Demographic change and consumption – how ageing affects the level and structure of private consumption

Britta Stöver
Marc Ingo Wolter
Content

1. Drivers and impact of demographic change
2. Demography in the macro-econometric model INFORGE
3. Impact of demographic change on consumption
4. Conclusion
1. Drivers and impact of demographic change
Drivers and impact of demographic change

- Demographic change set in decades ago
- Interest in the consequences of demographic change
  - Sachverständigenrat (Advisory Council) (2011)
  - Federal Ministry of the Interior (2011)
  - European Commission (2011)
- Research project „Hamburg“ commissioned by “Freie Hansestadt Hamburg“
  - Economic consequences of demographic change for Germany
  - Feedback on Hamburg
Drivers and impact of demographic change

Demographic trend

Households

Public budget
- Tax revenue
- Government spending
- Social insurance administration

Labour market
- Labour force participation rate
- Skills shortage
- Labour productivity
- Economic activities
- Wages

Production potential
- Technological progress
- Educational level
- Immigration
- Production growth

Goods and financial markets
- Private consumption (level and structure)
- Saving rate
- Property, assets, liabilities
- Residential buildings, cars
- Goods and services

Export
- Demographic change in trade partner countries
- Change in demand
- Export structure
- Production

Economic development

Economic activities & organisations

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Content

1. Drivers and impact of demographic change
2. Demography in the macro-econometric model INFORGE
The macro-econometric model INFORGE

- Used and annually updated since the 1990s
- Based on INFORUM philosophy
- Used for economic forecasts, projections, scenario analysis
- Trade covered by TINFORGE (more than 60 countries)
- Extended by different modules
  - Energy and environment
  - Labour market by occupation and qualification
  - Socio-economic issues
- Demographic information is considered
Demographic information in INFORGE

- Demographic information

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

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

Database:
- National Accounts, IO tables

Prices & Excise duties

Intermediates
- Consumption
- Investments
- Exports

Final demand

Production & Value added

Unit costs
- Intermediates
- Labour costs
- Depreciation

Labour market
- Employee wages

Industries

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

1. Drivers and impact of demographic change
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### Scenario settings

<table>
<thead>
<tr>
<th>Scenarios</th>
<th>Population</th>
<th>Additional adjustments</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>size</td>
<td>age structure</td>
<td>labour force participation rate</td>
</tr>
<tr>
<td>constant size &amp; constant structure</td>
<td>status in 2014</td>
<td>status in 2014</td>
<td>unchanged</td>
</tr>
<tr>
<td>decline &amp; constant structure</td>
<td>population projection (V1W2)</td>
<td>status in 2014</td>
<td>unchanged</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>constant size &amp; ageing</td>
<td>status in 2014</td>
<td>population projection (V1W2)</td>
<td>increasing</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>decline &amp; ageing (reference scenario)</td>
<td>population projection (V1W2)</td>
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<td>increasing</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Consequences for private consumption

- Quantity effect: negative
- Structural effect: positive
- With demographic change private consumption is higher
  - Disposable income is higher
  - Propensity to consume is higher
  - Different consumption structure

Total private consumption 2014-2030 (constant prices)

Source: INFORGE
Consequences for private consumption

► Disposable income:
  ⇒ Higher wages

► Saving rate:
  ⇒ Small quantity effect
  ⇒ Very large structural effect
  ⇒ Old people with lower saving rates

Disposable income and saving rate 2014-2030 (current prices)

Source: INFORGE
## Consequences for private consumption

- More expenditures for health and restaurants & services
- Less for stimulants, fashion and education

<table>
<thead>
<tr>
<th>private consumption expenditures</th>
<th>2030</th>
<th>percentage deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>in bn Euro at constant prices, consumption purposes SEA 2013</td>
<td>const size &amp; const structure</td>
<td>structural effect</td>
</tr>
<tr>
<td>food, beverages and tobacco</td>
<td>198,3</td>
<td>-1,2%</td>
</tr>
<tr>
<td>clothing and footwear</td>
<td>71,5</td>
<td>-1,8%</td>
</tr>
<tr>
<td>housing, water, electricity, gas, other fuels</td>
<td>340,1</td>
<td>1,7%</td>
</tr>
<tr>
<td>furnishings, household equipment</td>
<td>87,5</td>
<td>3,1%</td>
</tr>
<tr>
<td>health</td>
<td>92,0</td>
<td>36,0%</td>
</tr>
<tr>
<td>transport</td>
<td>169,5</td>
<td>1,5%</td>
</tr>
<tr>
<td>communication</td>
<td>55,9</td>
<td>1,6%</td>
</tr>
<tr>
<td>recreation and culture</td>
<td>160,6</td>
<td>0,8%</td>
</tr>
<tr>
<td>education</td>
<td>20,4</td>
<td>1,3%</td>
</tr>
<tr>
<td>restaurants and hotels</td>
<td>84,9</td>
<td>2,5%</td>
</tr>
<tr>
<td>miscellaneous goods and services</td>
<td>212,0</td>
<td>2,6%</td>
</tr>
<tr>
<td><strong>Total consumption</strong></td>
<td><strong>1493,7</strong></td>
<td><strong>3,5%</strong></td>
</tr>
</tbody>
</table>

Source: INFORGE

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Consequences for private consumption

▶ Consumption purpose health

⇒ All consumption purposes within health profit from ageing
⇒ High positive deviation to constant population:
  ▪ historical increase stops
  ▪ With ageing it continues on a lower pace
⇒ Consumption functions depend on age

<table>
<thead>
<tr>
<th>Consumption expenditures in bn Euro at constant prices</th>
<th>2030</th>
<th>Percentage deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>consumption purposes SEA 2013</td>
<td></td>
<td>const size &amp; const structure</td>
</tr>
<tr>
<td>Medical products, appliances and equipment</td>
<td>30,7</td>
<td>19,0%</td>
</tr>
<tr>
<td>Out-patient services</td>
<td>45,2</td>
<td>59,3%</td>
</tr>
<tr>
<td>Hospital services</td>
<td>16,2</td>
<td>2,8%</td>
</tr>
</tbody>
</table>

Source: INFORGE
Consequences for private consumption

Consumption purpose restaurants & hotels

⇒ Only positive effects for catering services
  ▪ Higher labour force participation rate
  ▪ Hospitals → catering
  ▪ Higher disposable income

⇒ Accommodation services are slightly negative
  ▪ Quantity effect is very large
  ▪ Less business, but more private trips

<table>
<thead>
<tr>
<th>Consumption expenditures in bn Euro at constant prices consumption purposes SEA 2013</th>
<th>2030</th>
<th>Percentage deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>const size &amp; const structure</td>
<td>structural effect</td>
<td>quantity effect</td>
</tr>
<tr>
<td>Catering services</td>
<td>66,3</td>
<td>2,3%</td>
</tr>
<tr>
<td>Accommodation services</td>
<td>18,6</td>
<td>3,1%</td>
</tr>
</tbody>
</table>

Source: INFORGE
Consequences for private consumption

- Consumption purposes food, beverages & tobacco and clothing & footwear
  - Consumption functions for alcohol, tobacco, clothing and footwear negatively depend on age
  - Food and non-alcoholic beverages show low impact

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<th>Consumption expenditures in bn Euro</th>
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</thead>
<tbody>
<tr>
<td>const size &amp; const structure</td>
<td>structural effect</td>
<td>quantity effect</td>
</tr>
<tr>
<td>Food</td>
<td>131,5</td>
<td>0,3%</td>
</tr>
<tr>
<td>Non-alcoholic beverages</td>
<td>21,4</td>
<td>1,0%</td>
</tr>
<tr>
<td>Alcoholic beverages</td>
<td>21,9</td>
<td>-7,1%</td>
</tr>
<tr>
<td>Tobacco</td>
<td>23,5</td>
<td>-6,2%</td>
</tr>
<tr>
<td>Clothing</td>
<td>61,0</td>
<td>-1,5%</td>
</tr>
<tr>
<td>Footwear</td>
<td>10,5</td>
<td>-3,5%</td>
</tr>
</tbody>
</table>

Source: INFORGE
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Conclusion

► Due to demographic change
  ⇒ Private consumption is higher
  ⇒ Saving rate is lower
  ⇒ The consumption structure is different
    ▪ More expenditures for health and catering services
    ▪ Less expenditures for stimulants, fashion and education

► The model structure (consumption functions) is sufficient to show demographic effects on consumption
Thank you for your attention

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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

Source: Federal Statistical Office (SNA 2014)