Carbon tax – determining the tax rate

Swedish Experiences

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Swedish Energy and Carbon Taxation
A long history that started in 1924

- **Taxation of energy – two components**
  - Energy tax on fuels (1924 gasoline; 1937 diesel; 1957 heating oil and coal; 1985 natural gas; 2013 biofuels blended in gasoline and diesel) and electricity (1951)
  - Carbon tax on fossil fuels (1991)

- **Two levels of carbon tax, per tonne fossil CO₂**
  - High for motor fuels and heating fuels in households and service
  - Low for heating fuels in industry – raised step by step

- **No carbon tax on installations covered by EU ETS (EU Emissions Trading Scheme)**, Large part of heavy industry, heat and power installations

- **Carbon tax** has since 1991 been the key driver behind Sweden’s success in cutting emissions
Reasons for Taxing Energy in Sweden
Increased focus on environmental taxes

• **Until 1980’s**: Primarily fiscal purposes
  – generally low tax levels

• **1990’s and onwards**: Environmental issues given high priority by Government and citizens
  – increased focus on environmental taxes
  – increased tax levels, step-by-step
  – focus on increased carbon tax share of taxation of energy (“carbon tax heavy”)

• **Now**:
  – Energy tax: fiscal and energy efficiency
  – Carbon tax: climate
Green Taxes 1991 and Onwards ….

1990/1991 tax reform

- Reduced and simplified labour taxes (- 6 billion €)
- Value Added Tax introduced on energy (+ 1.6 billion €)
- Carbon tax introduced at a low levels combined with approx. 50% cuts in energy tax rates (+ 0.3 billion €)
- Certain investment state aid measures

Since 1991

- 2001-2006 Green tax shift 1.6 billion € ; raised environmental taxes, cuts in income taxes (focus on low incomes).
- 2007-2013 Increased environmental taxes (+0.6 billion €), significant cuts in labour taxes (− 8.6 billion €).
- 2014 and onwards
  - Increases in taxes on pesticides and natural gravel as well as energy tax on transport fuels
  - Phasing out carbon tax reductions
  - New tax on chemicals in electronic products
  - Public inquiries in different environmental tax areas (e.g. vehicle taxation, road distance tax)

In Sweden no earmarking of revenues …. but it may be a solution in other national contexts.
Swedish Energy and Carbon Tax Revenues
A brief overview

<table>
<thead>
<tr>
<th></th>
<th>Revenues Billion €(^1) 2016</th>
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<tbody>
<tr>
<td><strong>A. Energy tax</strong></td>
<td></td>
</tr>
<tr>
<td>- electricity</td>
<td>2.24</td>
</tr>
<tr>
<td>- gasoline</td>
<td>1.25</td>
</tr>
<tr>
<td>- other fossil fuels than gasoline</td>
<td>1.18</td>
</tr>
<tr>
<td><strong>B. Carbon tax</strong></td>
<td></td>
</tr>
<tr>
<td>- gasoline</td>
<td>0.85</td>
</tr>
<tr>
<td>- other fossil fuels than gasoline</td>
<td>1.62</td>
</tr>
<tr>
<td><strong>Total (A+B)</strong></td>
<td>7.13</td>
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</tbody>
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\(^1\) Prognosis.

- Energy and Carbon Taxes – share of GDP in 2016: **1.6 %**
- Energy and Carbon Taxes – share of total national tax revenues in 2016: **3.6 %**
Easy to Administer

• In the tax law, carbon tax rates are expressed in normal trade units (weight or volume)
• State legislators use average CO₂ emission factors for different fuels to calculate tax rates
  – Internationally acknowledged emission factors
  – No need to measure at point of emissions to air
• Tax payers are distributors or large consumers
• The carbon tax is administered in the same way as the energy tax on fuels
• Low administrative costs for tax authorities and business
  – Administrative costs for Swedish Tax Administration is 0.1 % of total revenues for energy and carbon taxes.
Development of the Swedish Carbon Tax
General level and industry level

NOTE: from 2008 onwards the red line represents industry outside the EU Emissions Trading Scheme (EU ETS)
What Does the Public Think?

• What make households and firms adapt?

Swedes do not love to pay tax, but …..

– General environmental concerns, both from households and firms

– Start at low tax levels, raise gradually

– Ensure that feasible options are available (bio fuels, district heating, public transport, housing isolation etc.)

– “Polluter Pays” = “Money Talks”

– 20 years of carbon taxation show good environmental effects = Pollution from fossil fuels is not essential to economic success.

….. the carbon tax is generally accepted.
Real GDP and Domestic CO$_2$e Emissions$^1$ in Sweden, 1990–2015

Index (1990=100)

<table>
<thead>
<tr>
<th>Year</th>
<th>GDP</th>
<th>CO$_2$e</th>
</tr>
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<tbody>
<tr>
<td>1990</td>
<td>70</td>
<td>100</td>
</tr>
<tr>
<td>1995</td>
<td>85</td>
<td>95</td>
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<tr>
<td>2000</td>
<td>100</td>
<td>80</td>
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<td>2005</td>
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<td>70</td>
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<td>2010</td>
<td>120</td>
<td>60</td>
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<tr>
<td>2015*</td>
<td>135</td>
<td>50</td>
</tr>
</tbody>
</table>

$^1$ In accordance with Sweden's National Inventory Report, submitted under the UNFCCC and the Kyoto Protocol. CO$_2$ = approx. 80% of total CO$_2$e emissions. Preliminary data for 2015.

Sources: Swedish Environmental Protection Agency, Statistics Sweden
Swedish Experiences of CO₂ taxation, conclusions

• CO₂ taxation ....
  – has since 1991 been the key driver behind Sweden’s success in cutting emissions whilst maintaining economic growth
  – is easy to administer and gives results
  – is a cost-effective measure to reach emission reductions

• Long term priority in broad political consensus ....
  – involve stakeholders in discussions and analysis
  – step-by-step approach; alternatives available
Thank you for your attention!
Further information

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