GWS SPECIALISTS IN EMPIRICAL ECONOMIC RESEARCH

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Interindustry Forecasting at the University of Maryland

IMPACTS OF A MORE SUSTAINABLE CONSUMPTION
- SCENARIO ANALYSIS FOR GERMANY

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Motivation

- Transition towards a Green Economy (UNEP): resource saving, low carbon, socially inclusive
- Consumers have enormous influence on economic development
  - GDP: Share of private consumption more than 50%
  - Final energy consumption:
    - Almost 30% of final energy consumption excluding mobility are attributed to private households
    - Almost 30% to transportation – half is due to private households (including company car)

Therefore:

- Potential importance of a more sustainable consumption
- Focus on “deeper” socioeconomic characteristics
- Enlarge analysis - labour market aspects

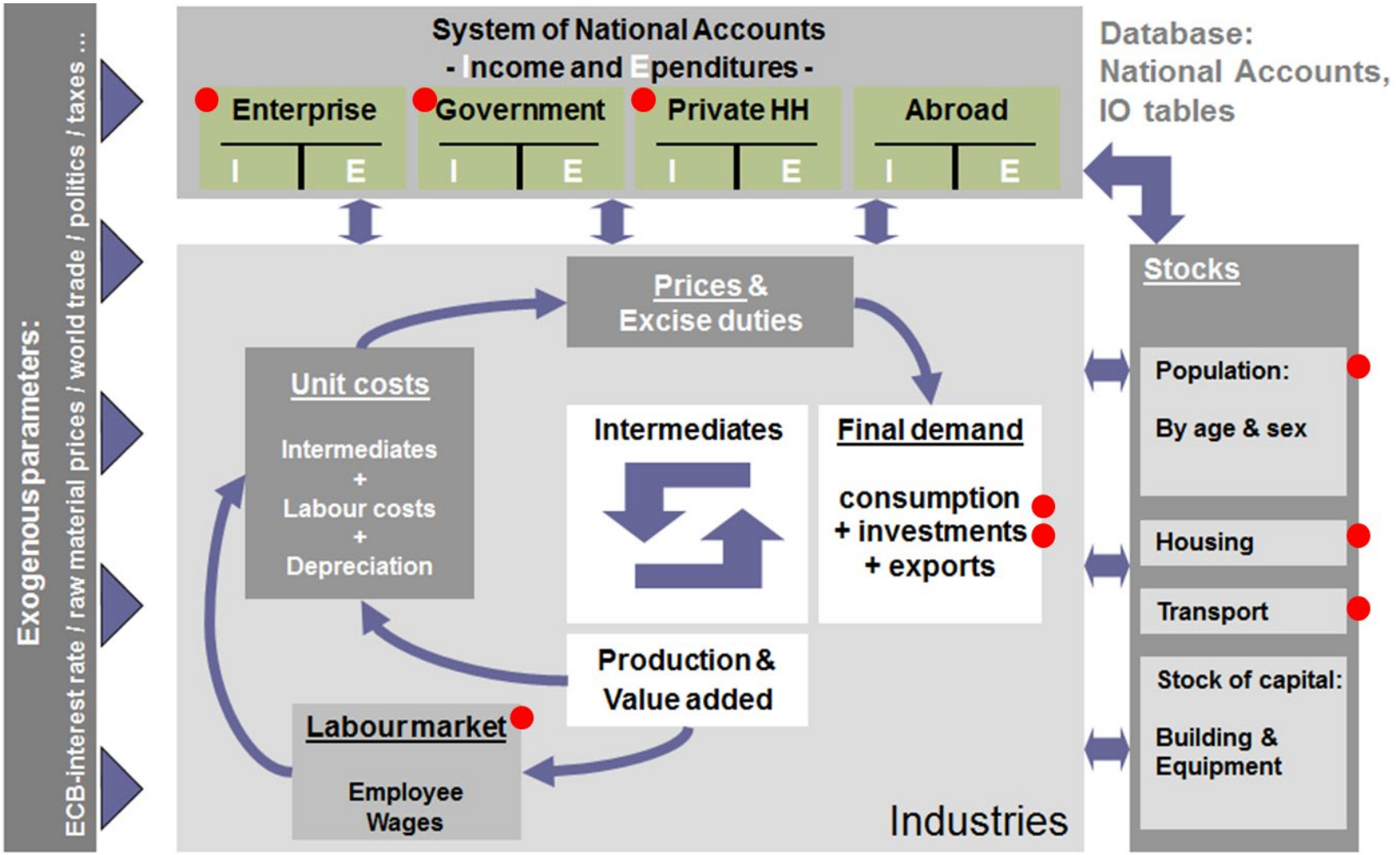
Modelling Approach

Modelling approach

- Focus on consumption of private households
- Applying socioeconomic consumption **module DEMOS** with socioeconomic information on income components and consumption structure for household types
  - ⇨ Based on **survey data**:
    - Household Budget Survey (HBS)

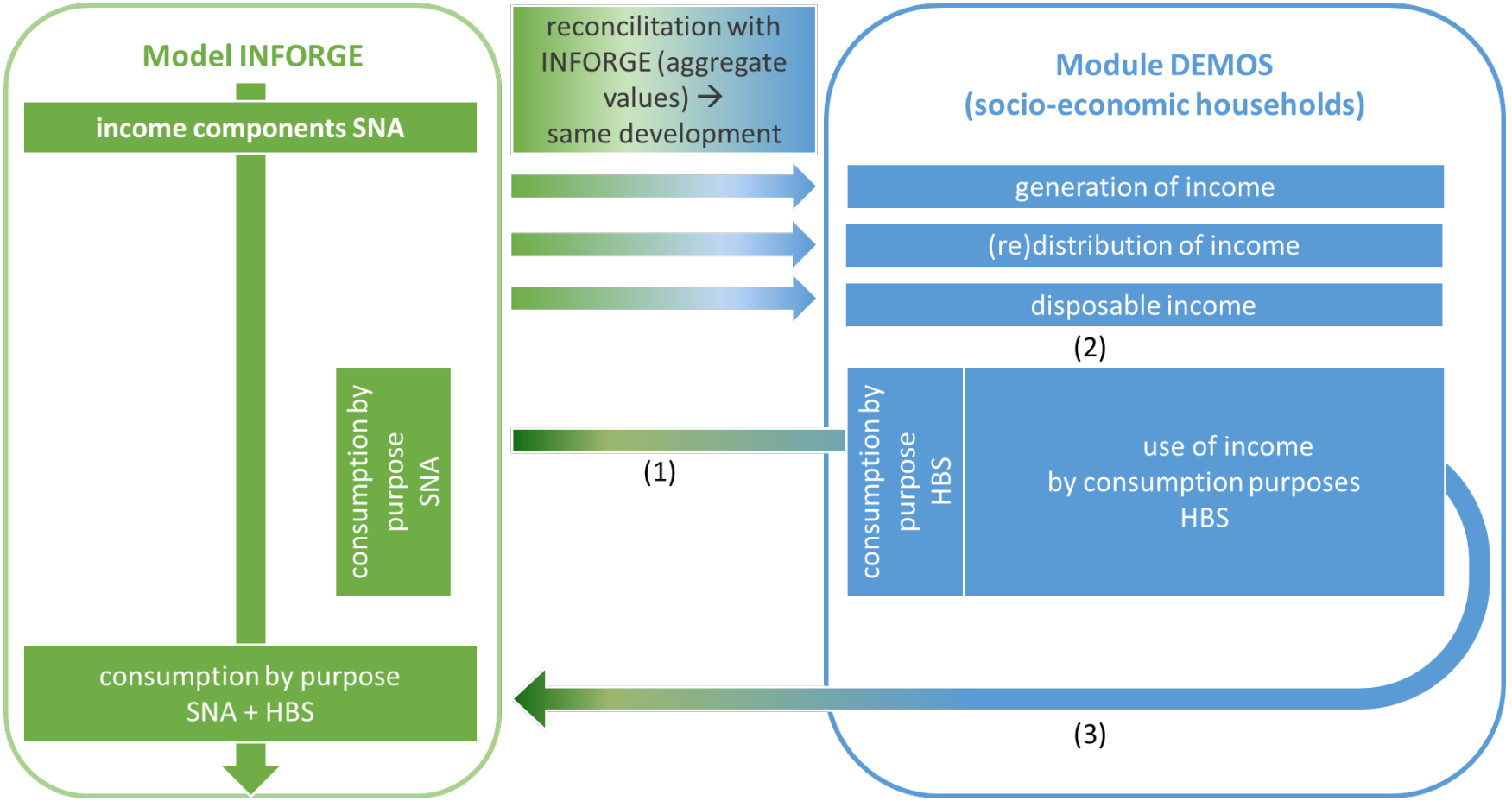
      (detailed data about income generation and use of income by consumption purposes)
    - Microcensus (e.g. number of households, size)
  - ⇨ Linked with **economic model INFORGE**

INFORGE: overview



Socioeconomic consumption module DEMOS

- Interaction between model and module



Application for scenario analysis

Application for scenario analysis

- Implementing a „more sustainable consumption“ in modelling context:
  - ⇨ Simplified understanding of sustainable consumption
    - Multidimensional concept -> difficult and controvert with regard to characteristics of sustainable consumption
    - Restrictions concerning project volume
  - ⇨ Focus on consumer behaviour of private households
- More harmful to the environment

  -> Consumption of physical goods (e.g. cars, furniture)
- Less harmful to the environment

  -> Consumption of services; immaterial goods (e.g. theatre visit)

Application for scenario analysis

- Selecting consumption purposes
  - Consumer goods
  - Non-durable goods
  - Consumer durables
  - Services
- Aggregation of consumption purposes – partly mixed services and other goods
- Plausibility checks

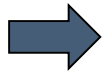
1	Consumer goods	Food
2		Non-alcoholic beverages
3		Alcoholic beverages
4		Tobacco
29		Other recreational items and equipment, gardens and pets
31		Newspaper, books and stationery
36		Personal care
5	Non-durable goods	Clothing
6		Footwear
11		Electricity, gas and other fuel
13		Household textiles
15		Glasware, tableware, and household utensils
37		personal commodities
7	Consumer durables	Actual rentals for housing
8		Imputed rentals for housing
9		Maintenance and repair of the dwellings
12		Furniture and furnishing, carpets and other floor coverings
14		Household appliances
16		Tools and equipment for house and garden
18		Medical products, appliances and equipment
21		Purchase of vehicles
25		Telephone and telefax equipment, incl. repairing
27		Audio-visual, photographic and information processing equipment incl. repairing
28		Other major durables for recreation and culture (incl. Repairing)
10	Services	Water supply and miscellaneous services related to dwelling
17		goods and services for housekeeping
19		Outpatient services
20		Hospital services
22		Operation of personal transport equipment
23		Transport services
24		Postal services
26		Telephone and telefax services, internet
30		Recreational and cultural services
32		Package holidays
33		Education
34		Catering services
35		Accommodation services
38		Services of social facilities
39		Insurance
40		Financial services n.e.c.
41		Other services n.e.c.

Source: Federal Statistical Office.

Application for scenario analysis

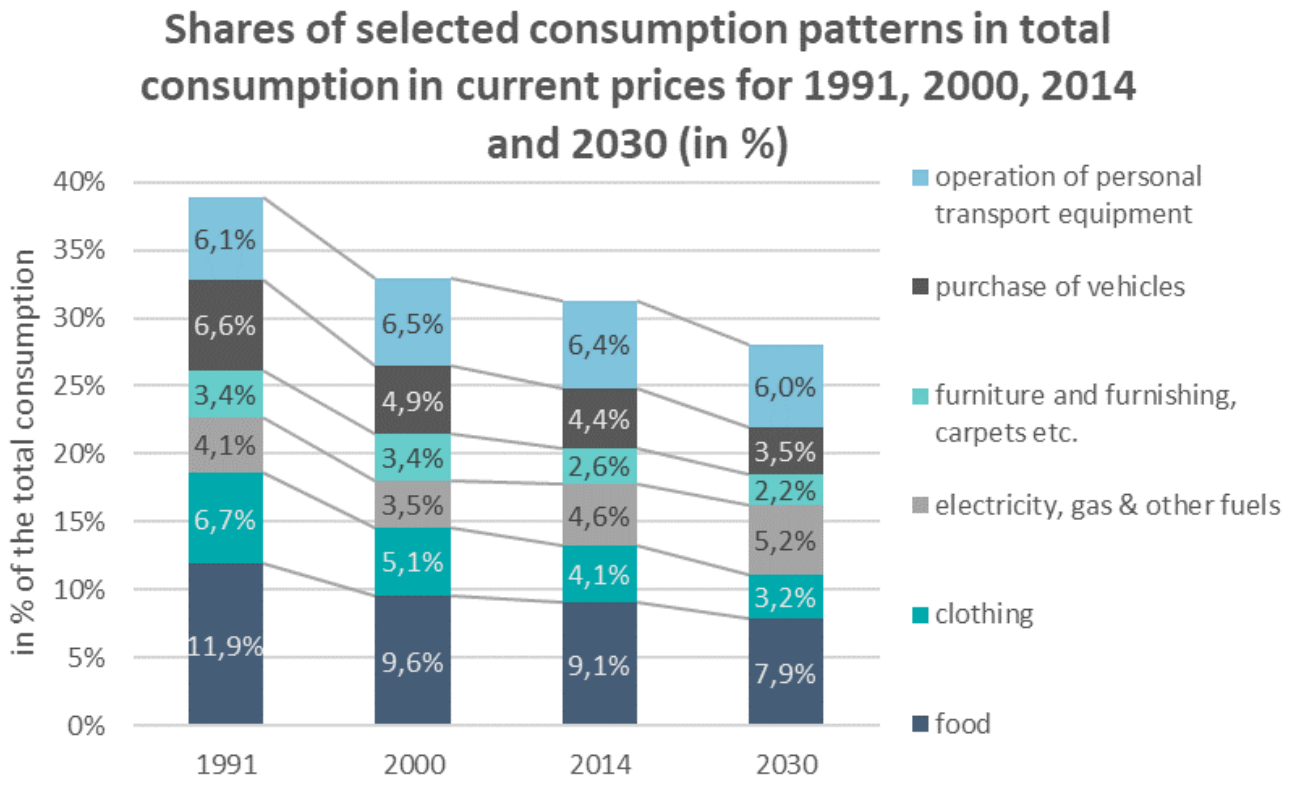
Main assumptions:

Changes in household expenditures on consumption purposes

- ⇨ Share of expenditures for less environmentally sustainable consumption purposes declines 
- ⇨ Share of expenditures for more environmentally sustainable consumption purposes rises 
- ⇨ Total amount of consumption expenditures stays constant within scenario time horizon 
  - ➢ Uncover structural effect (not quantity)
- ⇨ Linear increase of shift until 2030
  - 2030 less environmentally harmful consumption purposes: +5% of total consumption (price adjusted) compared to reference; others: -5%

Application for scenario analysis

- Development of selected consumption patterns rated as more environmentally harmful



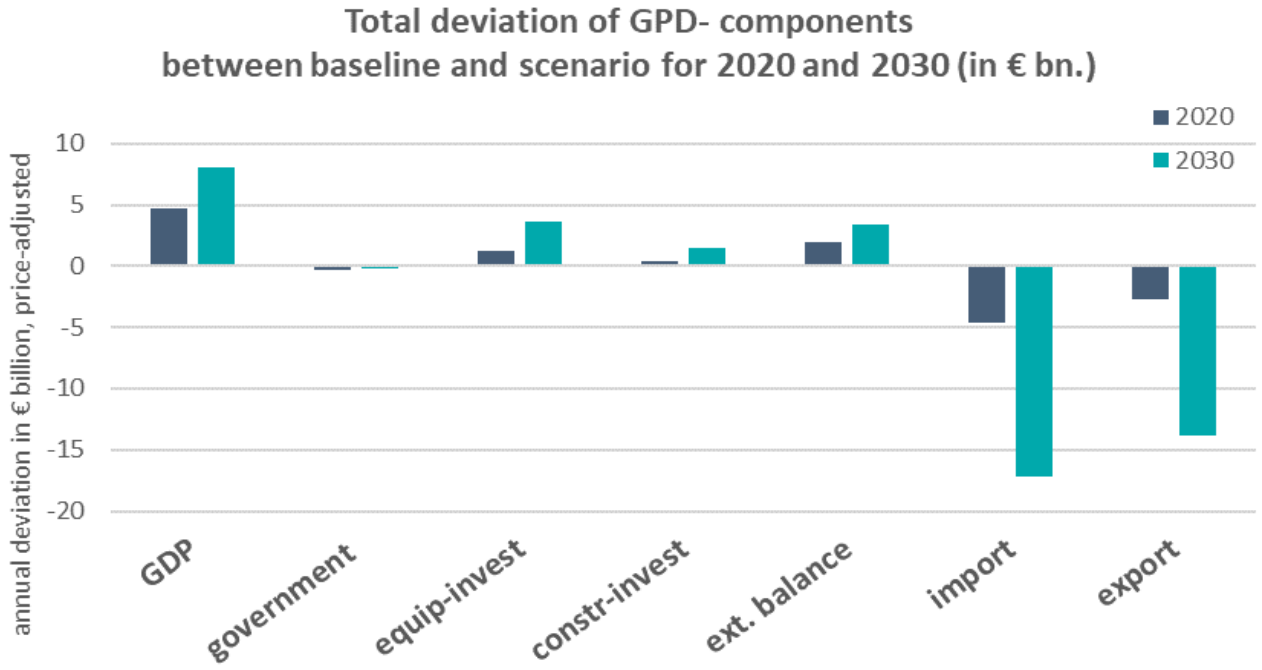
- Shares already decline

Source: Federal Statistical Office (2015), own calculations.

Main results

Main results

- Impacts on **macroeconomic** development
- Shifts in final demand lead to changes in production
  - ⇨ Positiv impact on GDP
  - ⇨ Decrease of German imports and exports
  - ⇨ Weakens international competitiveness through **rising unit costs** and **production prices**

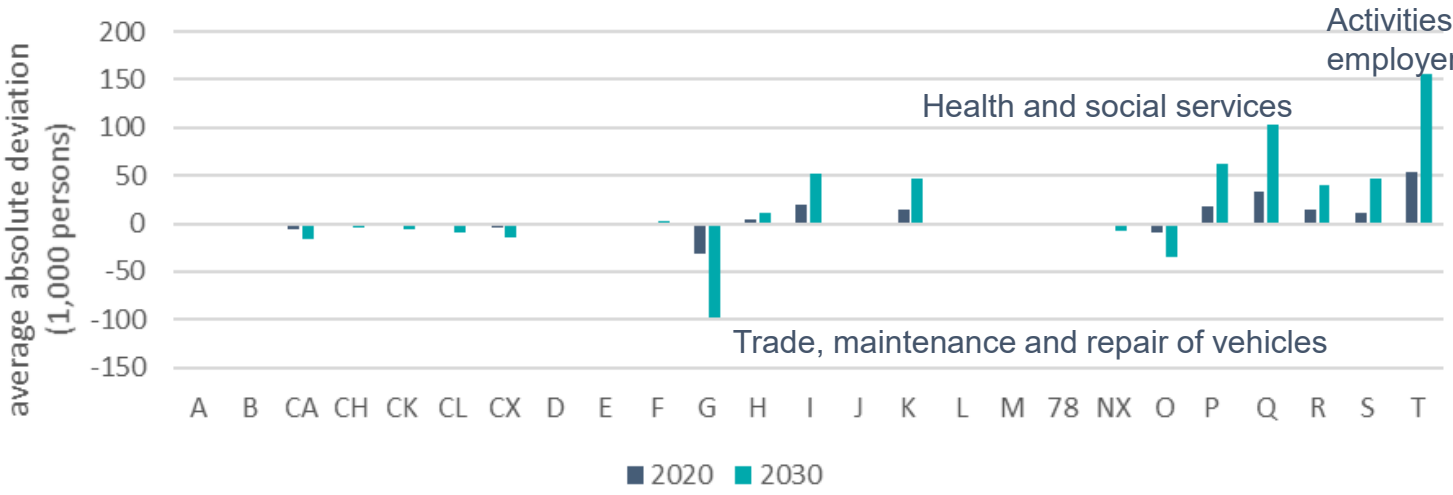


Source: Federal Statistical Office, INFORGE.

Main results

- Impacts on **employment development** by industries
  - ⇨ Shifts in final demand lead to changes in employment
  - ⇨ Decrease in **manufacturing industries**; increase in **service sectors**
  - ⇨ **Displacement** from sectors with high labour productivity to more labour intensive service sectors

Total deviation of number of employees between baseline and scenario by industries for 2020 and 2030 (1 000 persons)

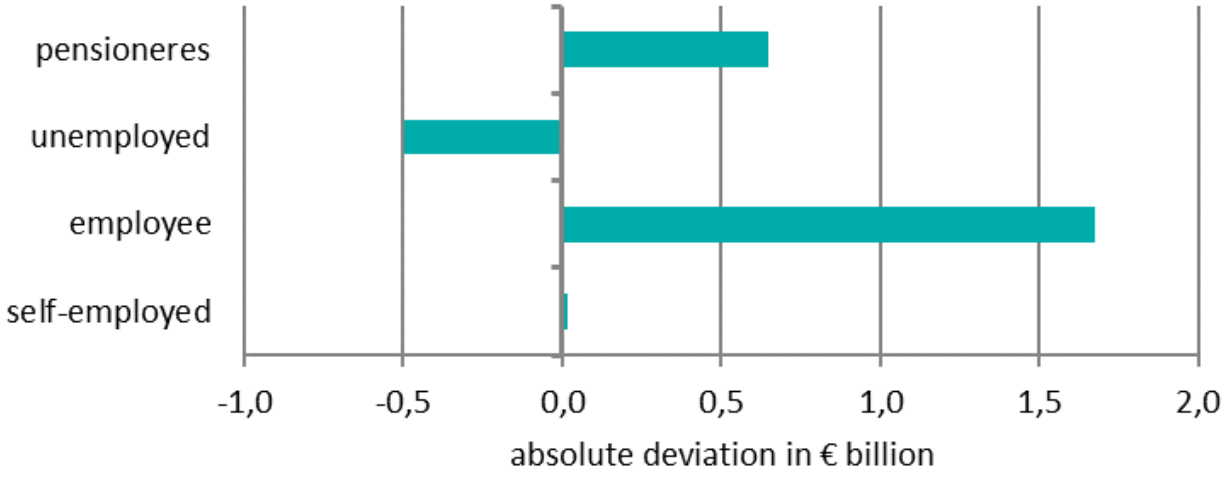


Source: Federal Statistical Office, INFORGE.

Main results

- Impacts on **household types I**
  - ⇨ Shifts in final demand lead to changes for types of households
  - ⇨ Increasing employment -> increasing disposable income
  - ⇨ Long-term socioeconomic outcomes are predominantly positiv

Total deviation of anually disposable income for different types of households between baseline and scenario in 2030 (in bn €)

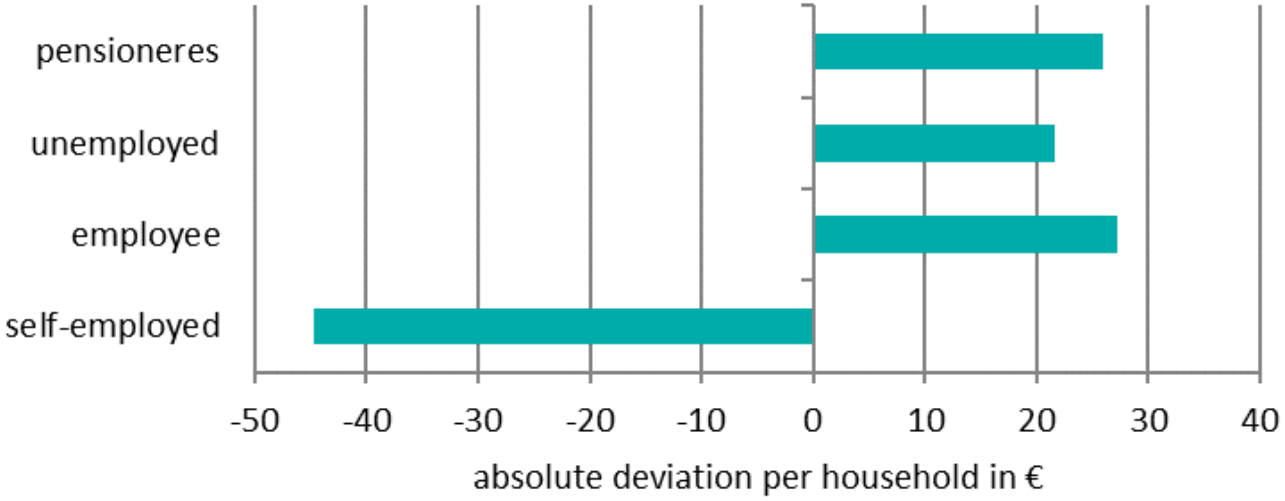


Source: Federal Statistical Office, INFORGE.

Main results

- Impacts on **household types II**
  - ⇨ Adjusted to effect of quantity – monthly per household
  - ⇨ Only self-employed have to face income losses -> less profits

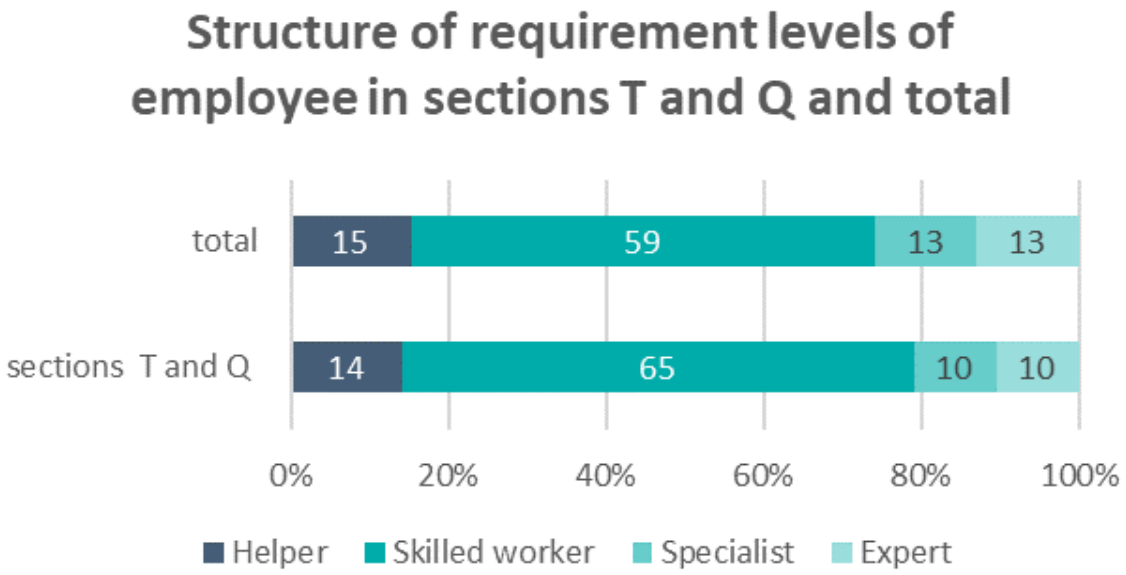
Total deviation of monthly disposable income for different types of households between baseline and scenario in 2030 (in €)



Source: Federal Statistical Office, INFORGE.

More results

- More **aspects of labor market** to enlarge analysis
  - ⇨ E.g. **job requirements** (also possible: gender, working hours, etc.)
- Max. deviation of employees in economic sectors:
  - ⇨ T: Activities of households as employers (+160 000)
  - ⇨ Q: Health and social services (+100 000)

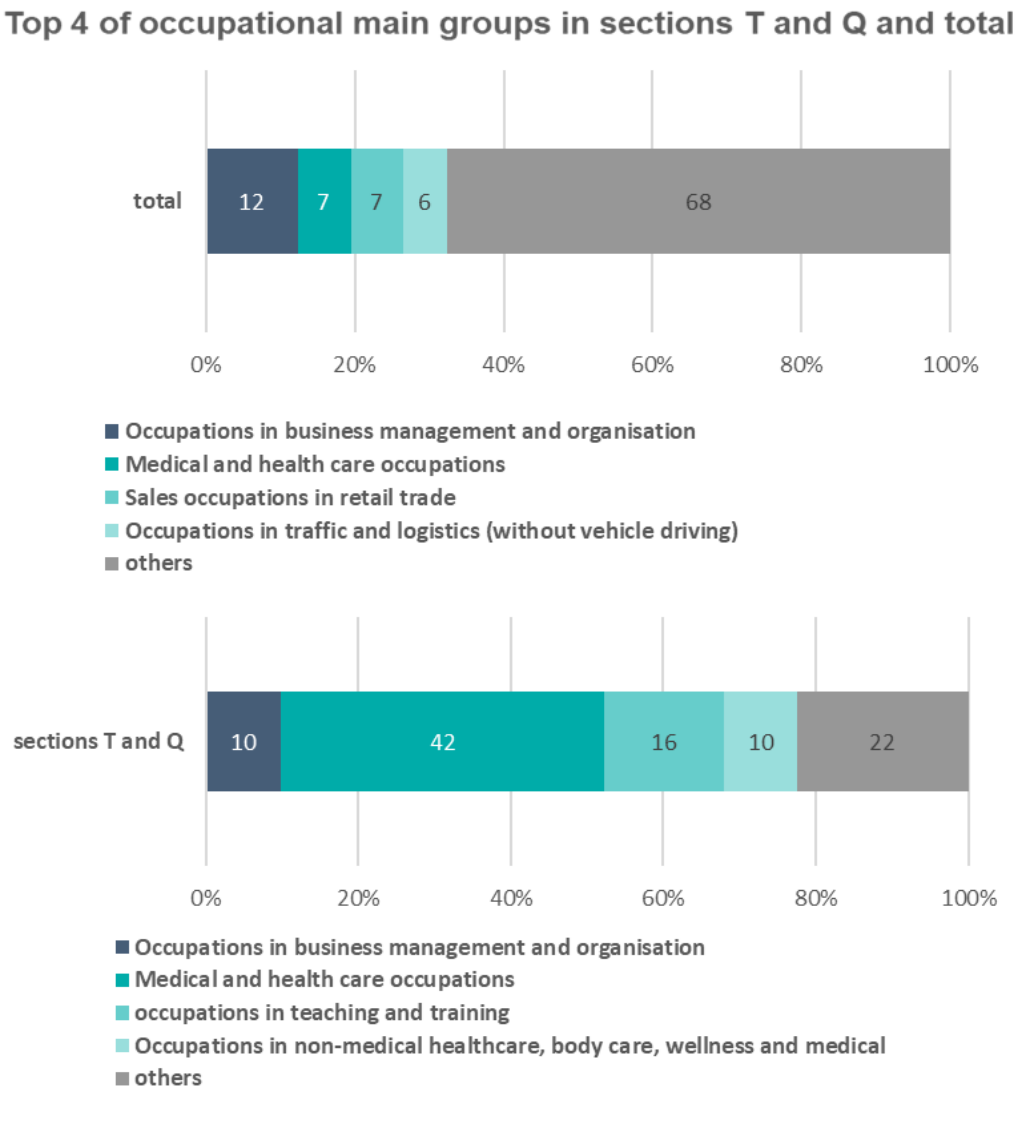


- Changes in job requirements
- Different requirements will be needed

Source: Federal Employment Agency, own calculations.

More results

- Employmee in **occupational main groups**
  - ⇨ Changes in required occupations
  - ⇨ Different occupations will be needed



Source: Federal Employment Agency, INFORGE.

Conclusion

Conclusion

- The reconstruction of the economy has an impact on…
  - Economic development in general, sectors, qualifications, occupations and therewith on potential earnings
  - ⇨ Analyses should look at:
    - Not only employment
    - But also jobs/ occupations
    - As well as redistribution between households
  - ⇨ A combination of I-O and survey data enables to make deeper statements
  - ⇨ Reconstruction is a “big” adventure due to globalization and digitization taking place at the same time
- INFORUM can observe and model such a reconstruction “in concert” with all partners and accompany in a consultative way!

Thank you for your attention

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Annex

Economic sections

A. Agriculture, forestry and fishing
B. Mining and quarrying
C. Manufacturing
D. Electricity, gas, steam and air conditioning supply
E. Water supply; sewerage, waste management and remediation activities
F. Construction
G. Trade, maintenance and repair of vehicles
H. Transportation and storage
I. Accommodation and food service activities
J. Information and communication
K. Financial and insurance activities
L. Real estate activities
M. Professional, scientific and technical activities
N. Administrative and support service activities
O. Public administration and defence; compulsory social security
P. Education
Q. Human health and social work activities
R. Arts, entertainment and recreation
S. Other service activities
T. Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use