A Carbon Tax and the Risk of Inequity

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Disagreements about the best way to limit the social cost

- Adverse impacts on activity and employment
- Adverse impacts on the purchasing power of consumers

... and therefore about how to use the carbon tax revenue

- Business tax cuts or Labour tax cuts ("efficiency")
- Direct compensations and redistribution ("equity")
• Evaluation of long term impacts (20 years) of various revenue-recycling schemes on a same set of criteria

• Standpoint: ‘the worst case’ to cover misunderstandings
  - Unilateral CT without border adjustment, based on the carbon content of all consumptions, and reaching 300€/tCO₂ in 2004.

• Simulation of ‘counterfactual France-2004’ compared to a same reference situation (the historical 2004-France)
Key Features of the IMACLIM Model

Simultaneous equilibria in monetary and physical units (MTOE)

20 income classes

4 productions (3E + 1 ‘Composite’)

Public administrations

Limited adaptation capacity (technical constraints)

Limited adaptation capacity (technical constraints & basic needs for energy)

Equilibrium unemployment (negative correlation: Domestic nominal wage / unemployment rate)

International trade is function of the domestic production costs (‘cost-competitiveness’)

Rest of the world Flows of products & funds

Public finance modalities (A tax and benefit system with multiple objectives)

France in open-economy
Let us start from two polar schemes

Two recycling options under the same ‘budget neutrality’

1. Lower social security contributions rates

2. Direct and universal transfers to households
A Trade-off Between Equity and Efficiency

The 2 schemes reduce CO₂ emissions by 34% over the period 1985-2004.
## Two Contrasted Impacts on Production Costs

<table>
<thead>
<tr>
<th>Carbon Tax (300€/tCO₂)</th>
<th>Transfers to households</th>
<th>Lower social security contributions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total variation</td>
<td>+3.7%</td>
<td>-1.0%</td>
</tr>
<tr>
<td>Energy costs variation</td>
<td>+1.6%</td>
<td>+1.6%</td>
</tr>
<tr>
<td>Net wages variation</td>
<td>+0.1%</td>
<td>+1.5%</td>
</tr>
<tr>
<td>Labour tax variation</td>
<td>id.</td>
<td>-3.6%</td>
</tr>
</tbody>
</table>

Lowering social security contributions on wages:

- Limit the propagation of costs increases
- Allow a higher progression of net wages
A Potential Virtuous Cycle for Activity and Employment

Carbon Tax - Lower Social Contributions

Structural change
Increase in employment intensity

Oil bill alleviation
Reduced levies on national incomes

Higher domestic consumption

Higher employment

Higher production

Tax burden transfer
Decrease in production price

Higher competitiveness
## Poverty Alleviation... at Cost of Higher Disparities

<table>
<thead>
<tr>
<th>€300/tCO2 &amp; Lower SSC</th>
<th>Impacts on energy bills</th>
<th>Unemployment (% points)</th>
<th>Disposable Income</th>
<th>Gini inequality index</th>
</tr>
</thead>
<tbody>
<tr>
<td>5% poorest</td>
<td>+78.3%</td>
<td>-12.2</td>
<td>+5.4%</td>
<td>+0.3 pts</td>
</tr>
<tr>
<td>5% richest</td>
<td>+72.0%</td>
<td>-0.9</td>
<td>+7.3%</td>
<td></td>
</tr>
</tbody>
</table>

Main determinants:

1) Budget share devoted to energy, energy saving potential
2) Initial unemployment rates, jobseeker’s allowance-wage gap
3) Relative weights of income sources (activity, property, transfers….)
Three Compromise Schemes

1. Mixed recycling
   - Households: what they paid in uniform green check
   - Firms: what they paid in lower SSC

2. Generalised tax credit (TC)
   - lump-sum rebate covering some levels of ‘basic needs’
     (commuting by car + share of residential consumption)
   - remaining proceeds and budget margin to SSC reduction

3. Targeted TC & measures
   - same tax credit but limited to the 80% lower income
   - remaining proceeds to SSC reduction
   - budget margin: accompanying measures (80% lower income)
The 3 schemes reduce CO$_2$ emissions by 34%

A Space for Reconciling Efficiency and Equity

Budget neutral reform (Cst Debt/GDP)
- €300/tCO$_2$ - Mixed recycling
- €300/tCO$_2$ - $G^a$ tax credit (TC)
- €300/tCO$_2$ - Targeted TC & measures

Employment
Inverted Gini index
GDP
Bottom twentile consumption

The 3 schemes reduce CO$_2$ emissions by 34%
But energy vulnerability is ill-explained by ‘income’

Annual budget shares of energy

A variety of technical, geographic and socioeconomic factors
Pourquoi le CI est ‘plus équitable’ que le chèque vert

An Example: Territorial Inequalities

<table>
<thead>
<tr>
<th>Compensations without territorial differentiation</th>
<th>Gini’s inequality index (% points)</th>
</tr>
</thead>
<tbody>
<tr>
<td>According to income</td>
<td>-0.4</td>
</tr>
<tr>
<td>According to location</td>
<td>+0.8</td>
</tr>
</tbody>
</table>

Initial budget shares of energy

<table>
<thead>
<tr>
<th>Initial budget shares of energy</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Ruraux</td>
<td>14%</td>
</tr>
<tr>
<td>Urbains (&lt; 20 000 hab.)</td>
<td>12%</td>
</tr>
<tr>
<td>Urbains (100 000 à 20 000 hab.)</td>
<td>10%</td>
</tr>
<tr>
<td>Urbains (&gt; 100 000 hab.)</td>
<td>8%</td>
</tr>
<tr>
<td>Agglo. parisienne (hors Paris)</td>
<td>6%</td>
</tr>
<tr>
<td>Ville de Paris</td>
<td>4%</td>
</tr>
<tr>
<td>Ensemble</td>
<td>2%</td>
</tr>
</tbody>
</table>
Conclusion

Three crucial ‘parameters’ to find the best compromises

• Balance between wage progression, control of costs, redistribution

• Targeted support towards the most vulnerable to energy prices

• Balance between high redistribution costs and high targeting costs
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Papers available on my personal web page at:

A Potential Virtuous Cycle for Activity and Employment

If the sharing of the payroll tax cuts actually reduces the relative labour costs

Structural change
Increase in employment intensity

Carbon Tax - Lower Social Contributions

Oil bill alleviation
Reduced levies on national incomes

Higher domestic consumption

Higher employment

Tax burden transfer
Decrease in production price

Higher production

Higher competitiveness

If part of the reallocated tax burden does not ultimately fall back on production costs (rents, transfers....)
Why it is Important to Target Compensations?

| 300€/tCO₂ (1984-2004) & General tax credit (TC) & Targeted TC & measures |
|-------------------------------------------------|------------------|------------------|
| Portion of the tax revenue allocated to compensations | 42,8%            | 24,3%            |
| Production price                                   | +1,3%            | +0,3%            |
| Nets wages                                         | +4,0%            | +5,7%            |
| Real GDP                                          | +0,6%            | +1,2%            |
| Employment                                         | +1,9%            | +2,7%            |
| Inequalities (Gini index)                          | -0,3 pts         | -0,4 pts         |