Socio-economic consumption modelling in an input-output model

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1. Reporting on socioeconomic development (soeb3)
2. Private consumption in Germany
3. Socio-economic modeling (soem)
4. Outlook
Content

1. Reporting on socioeconomic development (soeb3)

http://www.soeb.de/en/
Third reporting on socioeconomic development in Germany: Research association funded by the Federal Ministry of Education and Research (BMBF)

Coordination: SOFI

Objectives:
- Better understanding of the German society in transformation
  - Changing interaction between economy, politics, institutions and individuals
  - Increasing diversity of work and lifestyles
- Consequences for participation (focus on consumption and labor)
- Development of inequality and exclusion

Work packages of gws: economic projections (2030), private consumption projections by socioeconomic households (2030), scenario analysis, coordination, public relation
1. Reporting on socioeconomic development (soeb3)
2. Private consumption in Germany
Private consumption in Germany

► Contributes about 60% (1.6 trillion Euro) to domestic uses (2013)

► Consumption structure changes
   ⇒ Food, clothes and furniture lose importance
   ⇒ More expenditures on habitation and other purposes

► Changes due to
   ⇒ Prices, income, behavior
   ⇒ Household structure

1) Other purposes include health, education, personal care, personal effects, social protection, insurance and financial services, other services

Source: Federal Statistical Office (SNA 2014)
Consumption by different household types

► Consumption increases with household size, but not linearly

► Economies of scale
  ➞ 5+ household only with 2.6 more expenditures than a single household
  ➞ Especially for habitation
  ➞ Less valid for groceries, clothing, transport and education

► Health
  ➞ 2 persons and single household often older couples/singles ➞ higher exp./share

Source: Federal Statistical Office (HBS 2010)
Consumption by different household types

► Social status corresponds with income and age
► Higher income → more consumption
  ⇒ Higher quality goods
  ⇒ Necessities lose importance (food, housing)
  ⇒ More luxuries (transport, recreation, furniture, restaurants and hotels)
► Health
  ⇒ Expenditures increase with age (pensioners)
  ⇒ Special health security system for Beamte

Source: Federal Statistical Office (HBS 2010)
Consumption by different household types

► Changes in the population composition have impact on consumption

► Demographic change → more pensioner households
  ⇒ Change in consumption structure (more health and housing)
  ⇒ Change in consumption level/ expenditures (lower income)

► Consumption structure and level/ expenditures
  ⇒ depend on household types
  ⇒ Their different needs and preferences
  ⇒ And their income
Consumption by different household types

► Income components depend on
  ➔ Labor market situation
  ➔ Development of property income
  ➔ Redistributional policies (taxes, social security contributions, transfers)

► Affect households and their income differently, depending on the income structure

► Income and consumption by different household types should be considered in economic modelling
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The macro-econometric model INFORGE

► Used and annually updated since the 1990s
► Bottom up (sum of value added of economic activities is GDP)
► No emphasis of either demand or supply side
► Mutual interdependency between final and intermediate demand, investment and income
► Trade covered by TINFORGE (more than 60 countries)

► BUT:
  ⇒ Aggregate of private households (consumption and income)
  ⇒ No differentiation between socioeconomic household types
  ⇒ Additional information could enhance the model output
  ⇒ Socioeconomic information interacts with various parts of INFORGE
The macro-econometric model INFORGE

Interaction with add. socioeconomic information

System of National Accounts - Income and Expenditures -
- Enterprise
- Government
- Private HH
- Abroad

Database: National Accounts, IO tables

Exogenous parameters:
- ECB-interest rate / raw material prices / world trade / politics / taxes...

Unit costs
- Intermediates + Labour costs + Depreciation

Prices & Excise duties

Intermediates
- Production & Value added

Final demand
- consumption + investments + exports

Labour market
- Employee Wages

Stocks
- Population: By age & sex
- Housing
- Transport
- Stock of capital: Building & Equipment

Industries

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IIOA, Lisbon, July 2014
Socio-economic consumption module DEMOS

- Challenge: Combination of two different data sets (System of National Accounts SNA and Household Budget Survey HBS)
  - Times series vs. few data points
  - Data sets differ in level of consumption and income (method of data collection)

- Good news: classifications (income components, consumption purposes) are the same

- Procedure
  - Consumption module (DEMOS) with socioeconomic household information (household size combined with social status)
  - Gets input from the model
  - Results of the module are given back to the model INFORGE
  - Consequences for the other economic sectors are calculated
Socio-economic consumption module DEMOS

Interaction between model and module

Model INFORGE
- income components SNA
- consumption by purpose SNA + HBS

reconciliation with INFORGE (aggregate values) → same development

Module DEMOS
(socio-economic households)

- generation of income
- (re)distribution of income
- disposable income

use of income by consumption purposes HBS

(1) (2) (3)
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Outlook

Areas of application:

- Evaluation of demographic change
- Scenario analysis related to sustainable and poverty consumption
- Policy analysis
- Improvement of indicators for social transformation
Thank you for your attention

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Income by different household types

► Gross employee income is most important income component
  ⇒ Highest in 3-person household

► Lowest incomes in small households (1-2 persons)
  ⇒ Often older (retired → transfer payments)
  ⇒ Or very young (students)

► Bigger households → children
  ⇒ Received public transfers gain weight
  ⇒ Property income (mainly imputed rents) → own house

Source: Federal Statistical Office (HBS 2010)
Income by different household types

- Working households → main income from work
- Pensioner and unemployed → transfer payments
- Property income is positively related to
  - Income level (self-employed, Beamte)
  - Age (pensioners own finally the house)
- Social security contributions mainly paid by employees/workers

Source: Federal Statistical Office (HBS 2010)
Why this exercise?

The

*Report by the Commission on the Measurement of Economic Performance and Social Progress, Joseph E. STIGLITZ, Amartya SEN, Jean-Paul FITOUSSI, Coordinator*

Suggests:

*Recommendation 1: Look at income and consumption rather than production.*

*Recommendation 2: Consider income and consumption jointly with wealth.*

It further emphasizes Measuring **sustainability** differs from standard statistical practice in a fundamental way: to do it adequately, we need **projections**, not only observations.
Outlook

► Huge data set has been recently supplied by partner (Dr. Irene Becker)
  ⇒ 5x14 matrix (household size x social status) for each income component and consumption purpose

► Integration into the model

► Areas of application:
  ⇒ Evaluation of demographic change
  ⇒ Scenario analysis related to sustainable and poverty consumption
  ⇒ Policy analysis
  ⇒ Improvement of indicators for social transformation
Outlook

▶ Questions:

⇒ Is it sufficiently detailed? Right details?

⇒ Is a connection to welfare possible (welfare indicator)?

⇒ Which other parts of the model should be extended related to household information (except labor market)?
Consumption by different household types

- Needs and preferences
- Household type
- Income
- Consumption
  - Structure
  - Expenditures