

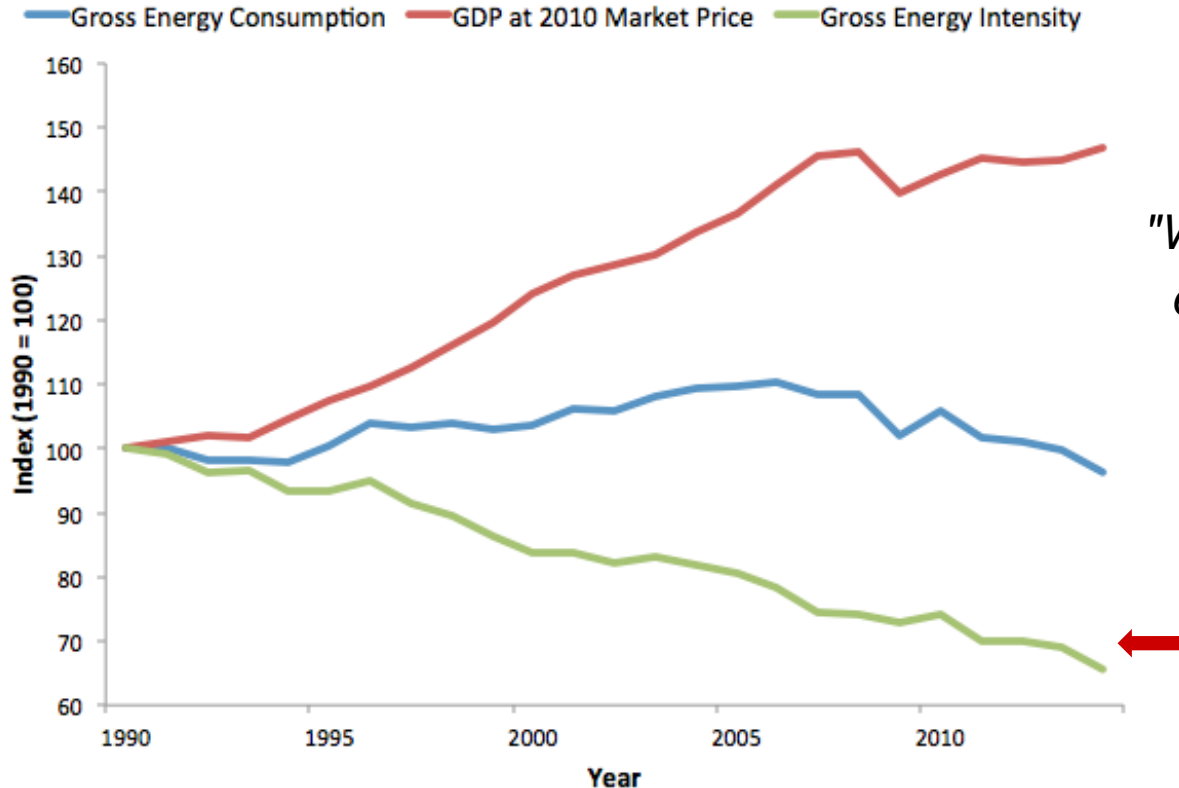
Decomposing Energy Consumption in Europe: The role of structural effects and energy efficiency towards decoupling

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Decoupling of energy consumption in the EU



"What are the main drivers of energy consumption in EU states and what are the implications of this decoupling?"

Methodology - Index Decomposition Analysis

Decomposition of final energy consumption into three key drivers (Ang, 2004):

1. Activity (Scale) (Q)
2. Structure (S)
3. Intensity (I)

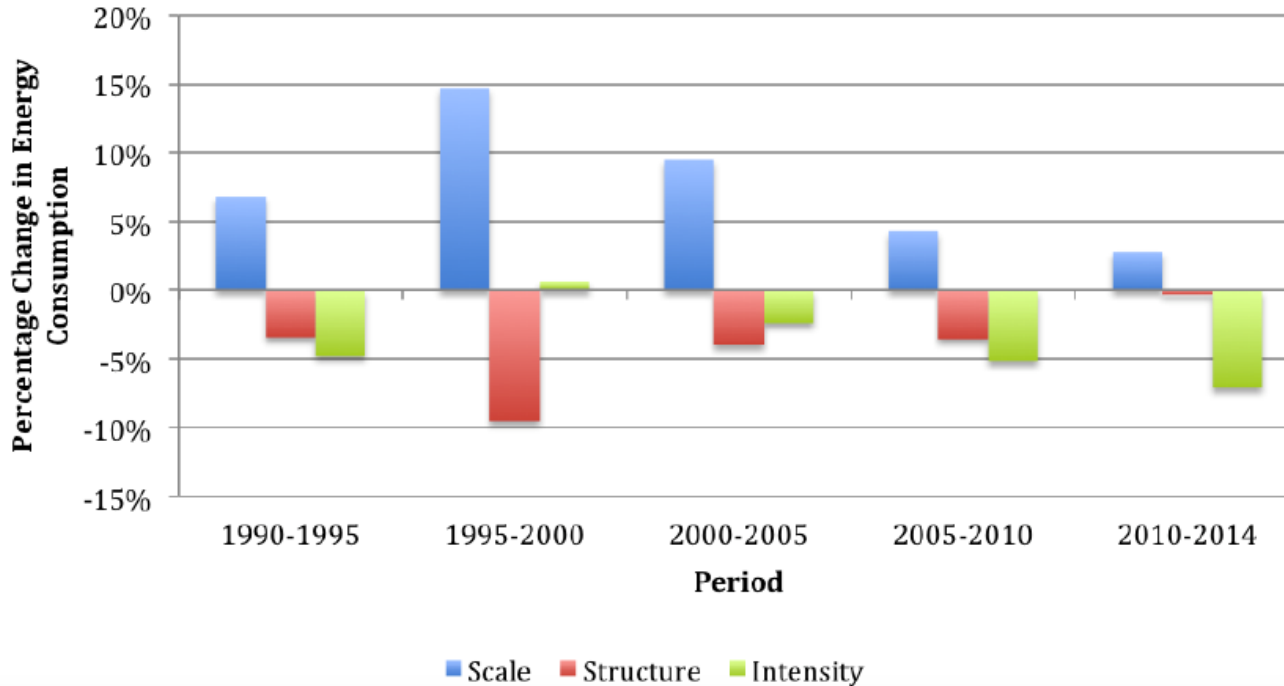
Data Sources: ODYSSEE MURE, World Input Output Database

$$E = \sum_i E_i = \sum_i Q \frac{Q_i E_i}{Q Q_i} = \sum_i Q S_i I_i$$

$$\Delta E = \Delta Q + \Delta S + \Delta I$$

$$\frac{\Delta E}{E^0} = \frac{\Delta Q}{E^0} + \frac{\Delta S}{E^0} + \frac{\Delta I}{E^0}$$

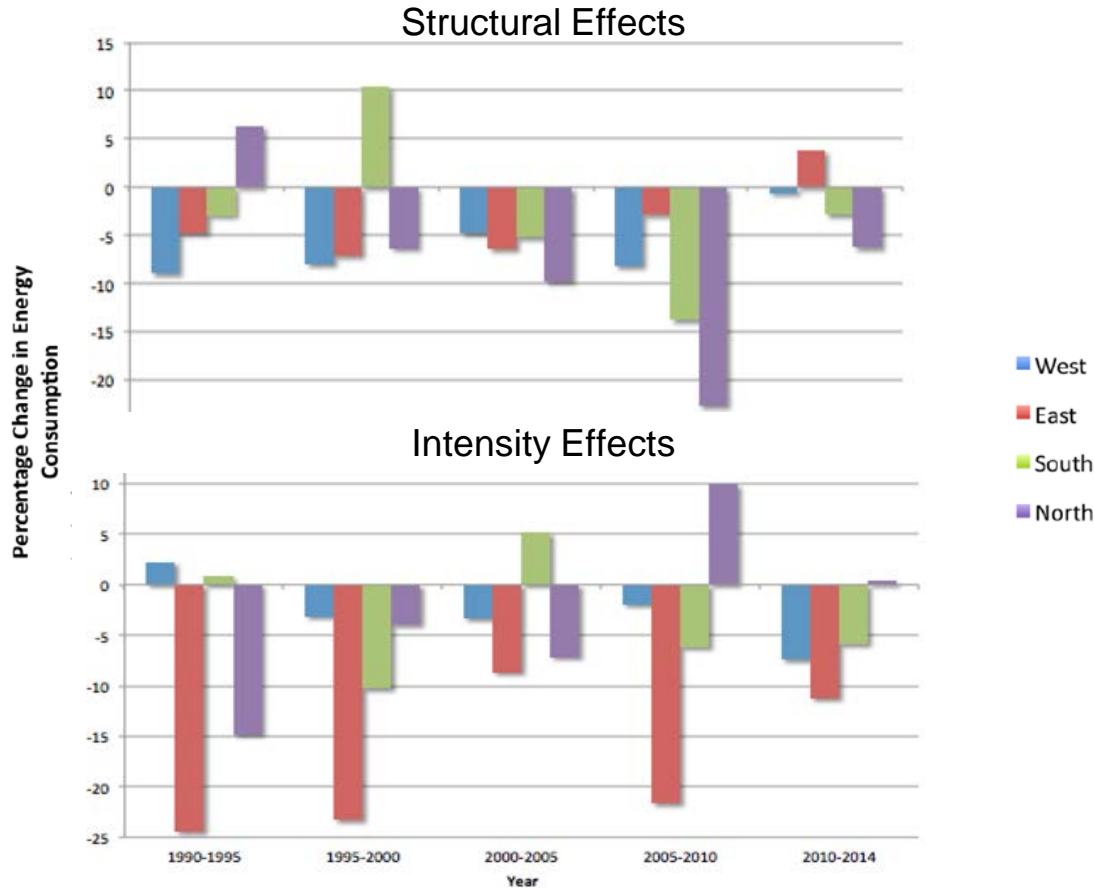
Results - European Union (28)



Large **Negative**
Structural Effects in
industry in the 1990s

Large **Negative**
Intensity Effects in all
sectors after 2000

Results - Industry by European Region



Eastern Europe showed the smallest average **Structural Effects** in the industry in the EU, but the largest average **Intensity Effects**



Intra EU Trade Offset

Conclusion & Recommendations

- A significant portion of the decoupling can be attributed to structural changes in the economy, such as outsourcing of energy intensive industries
- Energy efficiency is playing an increasingly important role in the decoupling, coinciding with an increase in energy efficiency policies

