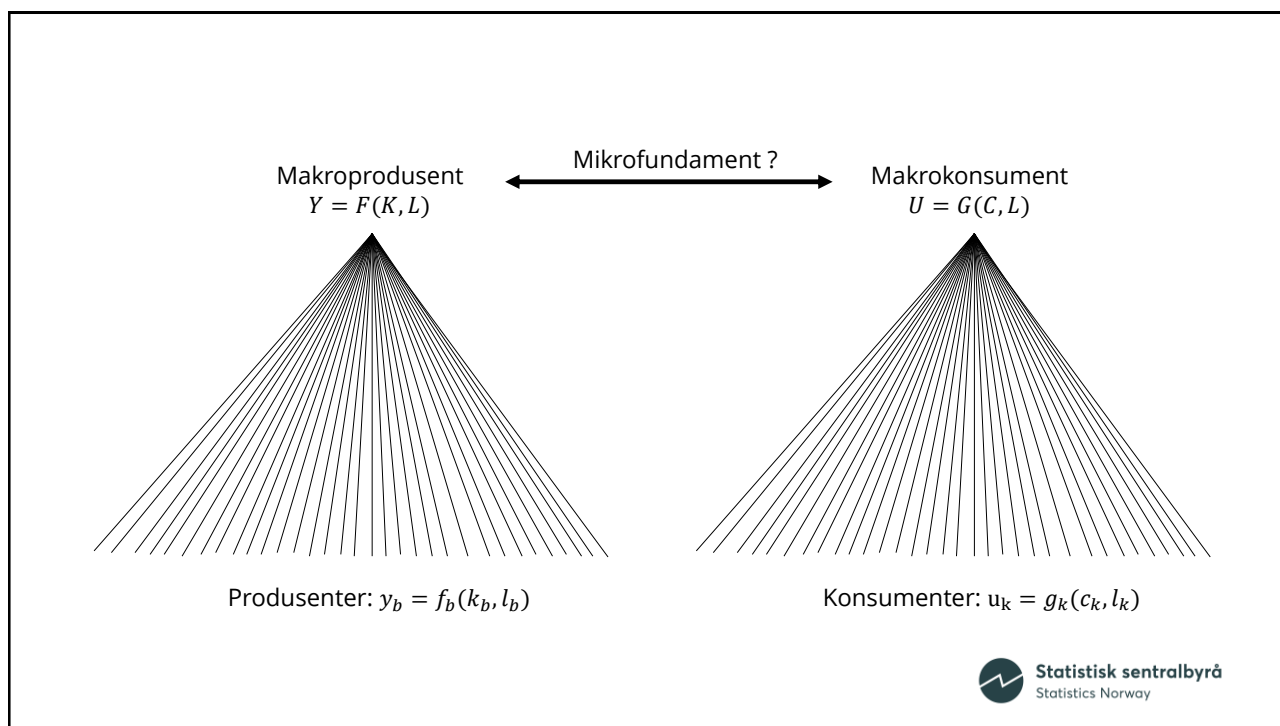


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Begrunnelser for aggregerte modeller

- Meningsfull aggregering fra mikro til makro (Nataf, Gorman mfl.)
 - Aggregeringsteorien holder som en approksimasjon (Fisher, 1989)
- Instrumentalisme – modellen er en lignelse på et abstrakt nivå
- Andre grunner ?





The idea of general interdependence existing among the various parts of the economic system has become by now the very foundation of economic analysis



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The idea of general interdependence existing among the various parts of the economic system has become by now the very foundation of economic analysis

Wassily W. Leontief (1936)

Leontief, W.W. (1936) Quantitative Input and Output Relations in the Economic Systems of the United States. The Review of Economics and Statistics, 18, 105-125.



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Kryssløpet er kjernen i økonomiens målesystem



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A major role of supply and use tables is to show changes in the structure of the economy, e.g. changes in the importance of various industries, changes in the inputs used and outputs produced and changes in the composition of final consumption expenditure, gross capital formation, imports and exports.

European System of National Accounts (2010)



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Rapporter
Reports
2018/18 ●

*Thomas von Brasch, Håvard Hungnes,
Birger Strøm*

Ringvirkninger av petroleumsnæringen i norsk økonomi
Basert på endelige nasjonalregnskapstall for 2015




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 **Journal of Labor Economics**

Volume 34, Number S1 | Part 2, January 2016

Import Competition and the Great US Employment Sag of the 2000s

Daron Acemoglu, *Massachusetts Institute of Technology
and National Bureau of Economic Research*

David Autor, *Massachusetts Institute of Technology
and National Bureau of Economic Research*

David Dorn, *University of Zurich and Centre for Economic
Policy Research*

Gordon H. Hanson, *University of California, San Diego,
and National Bureau of Economic Research*

Brendan Price, *Massachusetts Institute of Technology*

Even before the Great Recession, US employment growth was unimpressive. Between 2000 and 2007, the economy gave back the considerable employment gains achieved during the 1990s, with a historic contraction in manufacturing employment being a prime contributor to the slump. We estimate that import competition from China, which surged after 2000, was a major force behind both recent reductions in US manufacturing employment and—through input-output linkages and other general equilibrium channels—weak overall US job growth. Our central estimates suggest job losses from rising Chinese import competition over 1999–2011 in the range of 2.0–2.4 million.



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Review of International Economics

SPECIAL ISSUE PAPER | [Free Access](#)

The 'China shock,' exports and U.S. employment: A global input-output analysis

Robert C. Feenstra  Akira Sasahara

Abstract

This paper quantifies the impact on U.S. employment from imports and exports during 1995–2011, using the World Input–Output Database. We find that the growth in U.S. exports led to increased demand for 2 million jobs in manufacturing, 0.5 million in resource industries, and a remarkable 4.1 million jobs in services, totaling 6.6 million. Two-thirds of those service sectors jobs are due to the export of services themselves, whereas one-third is due to the intermediate demand from manufacturing and resource—or *merchandise*—exports, so the total labor demand gain due to merchandise exports was 3.7 million jobs. In comparison, U.S. merchandise imports from China led to reduced demand of 1.4 million jobs in manufacturing and 0.6 million in services (with small losses in resource industries), with total job losses of 2.0 million. It follows that the expansion in U.S. merchandise exports relative to imports from China over 1995–2011 created net demand for about 1.7 million jobs. Comparing the growth of U.S. merchandise exports to merchandise imports from *all* countries, we find a fall in net labor demand due to trade, but comparing the growth of *total* U.S. exports to total imports from all countries, then there is a rise in net labor demand because of the growth in service exports.



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The idea of general interdependence existing among the various parts of the economic system has become by now the very foundation of economic analysis

Wassily W. Leontief (1936)

Leontief, W.W. (1936) Quantitative Input and Output Relations in the Economic Systems of the United States. The Review of Economics and Statistics, 18, 105-125.



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AN ESTIMATED DYNAMIC STOCHASTIC GENERAL EQUILIBRIUM MODEL OF THE EURO AREA

Frank Smets

European Central Bank and CEPR

Raf Wouters

National Bank of Belgium

Abstract

This paper develops and estimates a dynamic stochastic general equilibrium (DSGE) model with sticky prices and wages for the euro area. The model incorporates various other features such as habit formation, costs of adjustment in capital accumulation and variable capacity utilization. It is estimated with Bayesian techniques using **seven key macroeconomic variables: GDP, consumption, investment, prices, real wages, employment, and the nominal interest rate.** The introduction of ten orthogonal structural shocks (including productivity, labor supply, investment, preference, cost-push, and monetary policy shocks) allows for an empirical investigation of the effects of such shocks and of their contribution to business cycle fluctuations in the euro area. Using the estimated model, we also analyze the output (real interest rate) gap, defined as the difference between the actual and model-based potential output (real interest rate). (JEL: E4, E5)

Journal of the European Economic Association September 2003 1(5):1123–1175



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INTERNATIONAL ECONOMIC REVIEW
Vol. 50, No. 4, November 2009

THE TRANSMISSION OF MONETARY POLICY IN A MULTISECTOR ECONOMY*

BY HAFEDH BOUAKEZ, EMANUELA CARDIA, AND FRANCISCO J. RUGE-MURCIA¹

This article constructs and estimates a sticky-price, Dynamic Stochastic General Equilibrium model with heterogeneous production sectors. Firms in different sectors vary in their price rigidity, production technology, and the combination of material and investment inputs. In particular, firms buy inputs from all sectors using the actual Input–Output Matrix and Capital Flow Table of the U.S. economy. By relaxing the standard assumption of symmetry, this model allows idiosyncratic sectoral dynamics in response to monetary policy shocks. The model is estimated by the Generalized Method of Moments using sectoral and aggregate U.S. time series.



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Mer av industrien har blitt oljeavhengig, mens den delen som ikke leverer til oljenæringen har blitt mindre. En to-sektormodell fanger ikke opp denne strukturendringen Det som var optimal rentesetting i to-sektormodellen, er ikke optimal rentesetting i tre-sektormodellen.



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Ragnar Torvik (2015)



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Business cycles in an oil economy[☆]

Drago Bergholt^{a,*}, Vegard H. Larsen^a, Martin Seneca^b

^a Norges Bank, Norway
^b Bank of England, United Kingdom

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 C11
 E30
 F41
 F44

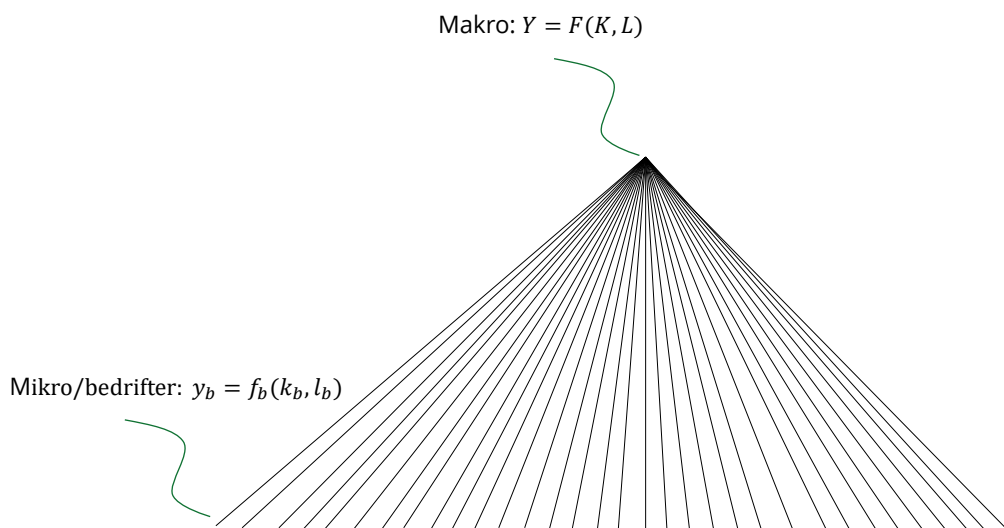
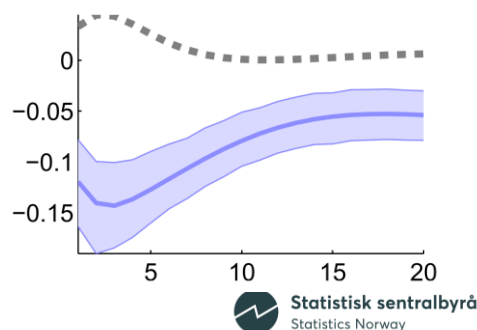
Keywords:
 DSGE
 Small open economy
 Oil and macro
 Bayesian estimation

ABSTRACT

The recent oil price fall has created concern among policy makers regarding the consequences of terms of trade shocks for resource-rich countries. This concern is not a minor one – the world's commodity exporters combined are responsible for 15–20% of global value added. We develop and estimate a two-country New Keynesian model in order to quantify the importance of oil price shocks for Norway – a large, prototype petroleum exporter. Domestic supply chains link mainland (non-oil) Norway to the off-shore oil industry, while fiscal authorities accumulate income in a sovereign wealth fund. Oil prices and the international business cycle are jointly determined abroad. These features allow us to disentangle the structural sources of oil price fluctuations, and how they affect mainland Norway. The estimated model provides three key results. First, oil price movements represent an important source of macroeconomic volatility in mainland Norway. Second, while no two shocks cause the same dynamics, conventional trade channels make an economically less significant difference for the transmission of global shocks to the oil exporter than to oil importers. Third, the domestic oil industry's supply chain is an important transmission mechanism for oil price movements, while the prevailing fiscal regime provides substantial protection against external shocks.

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Interest rate, oil price shock, with and without supply chain links



What does it matter if an economy has 10,000 versus 300 million participants? What macroeconomic purposes are served by small-scale models, and which require a scale closer to empirical reality? Do macroeconomies exhibit important regularities that simply cannot be generated using smallscale models?

LeBaron and Tesfatsion (2008)



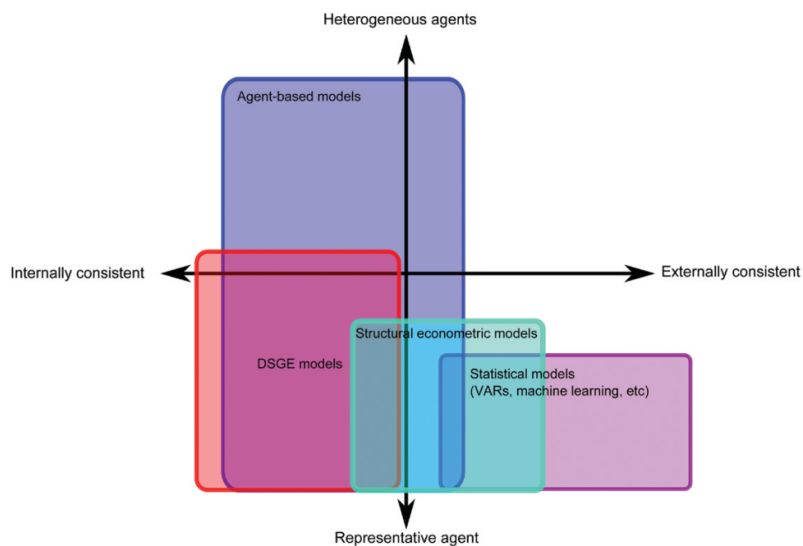
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LeBaron, B. and Tesfatsion L. (2008). *Modeling Macroeconomies as Open-Ended Dynamic Systems of Interacting Agents*. American Economic Review: Papers & Proceedings 2008, 98:2, 246–250

Agent Based Models

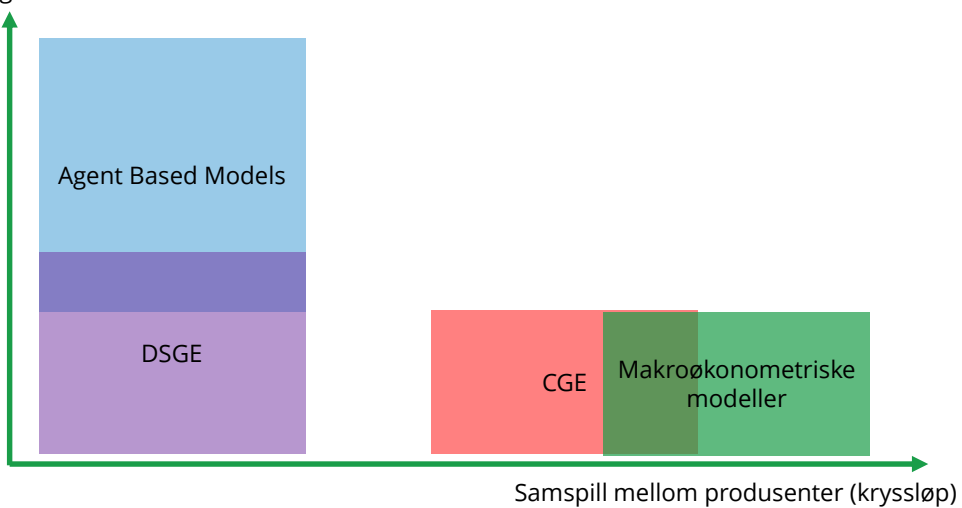


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Haldane, A.G. & Turrell, A.E. (2019). Drawing on different disciplines: macroeconomic agent-based models. J Evol Econ. 29 (1)

Heterogenitet



Our main argument will be that in practice we do not know enough about micro behavior to be able to specify micro equations perfectly. Hence, empirically estimated micro relations, whether those of individual consumers or of individual producers, should not be assumed to be perfectly specified either in an economic sense or in a statistical sense. Aggregation of economic variables can, and in fact frequently does, reduce these specification errors. Hence, aggregation does not only produce an aggregation error, but may also produce an aggregation gain.

Grunfeld og Griliches (1960)

Grunfeld, Y., & Griliches, Z. (1960). Is Aggregation Necessarily Bad? *The Review of Economics and Statistics*, 42(1), 1-13. doi:10.2307/1926089



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Hvor mange næringer burde modellen ha?

- Single or multi-purpose?
- Er næringsstruktur temaet?
- Næringsspesifikke «eksogene» endringer som er viktige for makrobildet?
- Kan næringsinndeling være viktig for resultatet selv om problemstillingen er av mer aggregert type?



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Hva skal modellen brukes til?



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TALL
SOM FORTELLER

Takk!

ssb.no



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