

FUEL TAXES AND THE POOR

THE DISTRIBUTIONAL EFFECTS OF
GASOLINE TAXATION AND THEIR IMPLICATIONS
FOR CLIMATE POLICY

EDITED BY

THOMAS STERNER



The impacts of
energy and climate policies
on

Inequalities

Thomas Sterner

Collège de France

Univ. of Gothenburg

CHALMERS CLIMATE CALCULATOR

Christian Azar, Daniel Johansson (Frt) (1 region vs)

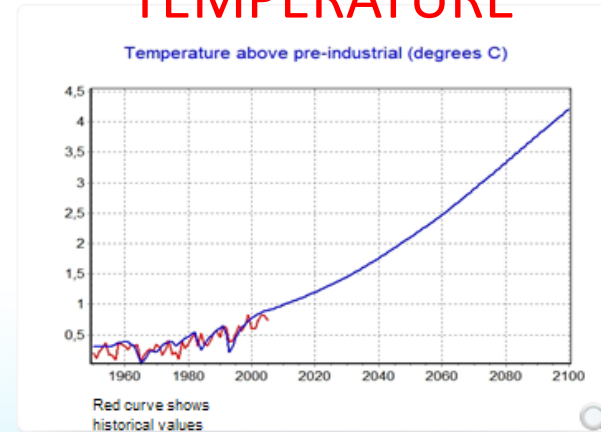
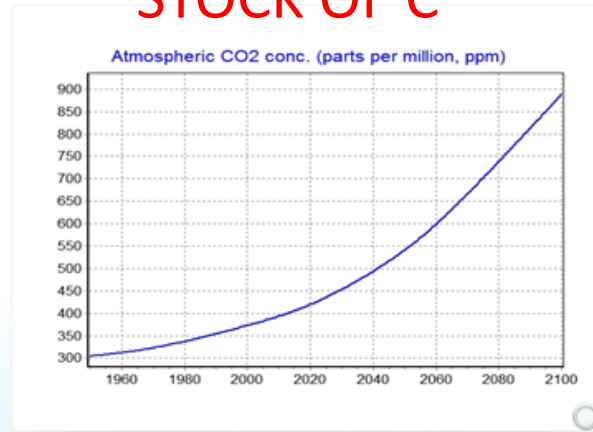
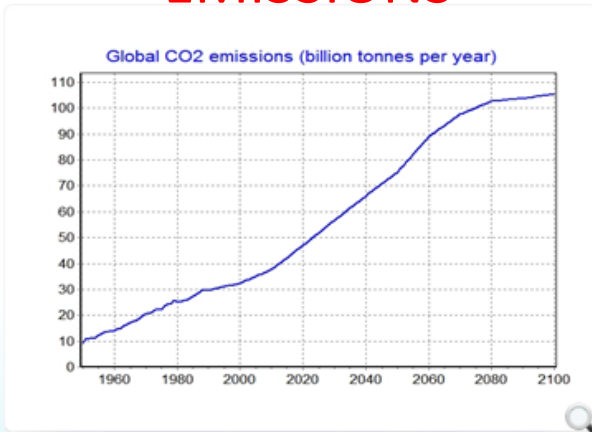


CHALMERS

EMISSIONS

STOCK OF C

TEMPERATURE



Emission scenario ?

Emission reductions start in year

Rate of reduction (% per year)

Climate sensitivity ?

- 1.5 °C per CO₂ doubling
- 3.0 °C per CO₂ doubling
- 4.5 °C per CO₂ doubling
- °C per CO₂ doubling (1 to 6)

Aerosol forcing in 2005 ?

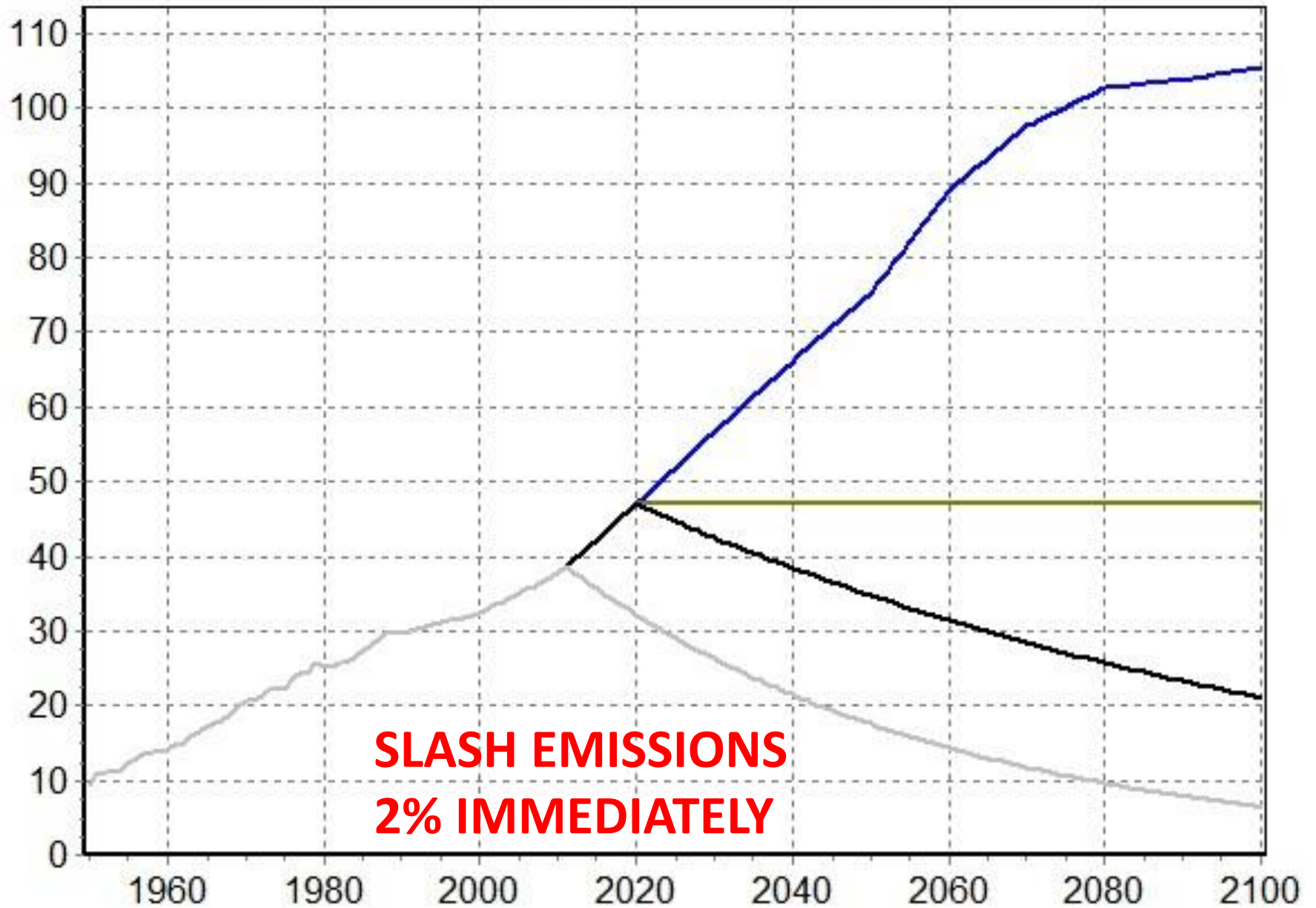
- Automatically calculated value
- W/m² (-2.2 to -0.5)

- User guide
- Model documentation
- Modeling team

GENERATE SCENARIO

CLEAR GRAPHS AND GENERATE

Global CO2 emissions (billion tonnes per year)



Growth and Environment 101

- Can we increase income 3% p a & reduce fossil emissions 2% ?
- Take the transport sector: A simple model for fuel demand is
 $Q = Y^a P^b$
- Elasticities 1 for income Y , -0.7 for price P

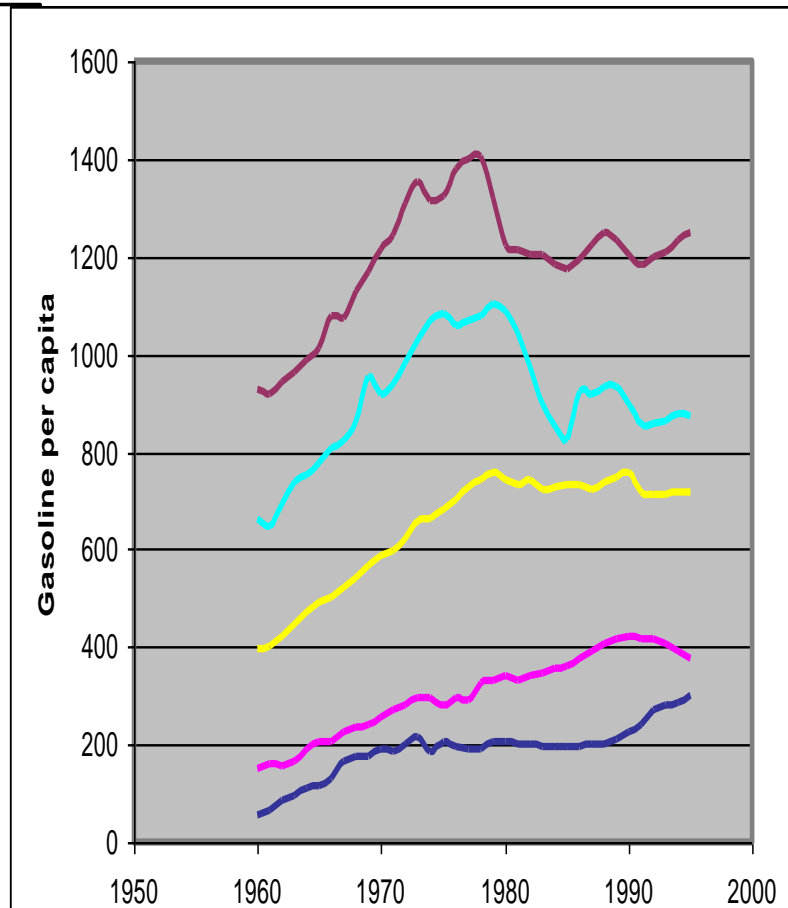
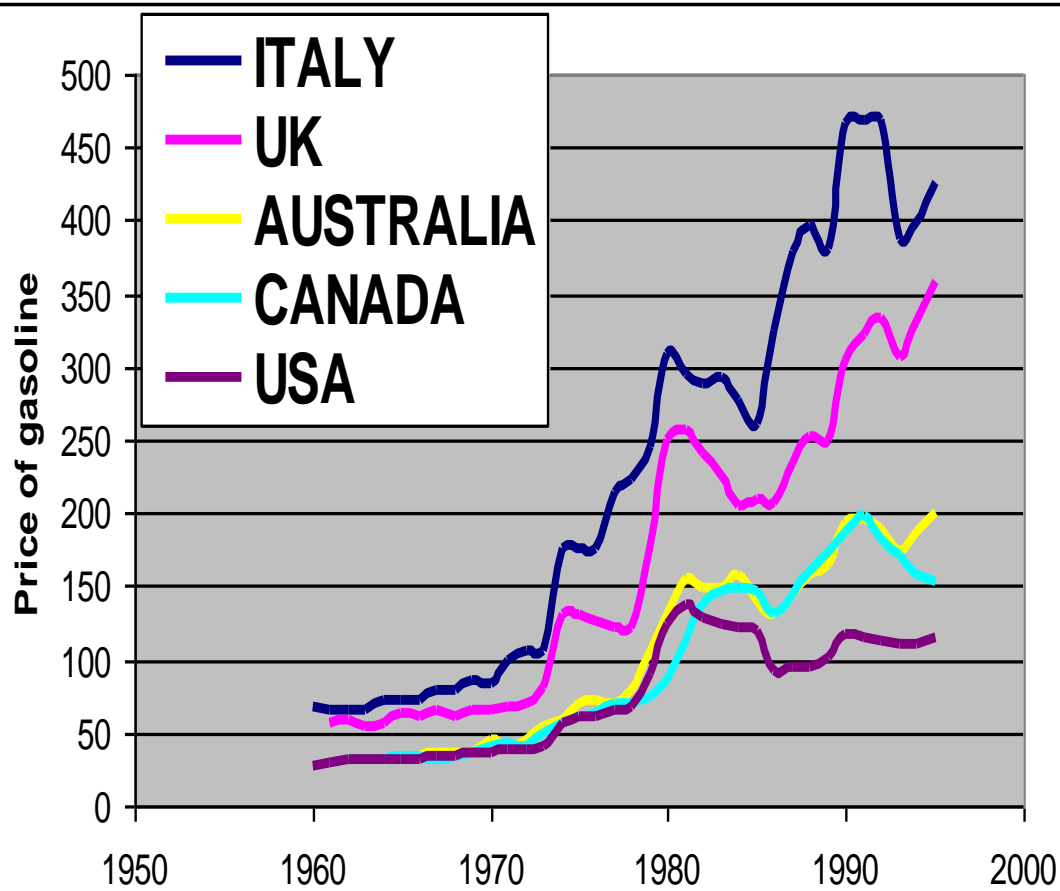
Just raise fuel price 7% p a !*

- Because $P = (0.98/1.03)^{-(1/0.7)} = 1.074$

Petrol

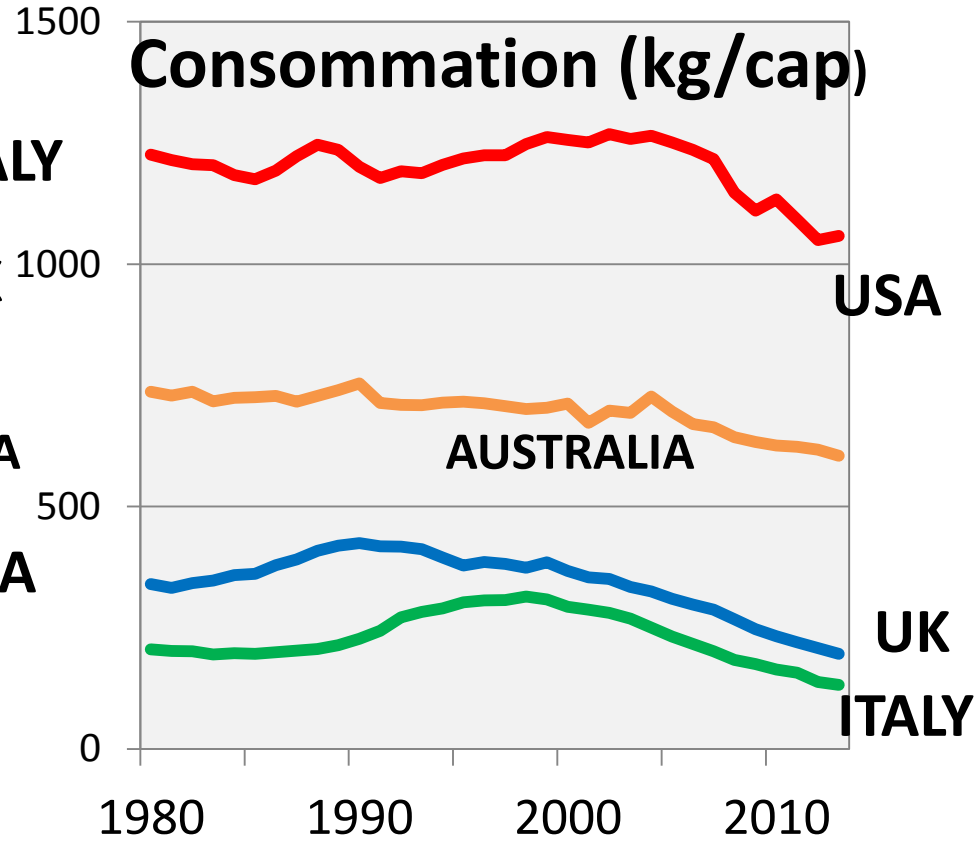
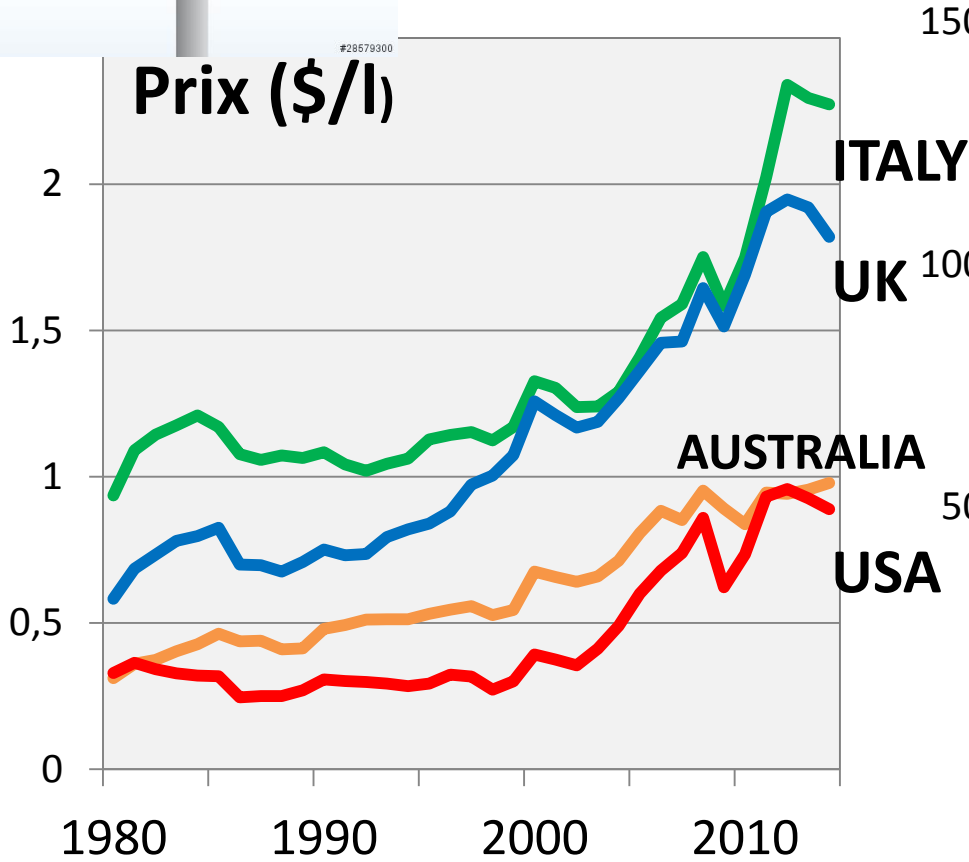
prices

Consumption/cap





Prix de l'essence et émissions



Reactions?









Nigeria abolished fuel subsidy Jan 1

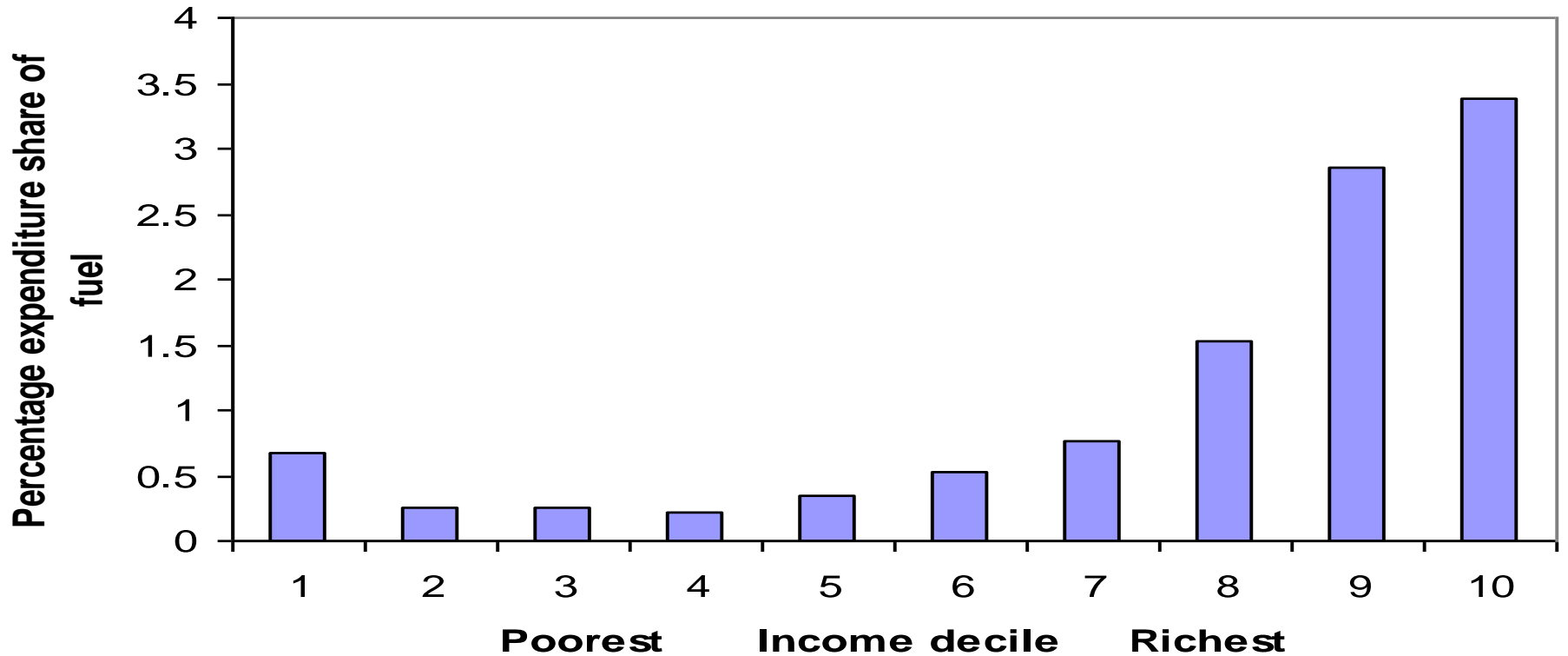


Why are people upset?

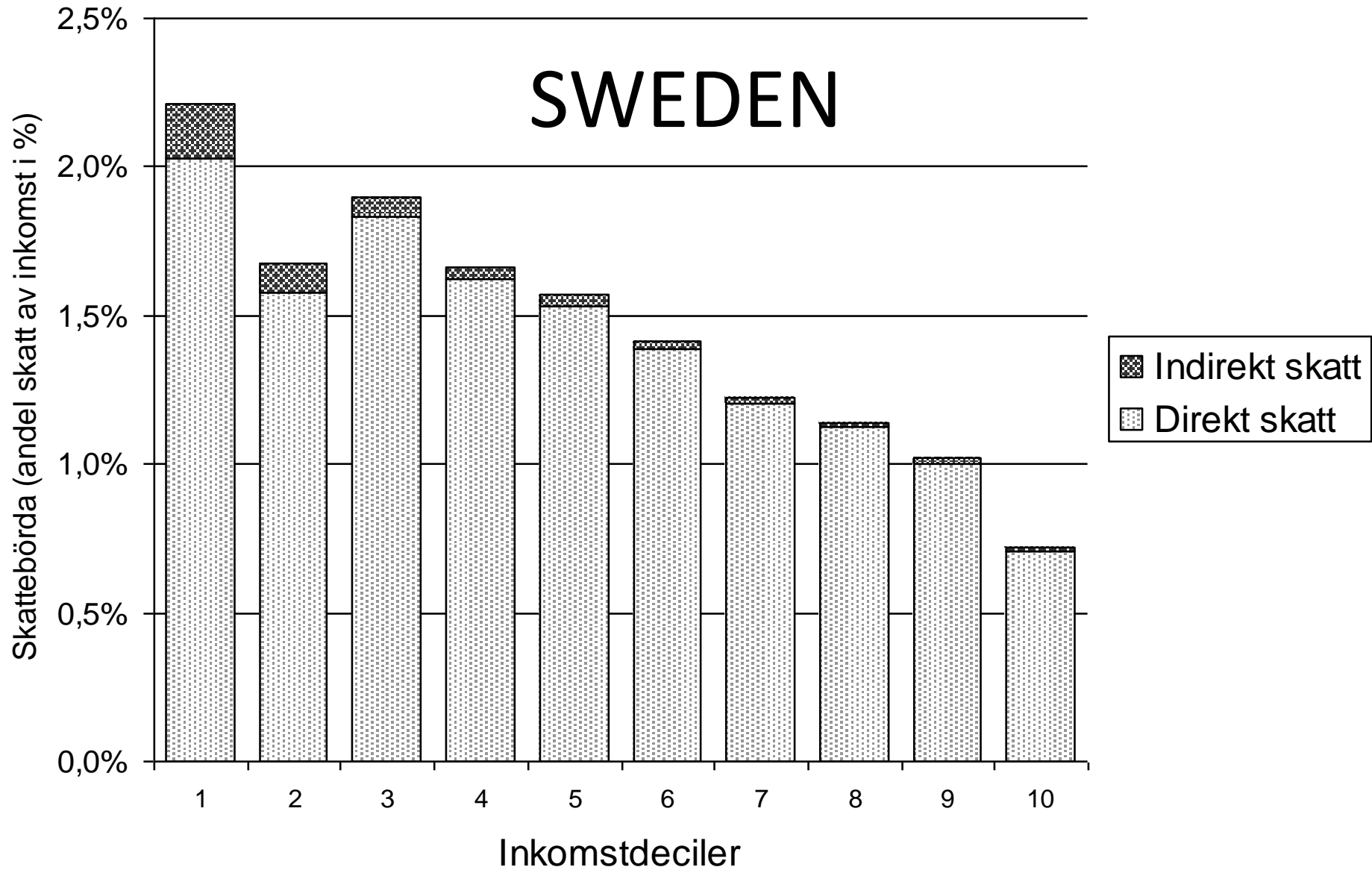
- Because the reforms might hurt the poor?
- How judge?
- Budgetshares!

S Africa

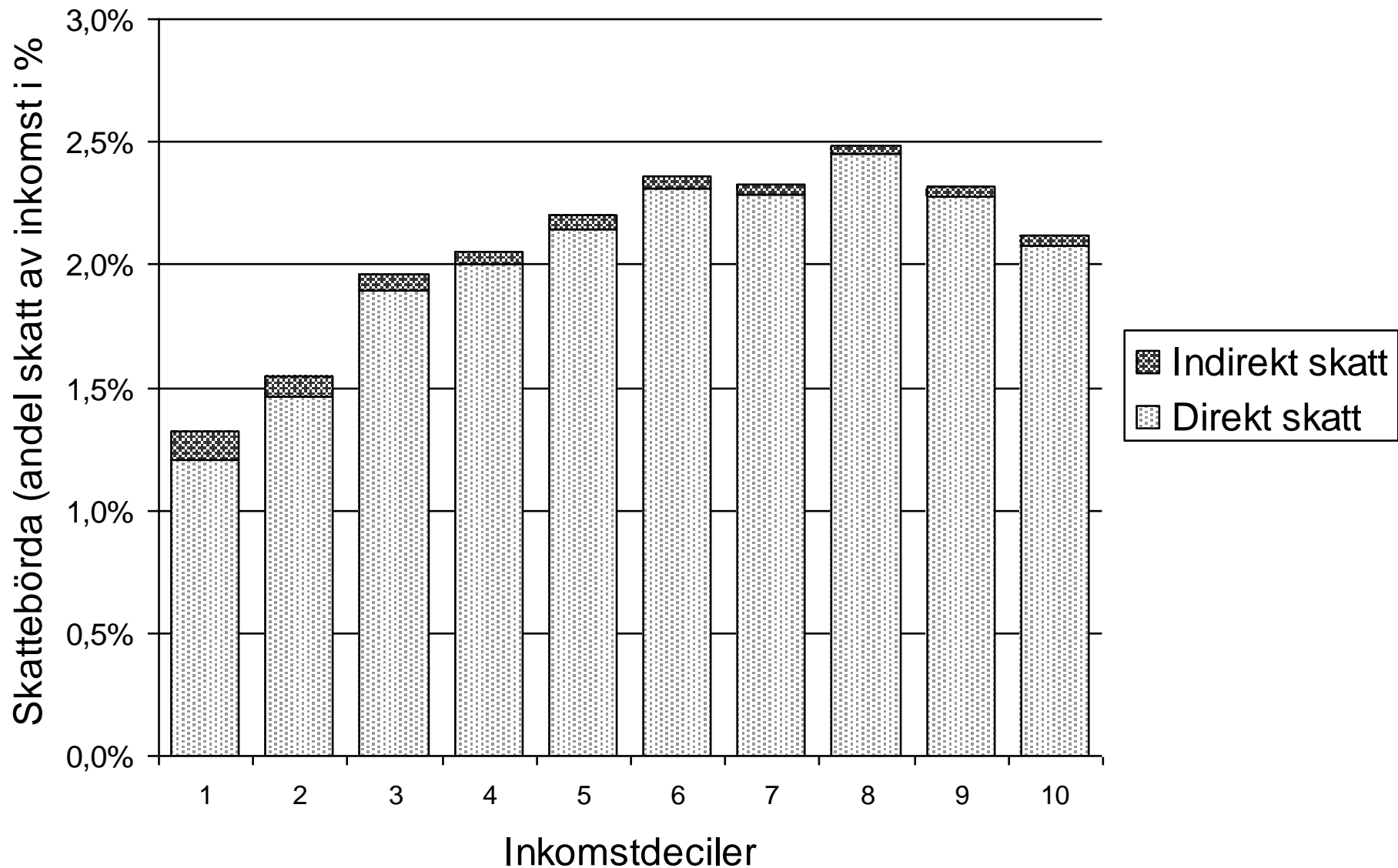
Figure 1: Fuel expenditure as a share of total household expenditure



SWEDEN

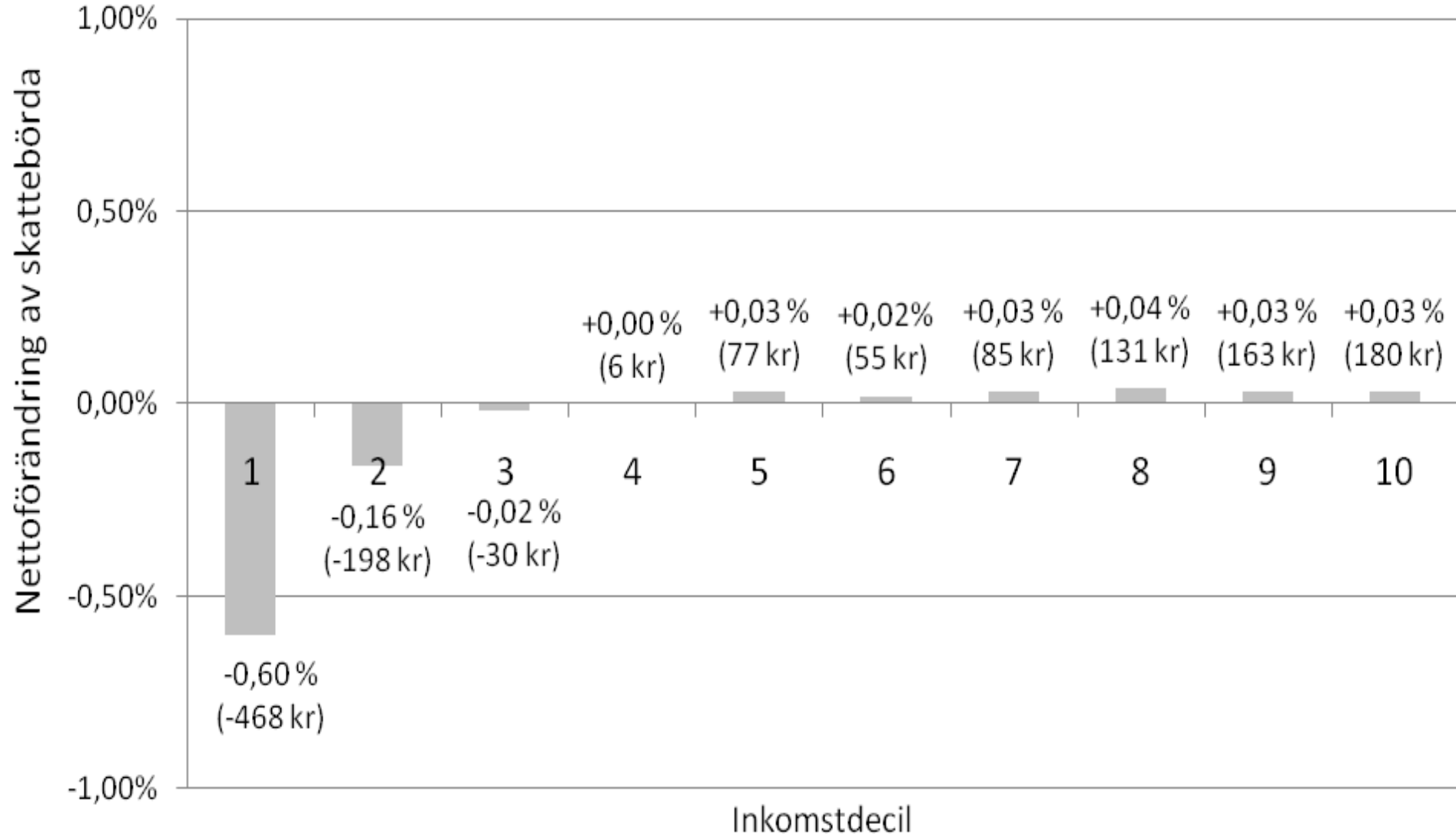


- Gasoline /Diesel taxes by **income** decile

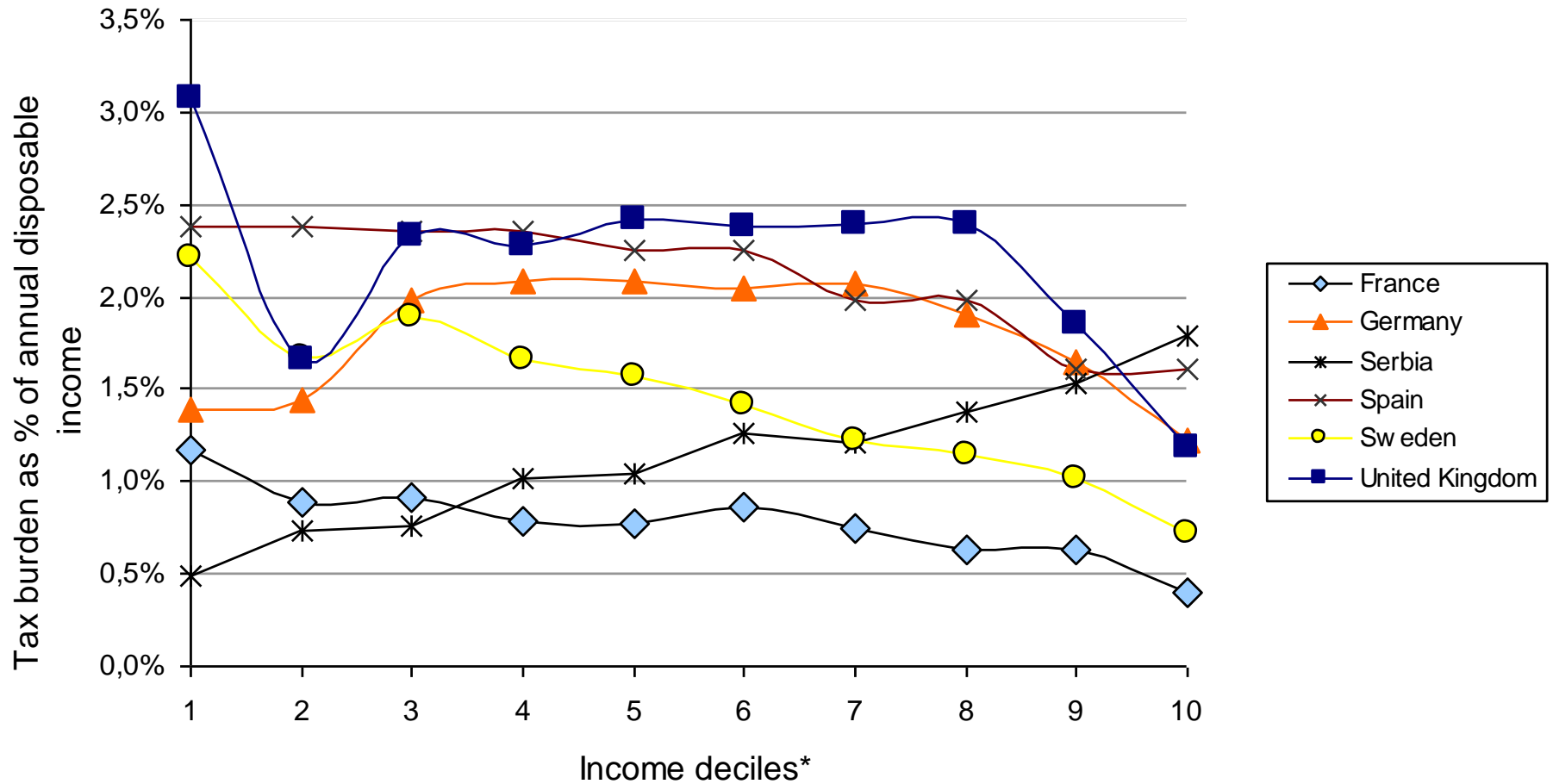


Gasoline /Diesel taxes by **Expenditure** decile

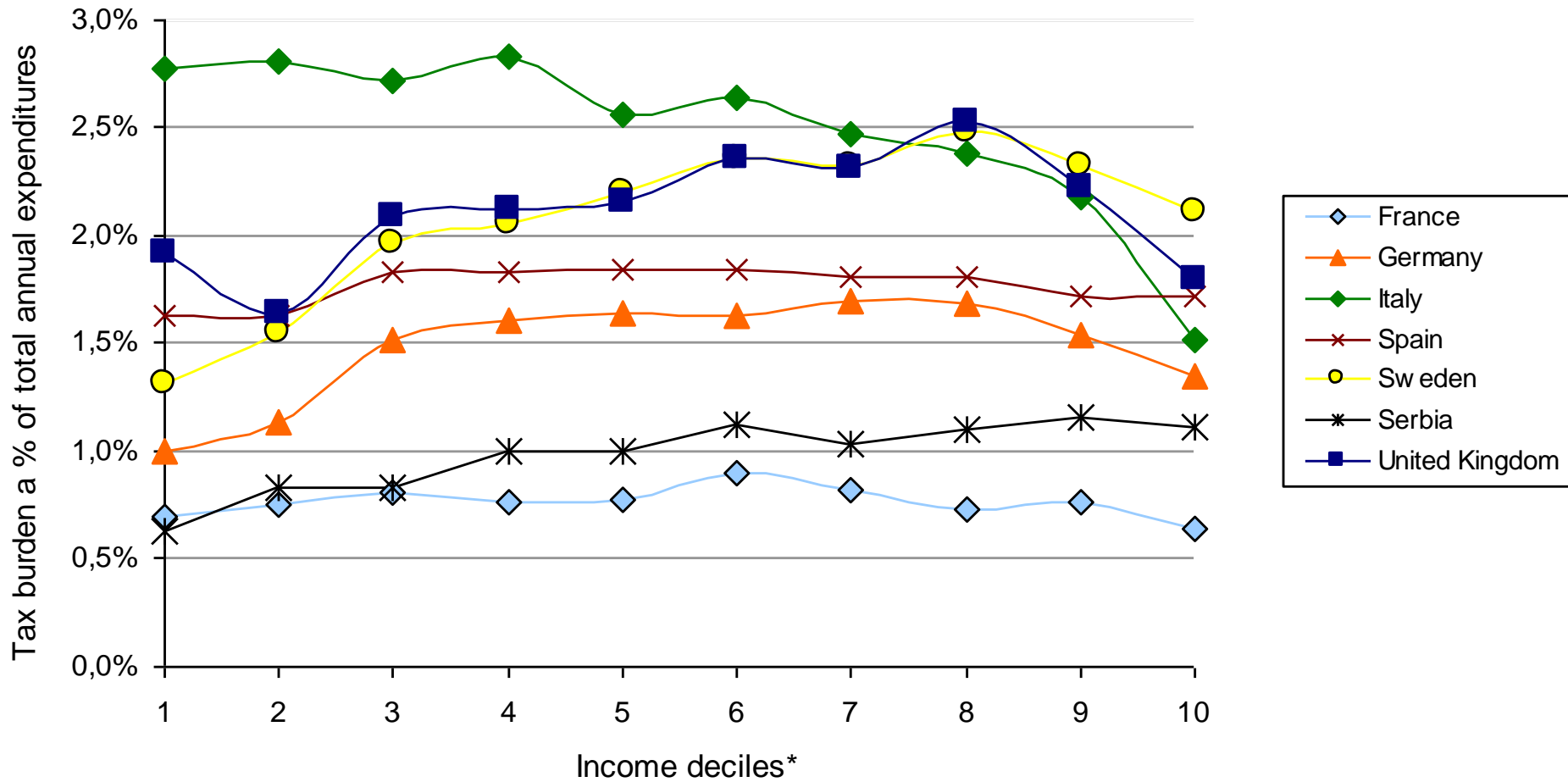
Skatteväxling 70 öre/l mot sänkt matmoms



Using Income



Using Expenditure

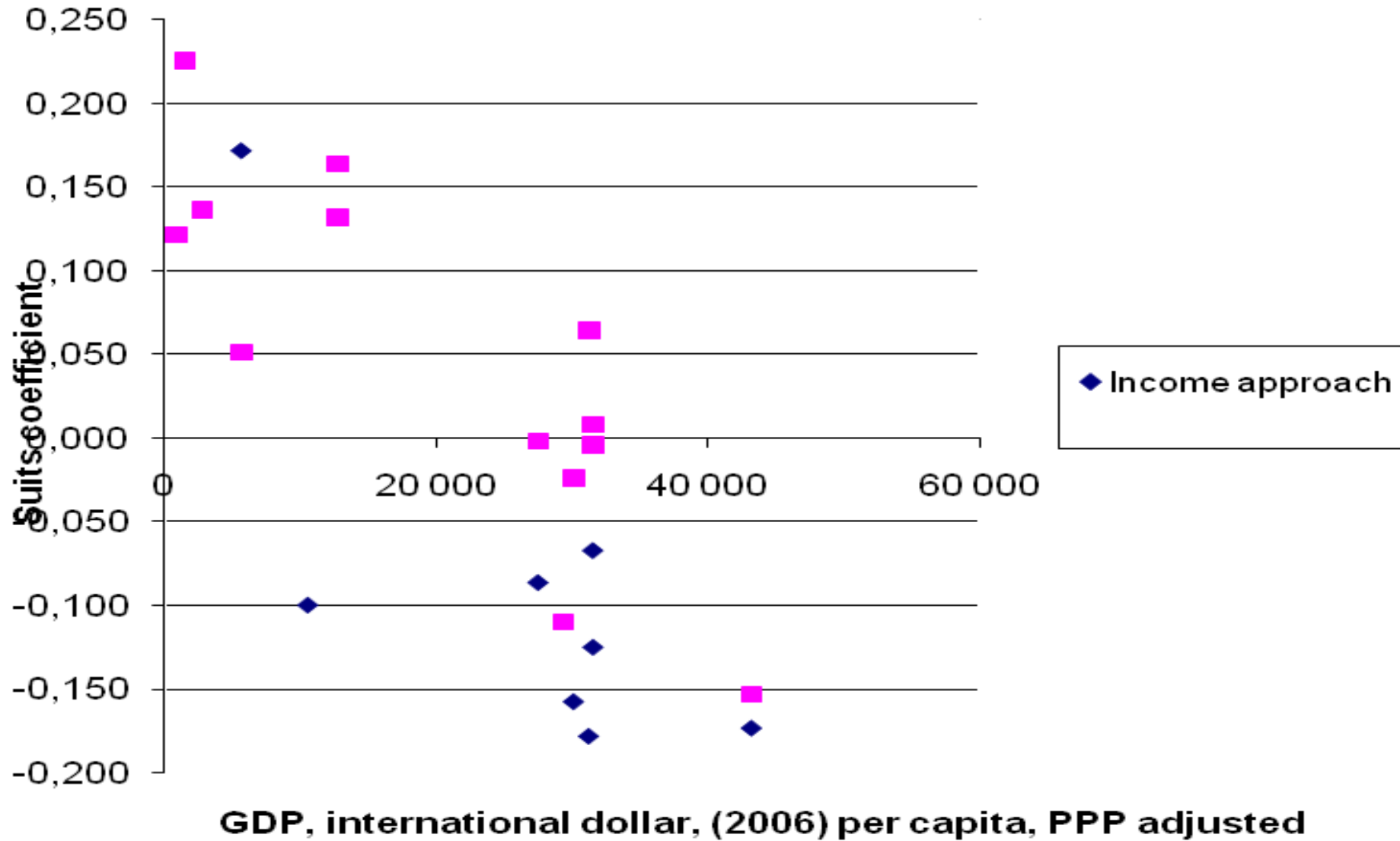


Thank you

- PS Isn't strange that so many people ONLY talk about the poor when trying to stop environmental reforms?
- It is in principle easy to design progressive taxes but most political reforms the last 30 years have reduced or abolished progressivity!

- A few extra

Progressivity vs Income





SPECIAL FEAT

Debate on fuel subsid

If you really care about poverty you should subsidise things the poor need the most - and that is surely not

When fuel prices jumped 30% at the pump, increasing from GHc0.857 (US\$0.60) to GHc1.11 (US\$0.78) per litre for petrol, the initial response by many was to ask



Back to the USA

- West and Williams: for USA
- More regressive with Income than Expenditures
- Less regressive when you take adaptation into account
- Even less regressive with individual elasticity
- Can be progressive with refunding of revenue