Climate-related taxes
– Who pays?

Extensive use of micro- and macro-economic models

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Micro- and macro-economic models

1. A computable general equilibrium (CGE) model

2. Distributional analysis system for income and transfers

3. Firm Register and Individual Database

4. Simulation model for the Firm Register and Individual Database
General Equilibrium model

- "Original situation"          "future situation"

- Long term effects of the tax restructuring (2010-2015)

- Impact on the entire Swedish economy

- 6 types of households, 26 trade and industry sectors

- Perfect competition in all markets - key assumption
Findings based on CGE

Small long-term effects of the tax restructuring

› Only marginal effects on emissions

› Marginal effects on the economy as a whole

› Increased cost-effectiveness
Distributional analysis system for income and transfers

› Distribution of expenditure for climate-related taxes and emissions among household groups

› Module for indirect taxation

› No behavioural changes (2007 consumption patterns)
### Household expenditure for taxes and emissions

<table>
<thead>
<tr>
<th>Household type</th>
<th>Carbon dioxide tax</th>
<th>Energy tax excl. electricity</th>
<th>Vehicle tax</th>
<th>Total carbon dioxide, energy and vehicle taxes (excl. electricity)</th>
<th>Emissions from private vehicles and oil heating</th>
<th>Energy tax on electricity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single women</td>
<td>600</td>
<td>700</td>
<td>400</td>
<td>1,800</td>
<td>700</td>
<td>800</td>
</tr>
<tr>
<td>Single men</td>
<td>1,300</td>
<td>1,500</td>
<td>1,000</td>
<td>3,800</td>
<td>1,400</td>
<td>900</td>
</tr>
<tr>
<td>Cohabiting without children</td>
<td>2,100</td>
<td>2,400</td>
<td>1,600</td>
<td>6,000</td>
<td>2,200</td>
<td>1,700</td>
</tr>
<tr>
<td>Cohabiting with children 0–19 years</td>
<td>1,700</td>
<td>2,000</td>
<td>1,200</td>
<td>4,900</td>
<td>1,800</td>
<td>1,300</td>
</tr>
<tr>
<td>Single women with children</td>
<td>800</td>
<td>1,000</td>
<td>600</td>
<td>2,300</td>
<td>800</td>
<td>800</td>
</tr>
<tr>
<td>Single men with children</td>
<td>1,400</td>
<td>1,700</td>
<td>1,200</td>
<td>4,300</td>
<td>1,500</td>
<td>1,500</td>
</tr>
<tr>
<td><strong>Total, all household types</strong></td>
<td><strong>1,500</strong></td>
<td><strong>1,700</strong></td>
<td><strong>1,100</strong></td>
<td><strong>4,300</strong></td>
<td><strong>1,600</strong></td>
<td><strong>1,200</strong></td>
</tr>
</tbody>
</table>
Firm Register and Individual Database

› Expenditure for climate-related taxes and emissions between trade and industry sectors

› Energy volumes

› Calculated emissions

› Expenditures for energy and CO₂ taxes

› Revenues and Costs
Expenditures for emissions and value of emission allowances

- Manufacture of basic metals
  - Expenditure for energy and CO2 taxes (after tax exemption)
  - Value of the surplus of free allocated emission allowances

- Manufacture of paper and paper products
  - Expenditure for energy and CO2 taxes (after tax exemption)
  - Value of the surplus of free allocated emission allowances
New simulation model

› Fiscal outcome of the tax restructuring (2010-2015)

› Inflow of tax revenues for energy and CO₂ to the central government

› Differences of expenditures between NETS and ETS before and after the tax restructuring
Effects on ETS and NETS of the tax restructuring

<table>
<thead>
<tr>
<th></th>
<th>Energy tax on fuels and motor fuels</th>
<th>Carbon dioxide tax</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>The trading sector</td>
<td>1.5</td>
<td>-6.9</td>
<td>-5.4</td>
</tr>
<tr>
<td>The non-trading sector</td>
<td>3.4</td>
<td>2.3</td>
<td>5.7</td>
</tr>
<tr>
<td>Total</td>
<td>4.9</td>
<td>-4.5</td>
<td>0.3</td>
</tr>
</tbody>
</table>
The Swedish NAO’s calculations etc.

› Calculation of the value of the surplus or deficit of emission allowances

› Summing ups of the surplus of allowances and calculations of its value

› Illustration of the differences in caused emissions and expenditures between households and the trade and industry and other sectors
Unevenly distributed expenditures

- CO₂ emissions in 2008:
  - Households: 18%
  - Trade and industry and others: 82%

- Expenditure for CO₂ tax in 2008:
  - Households: 39%
  - Trade and industry and others: 61%