



Carbon pricing and the distribution of income

The case of France

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Objectives

- **General purpose** is to split the conventional representative household to assess how different household classes fare facing carbon pricing
- **+ Not-so-hidden agenda**
 - **intuition 1:** adverse distributive effects are easily compensated without compromising emissions reductions
 - **intuition 2:** linking pension issues, labour market distortions and carbon pricing in a comprehensive ecofiscal reform

Requirements

- High level of detail is needed to make the analyses relevant
 - detailed revenues and expenses for \neq household groups
 - detailed tax structure

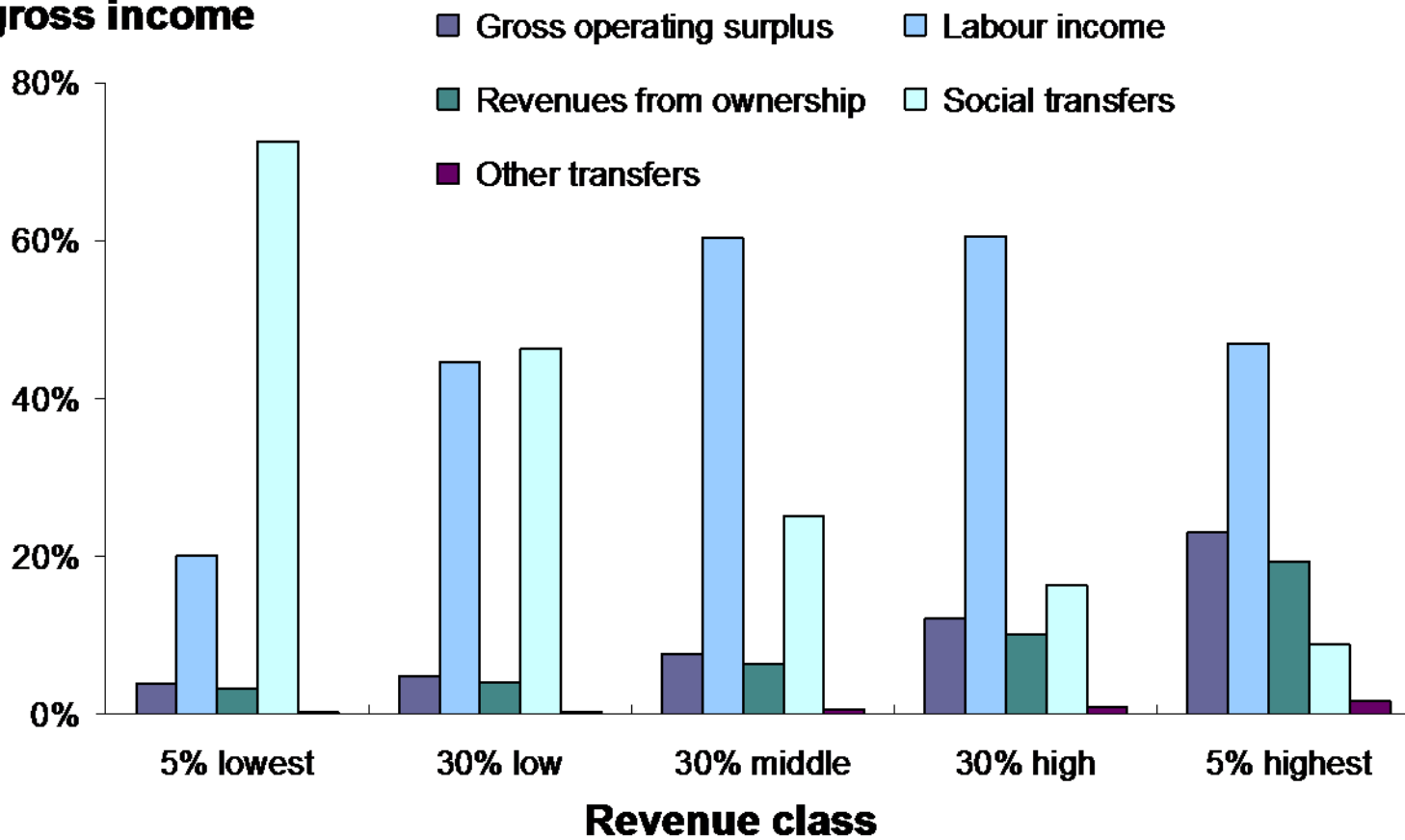
→ *focus on France w stringent data requirements*
- Modelling shell (...) must be adapted to open country, multiple households, fiscal description, equity criteria, *etc.*

Data sources and treatment

- Hybrid national accounts
 - Tracking TOE rather than abstract quasi-quantities, based on IEA and French Ministry of Industry data
 - Agent-specific margins to introduce different end-use prices
 - “Sectoral” split dictated by focus on households: out-of-the-mine oil and gas, vehicle fuels, other distributed energies, and a composite good
- INSEE Household budget surveys
 - extensive revenues & expenses structures
 - potential for econometrics of behaviour but...

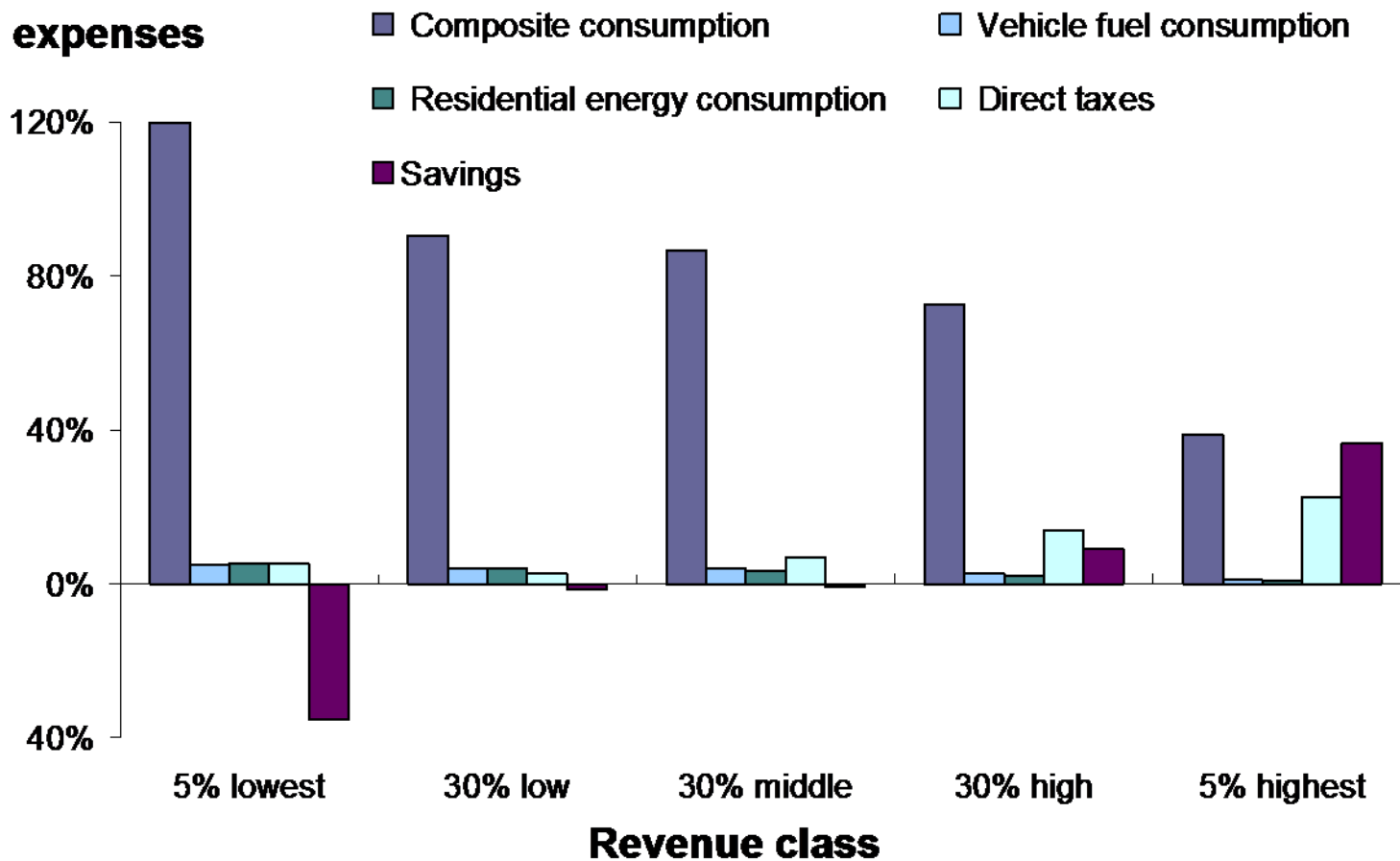
5 revenue-per-CU classes

Share of gross income



5 revenue-per-CU classes

Share of expenses

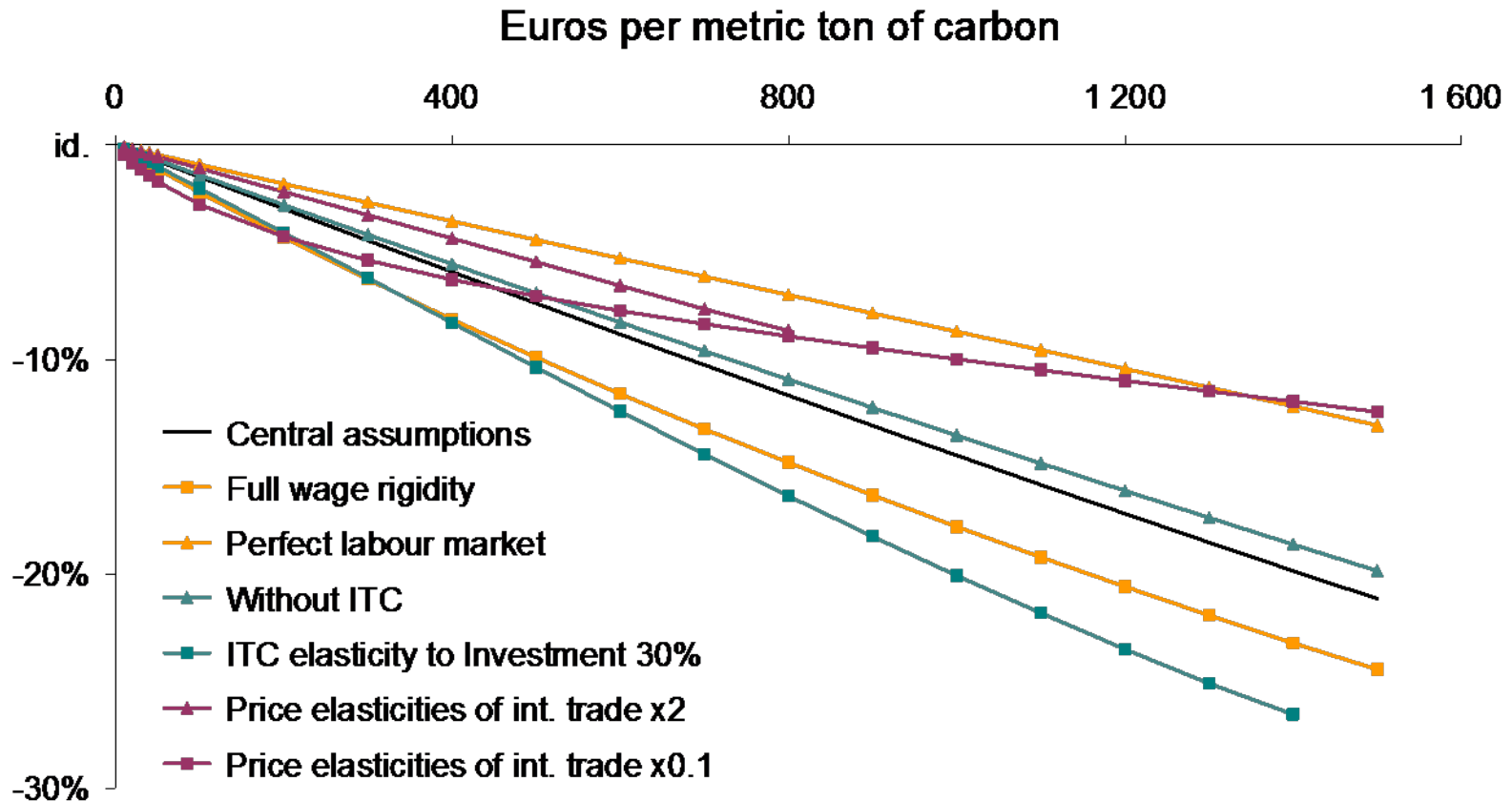


Preliminary version running...

Sensitivity analysis on main drivers

- Labour markets imperfections
 - Wage rigidities modelled by a wage curve, elasticity 10%
- Induced technical change
 - Hicks-neutral TP in composite production triggered by real investment, elasticity 5.2%
- International trade
 - Share of imports in resources elastic to price ratio, 125% for the composite good, 250% for energy goods
 - Exports elastic to price ratio, 60% / 120%

Sensitivity analysis on main drivers

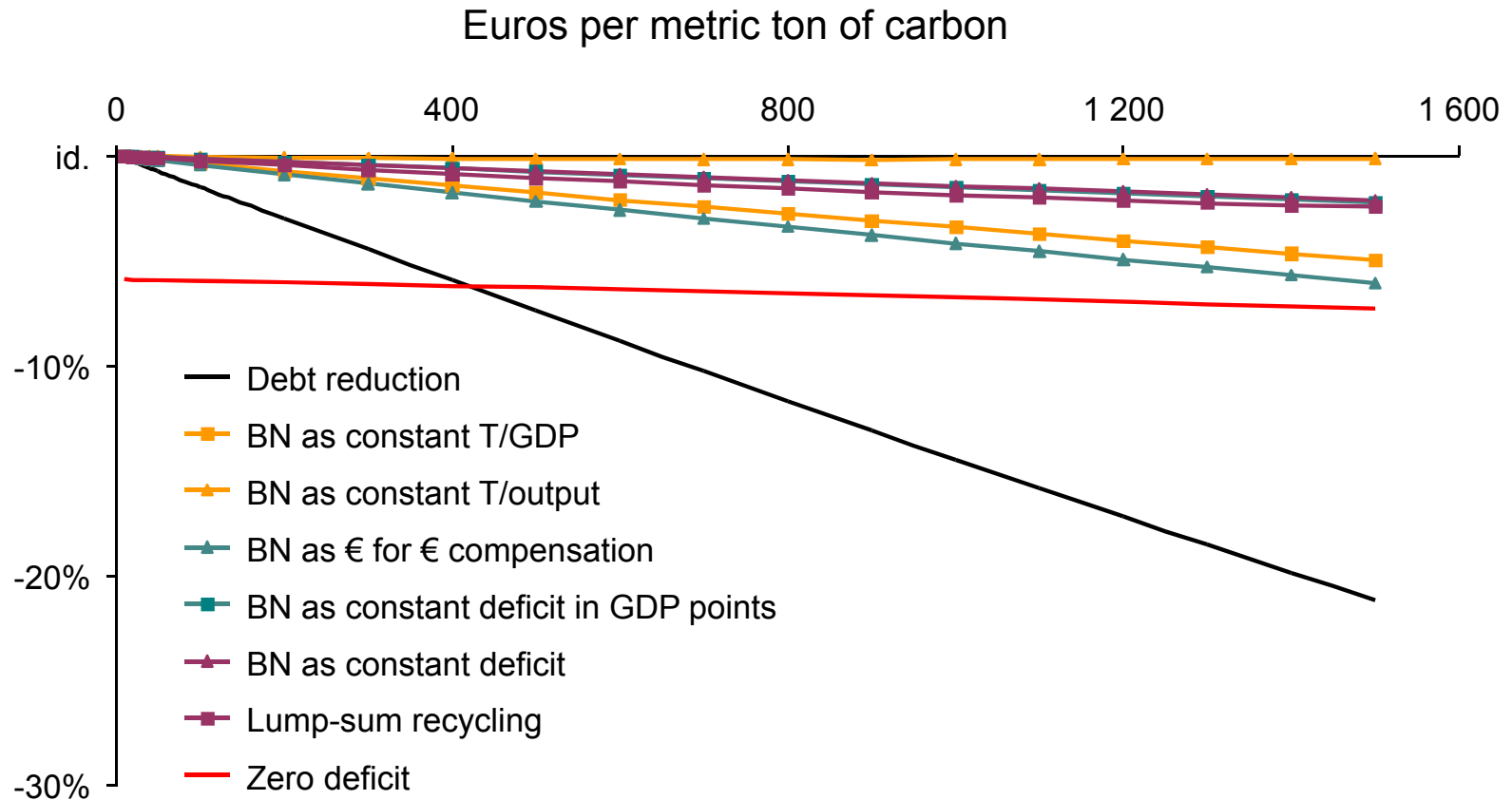


GDP impact

Preliminary policy results

- Aggregate results: recycling assumption paramount
 - Lump-sum vs. debt reduction vs. fiscal reform under budget neutrality
 - specifics of budget neutrality matter!
- Income distribution: depends on aggregate result

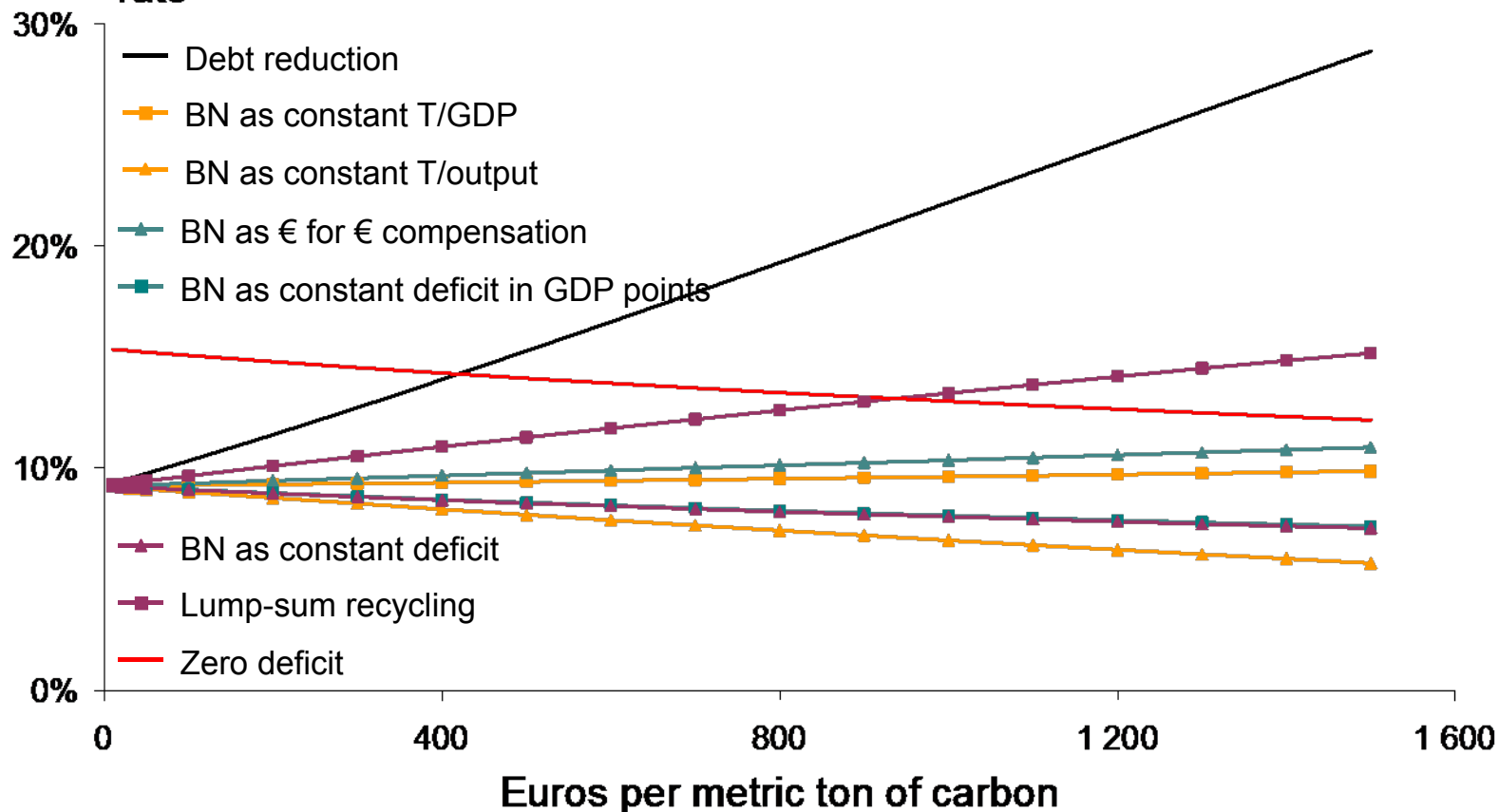
Recycling assumptions and GDP impacts



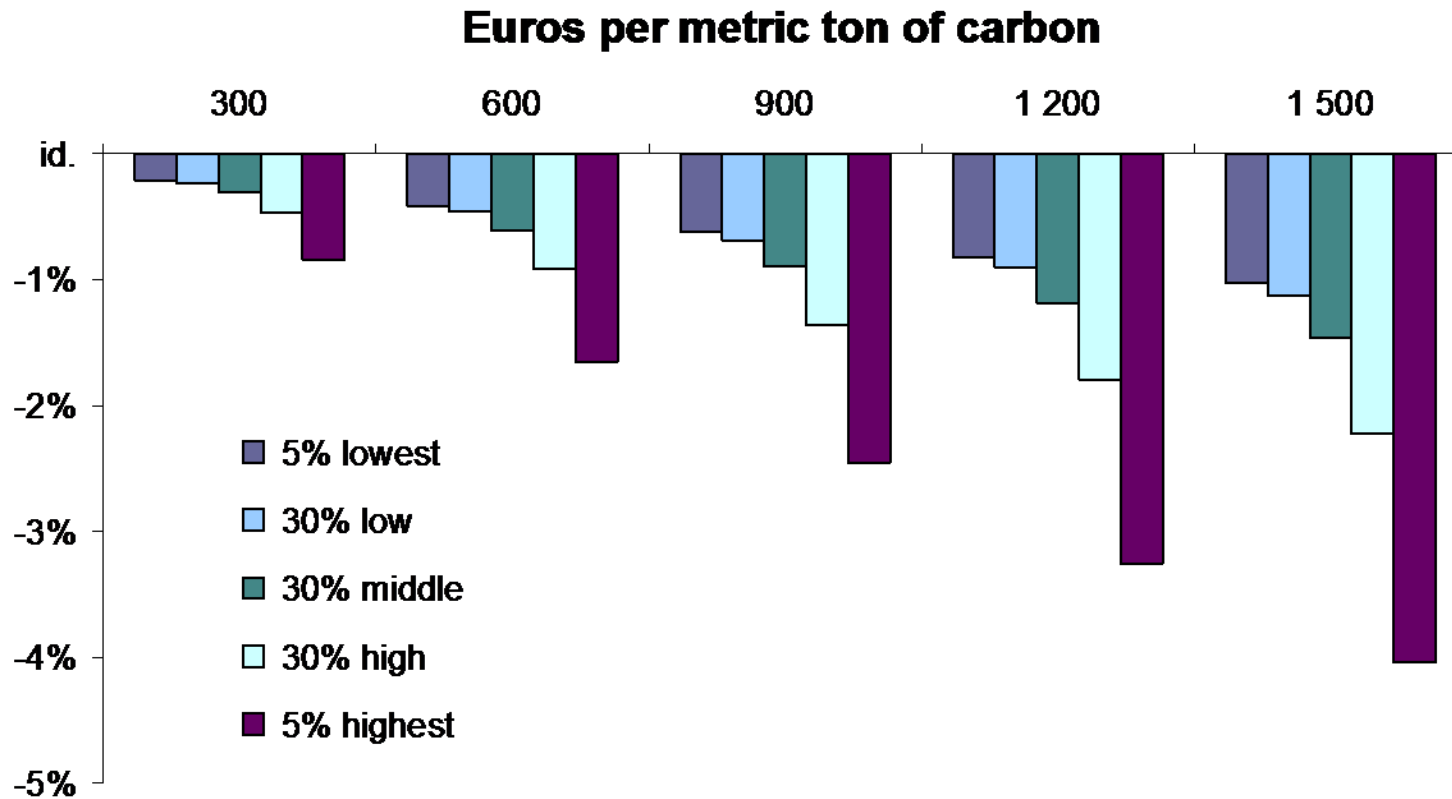
GDP Impact

Recycling assumptions and unemployment

Unemployment rate

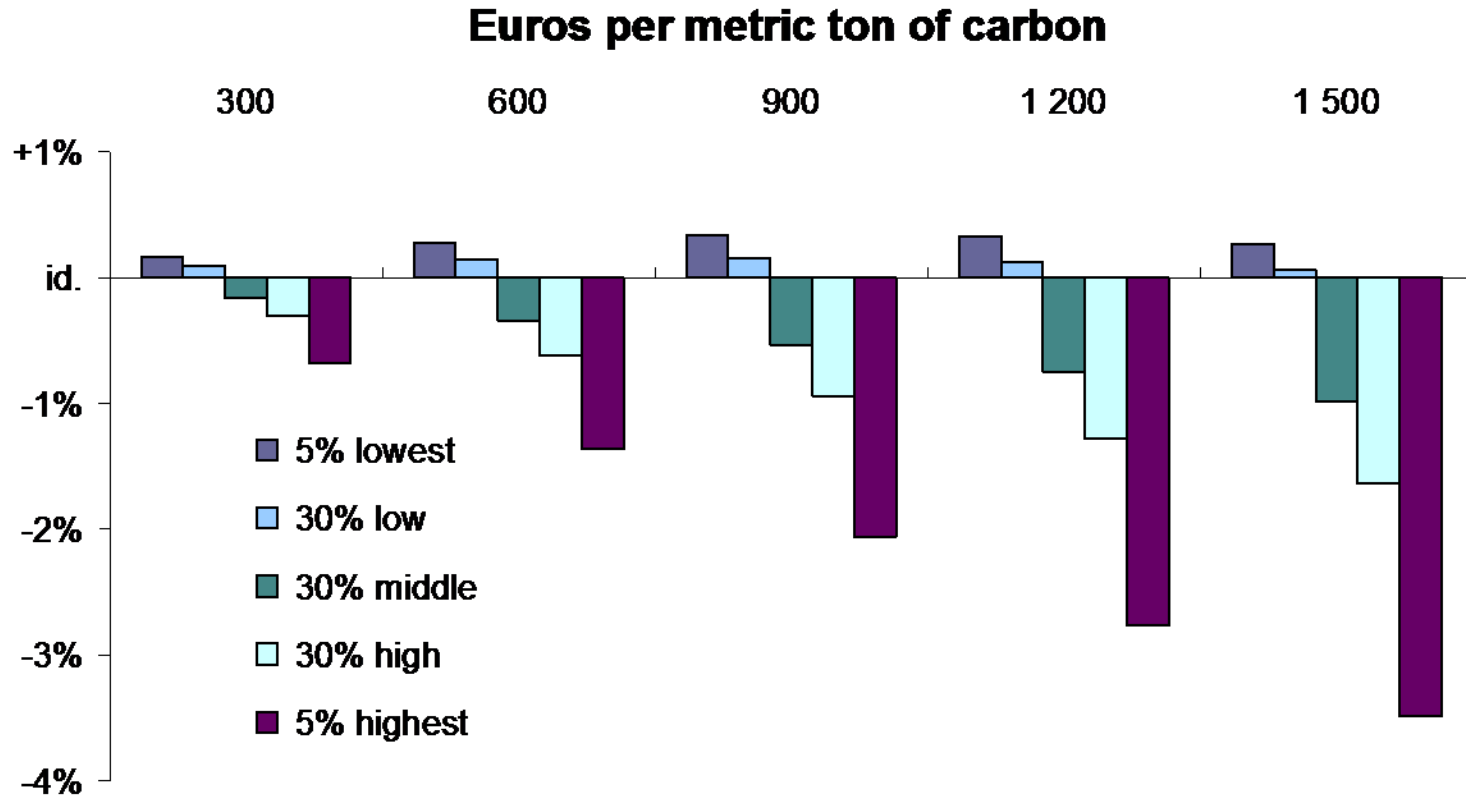


Distribution: BN as constant T/GDP



**Revenue
impact**

Distribution: BN as constant T/output



**Revenue
impact**

Next steps

- Refine crudest modelling assumptions
- Control model behaviour
- Project to 2020?
- Implement equity indicators
- More policy runs...