ESRI ECONOMIC & SOCIAL RESEARCH INSTITUTE

The Global Emissions Impact of Irish Consumption

DATE
25th November 2022
VENUE
Stephen's Green Club
9 St Stephen's Green
Dublin 2

Introduction

- GHG emissions
- Climate change
- Impacts
- Measurement and accounting of GHG emissions
- Production-based
- Consumption-based

Emissions accounting: production-based

- The polluter/producer responsible : Japan is responsible for the emissions created to produce a car
- Measures GHG emitted within Ireland
  - Production sectors
  - Households
  - Government
- 60 Mt in Ireland
- Measurements used for targets and policies

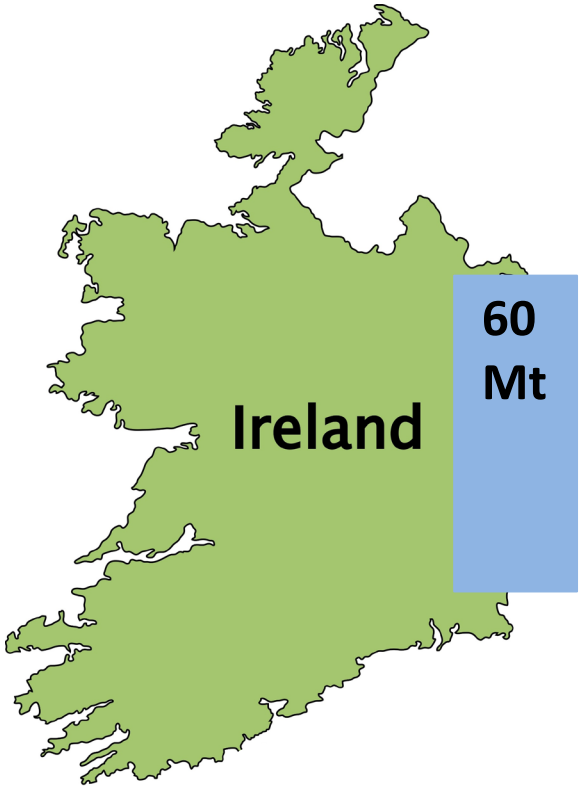
Emissions accounting: consumption-based

- Consumer is responsible: Ireland is responsible for the emissions created to produce its imported Japanese car
- Trade
- Consumption-based emissions = production based emissions – emissions in exports + emissions in imports
- Consumption-based accounting is argued to be more fair and effective and is gaining traction

Calculating consumption-based emissions

- Complex
- Input-output basis
- EXIOBASE
- I3E model
- Up to date trade data
- Work in progress

Production-based emissions in 2019



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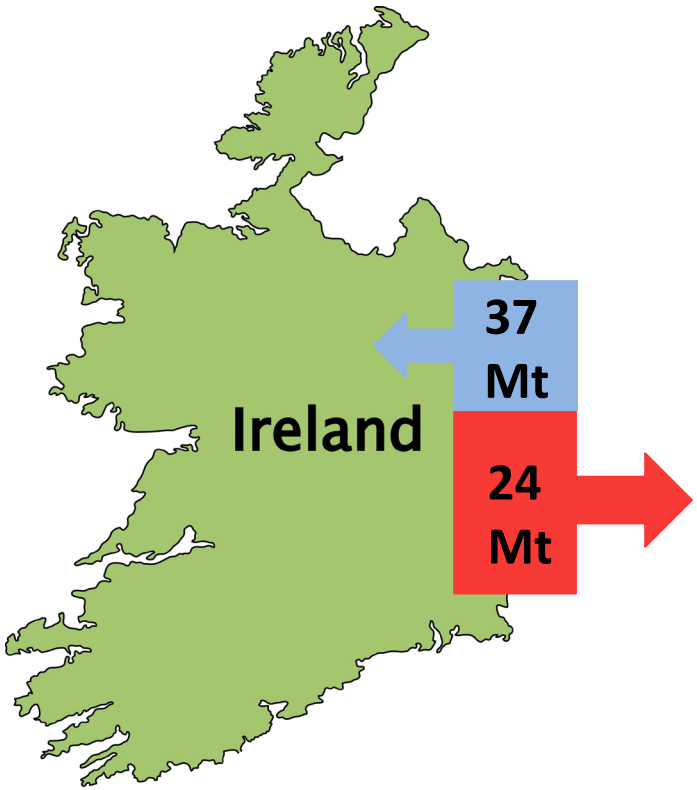

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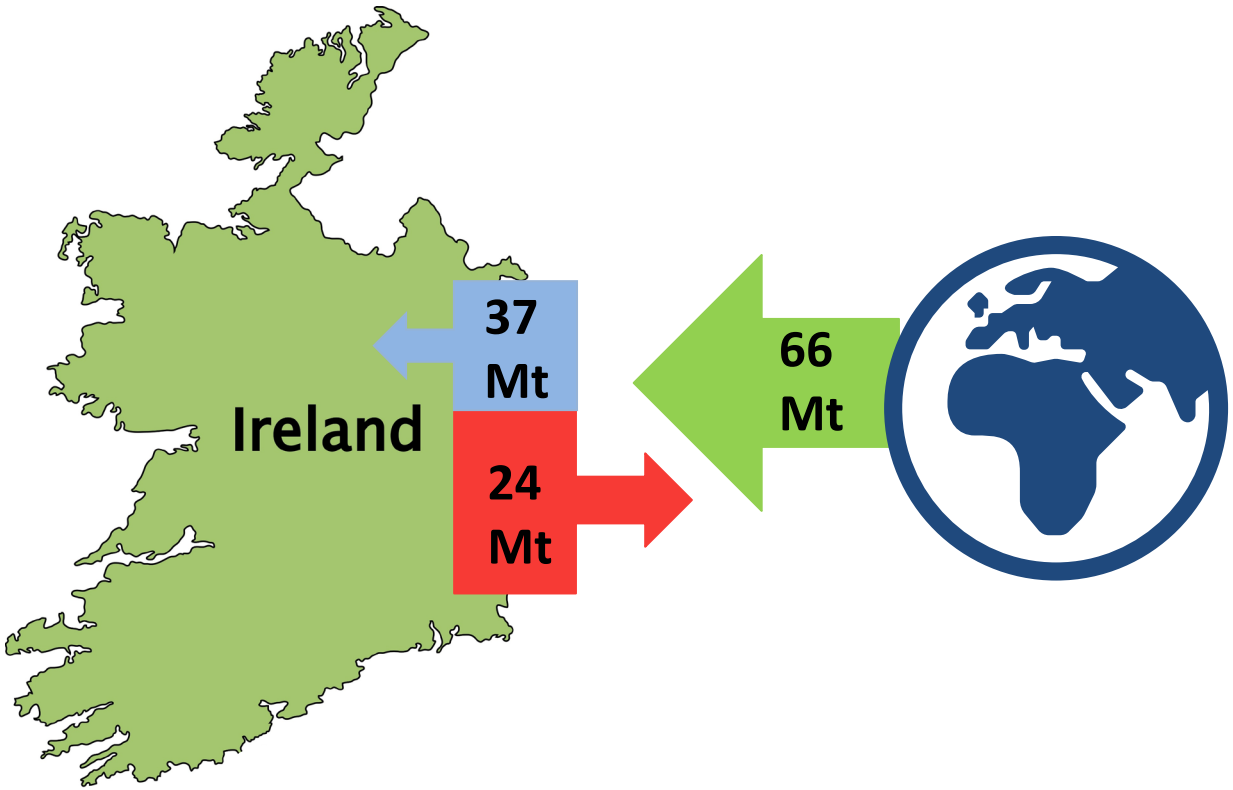

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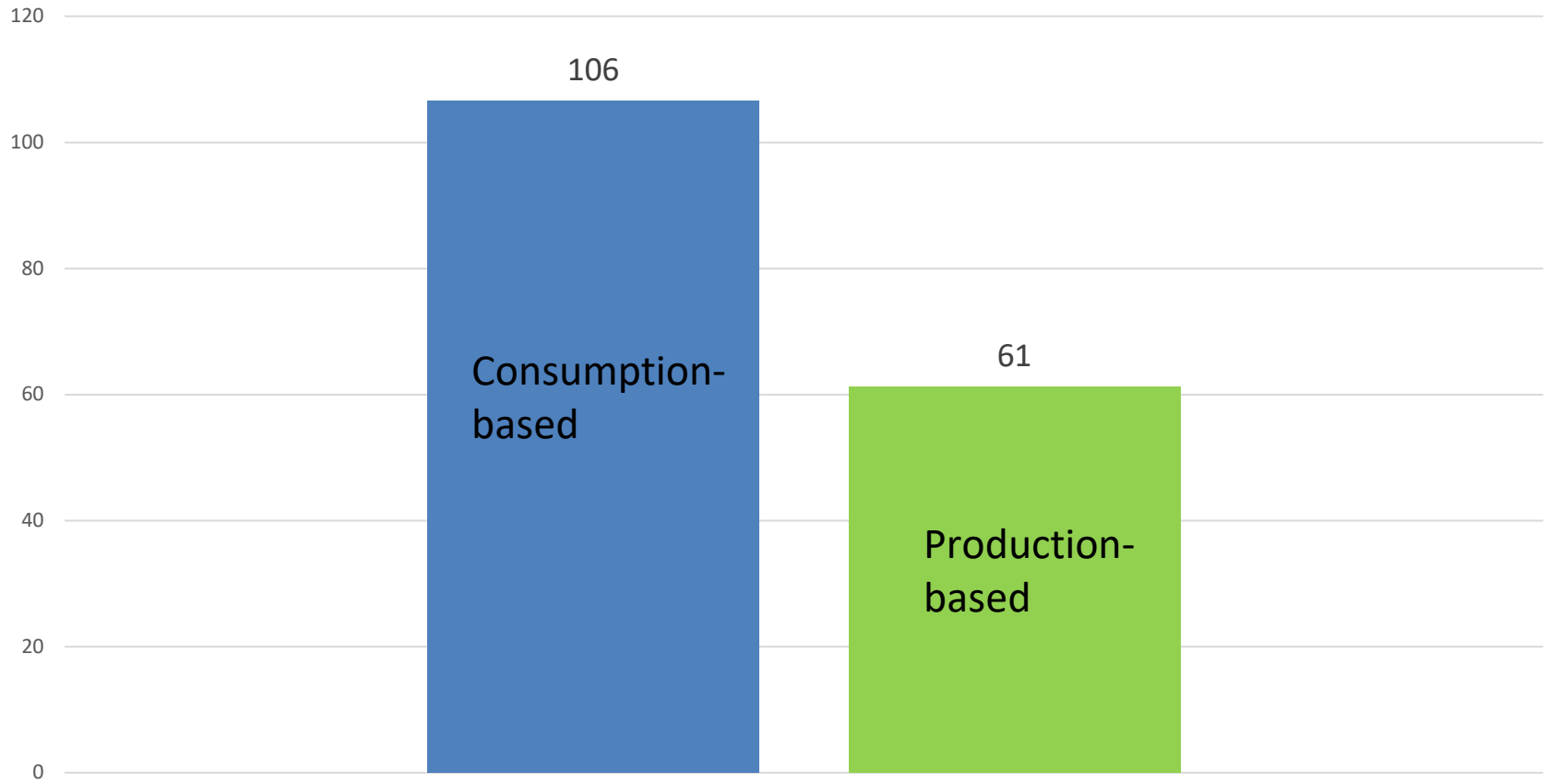
CBA versus PBA



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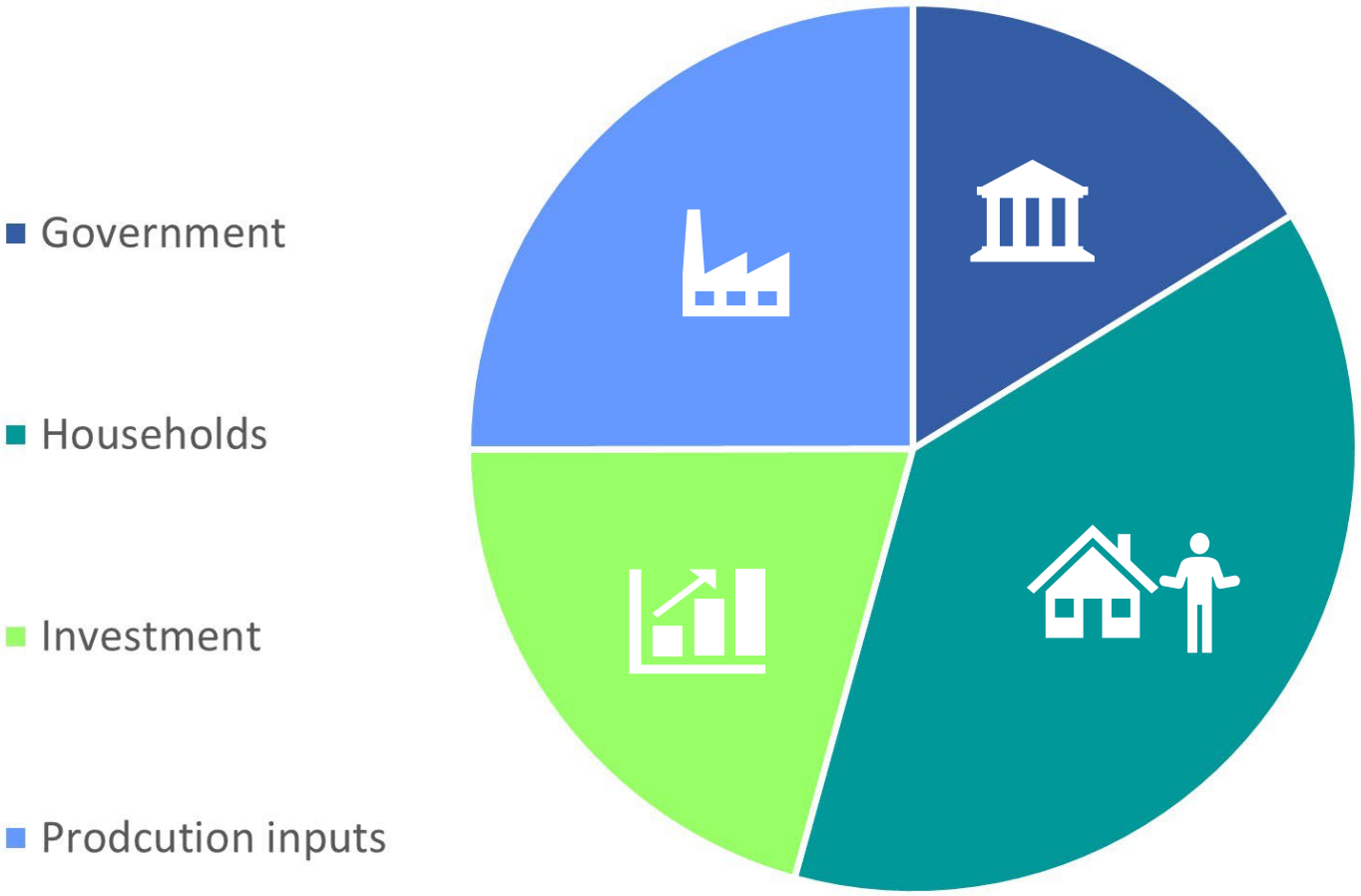
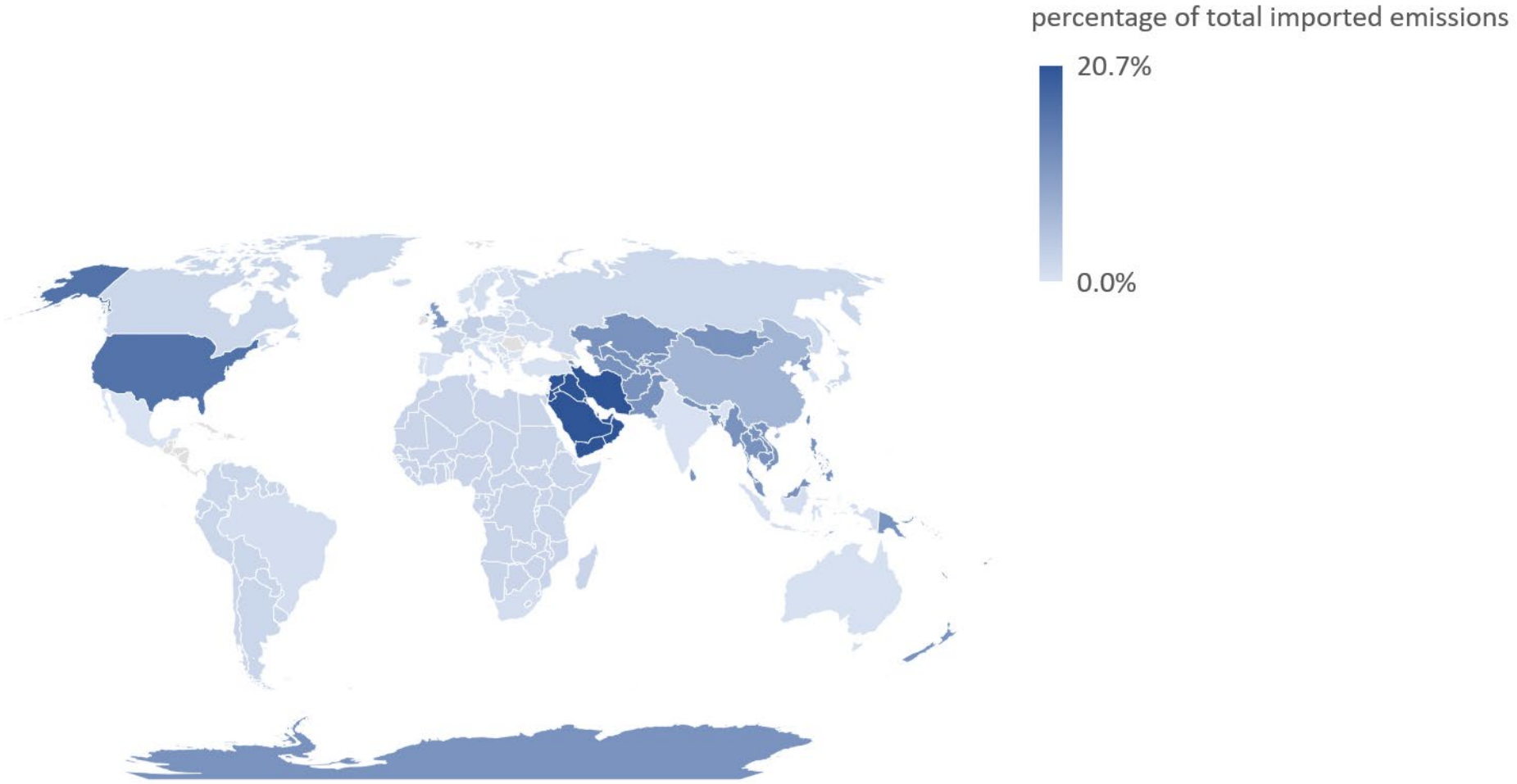
Who imports?



Share of emissions embedded in imports

From where?



Conclusions

- Irish global carbon footprint is a lot higher than its national footprint
- To reduce our footprint we would need to consider our consumption patterns and impacts outside of our borders

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The Global Emissions Impact of Irish Consumption.

Economic & Distributional Impacts of a 'Green VAT'.

Miguel Tovar Reanos, Kelly de Bruin, David Meier, and Aykut Mert Yakut

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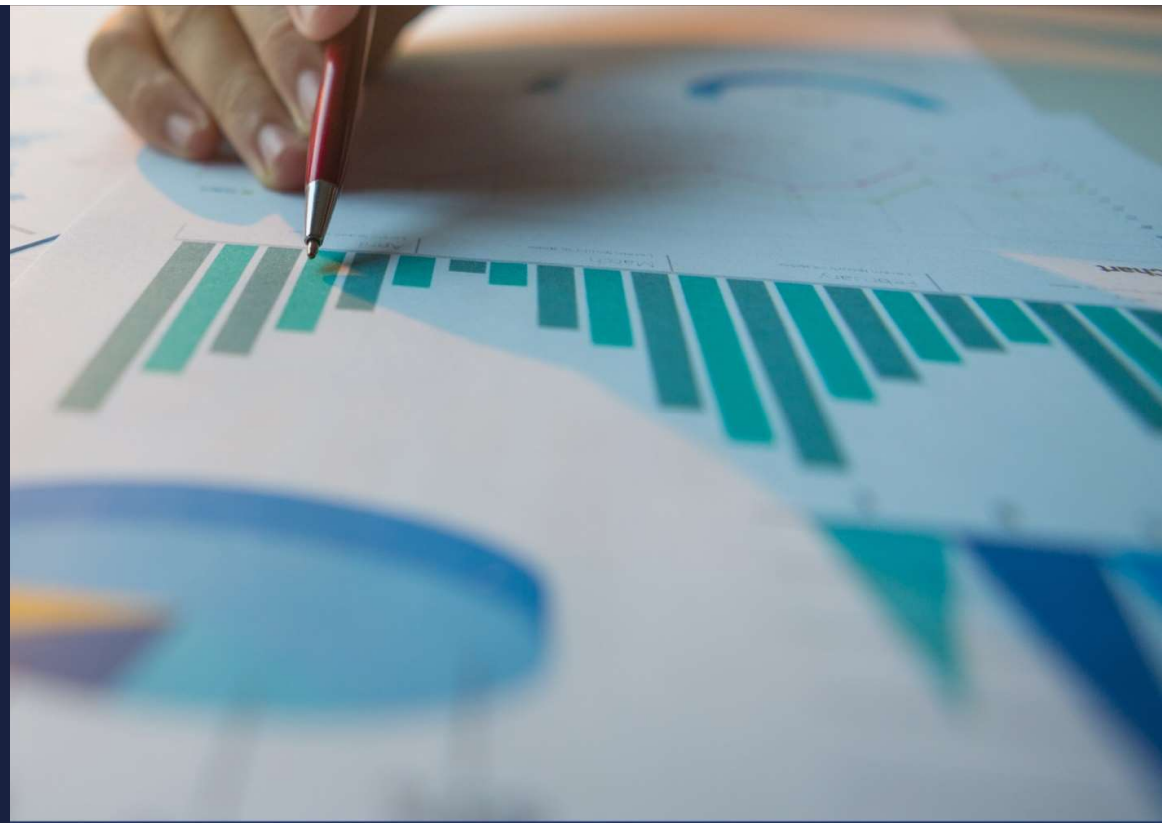

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Motivation & Research Questions

Problem

Consumption in Ireland causes upstream emissions worldwide. Products differ strongly in how much emissions are 'embedded' in them. Taxation can be used to deter consumption away from particularly 'dirty' products. Main existing consumption tax is the Value-Added Tax (VAT).

Research Question(s):

- What are the economic and environmental consequences of basing VAT on embedded emissions?
- Secondary: What are patterns in Irish carbon footprint?

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Figure: Greening the VAT

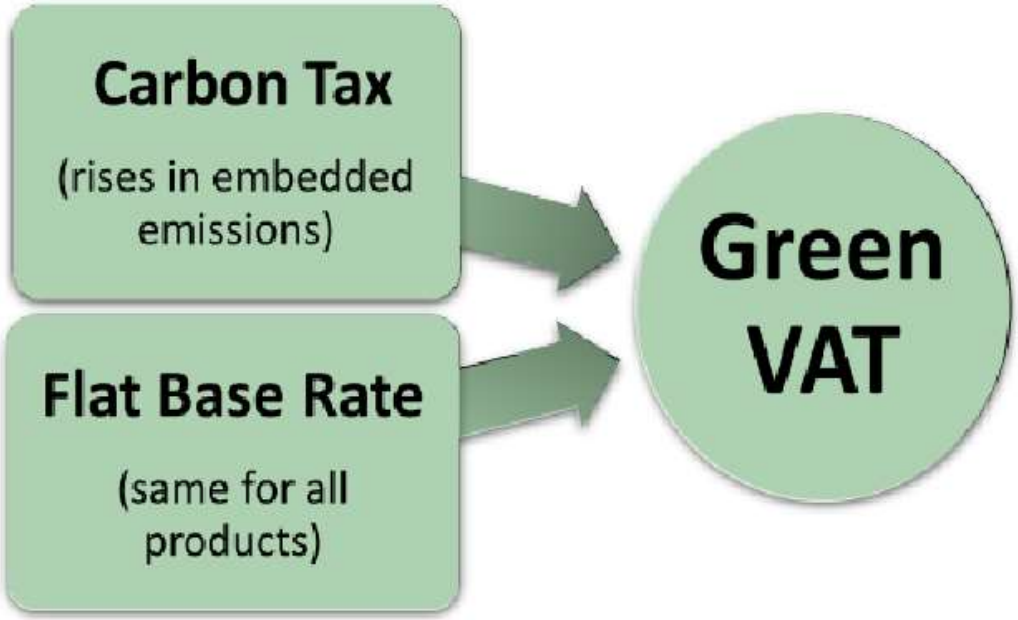
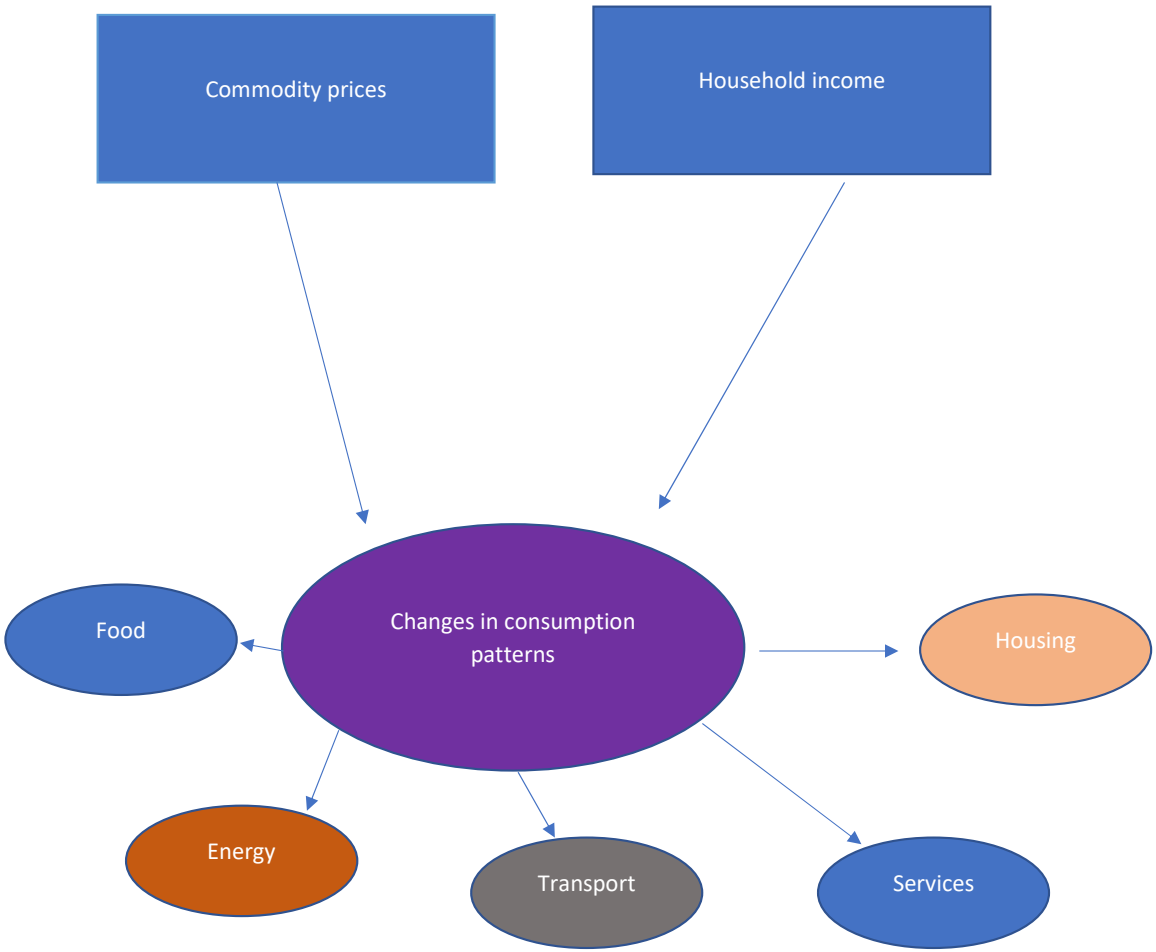


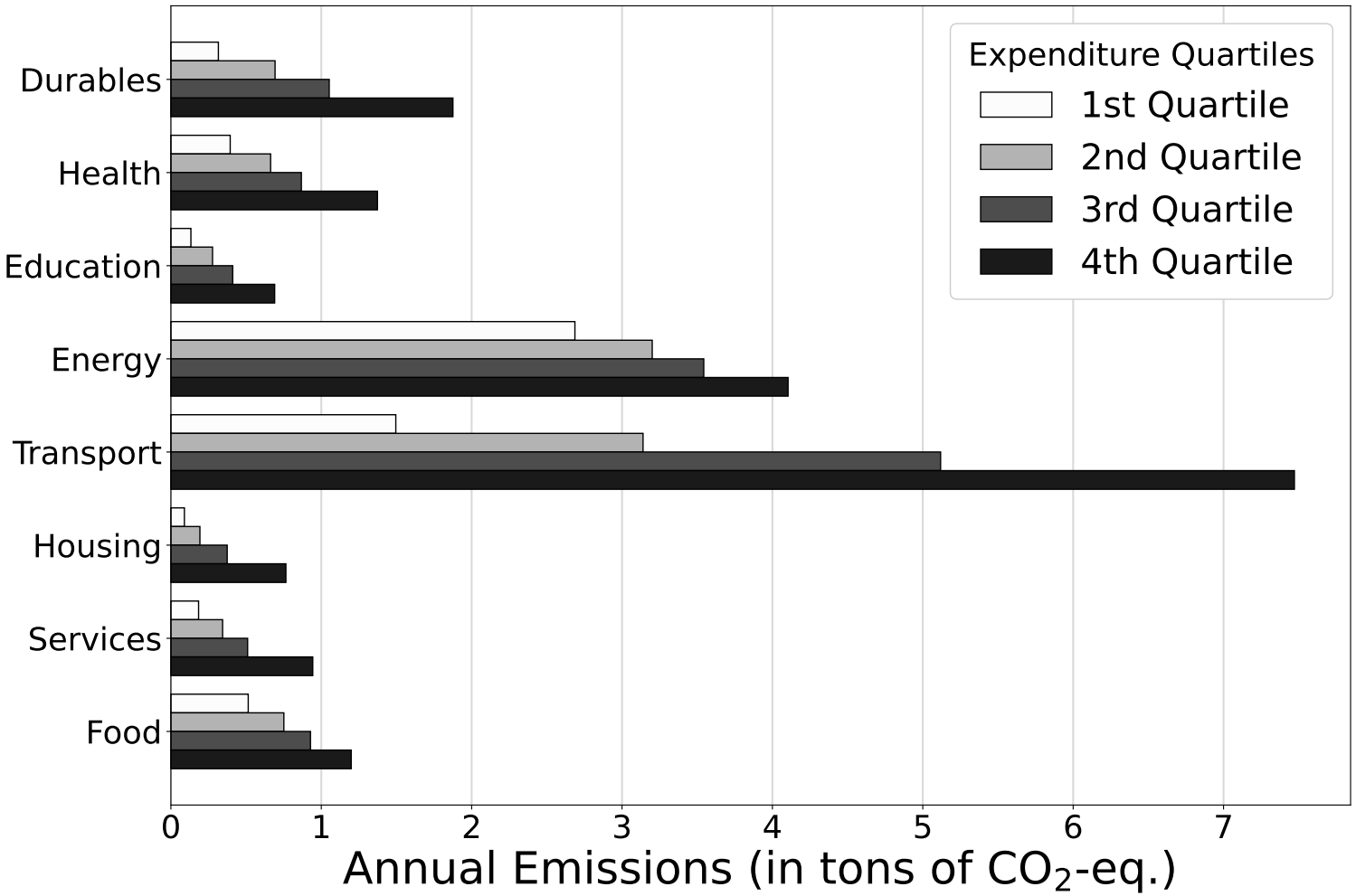
Figure 1: General structure of the Green VAT

Concept & Methods



Findings: Distribution of Footprints

(a) Per capita emissions across expenditure quartiles



Findings: Distribution of Expenditure

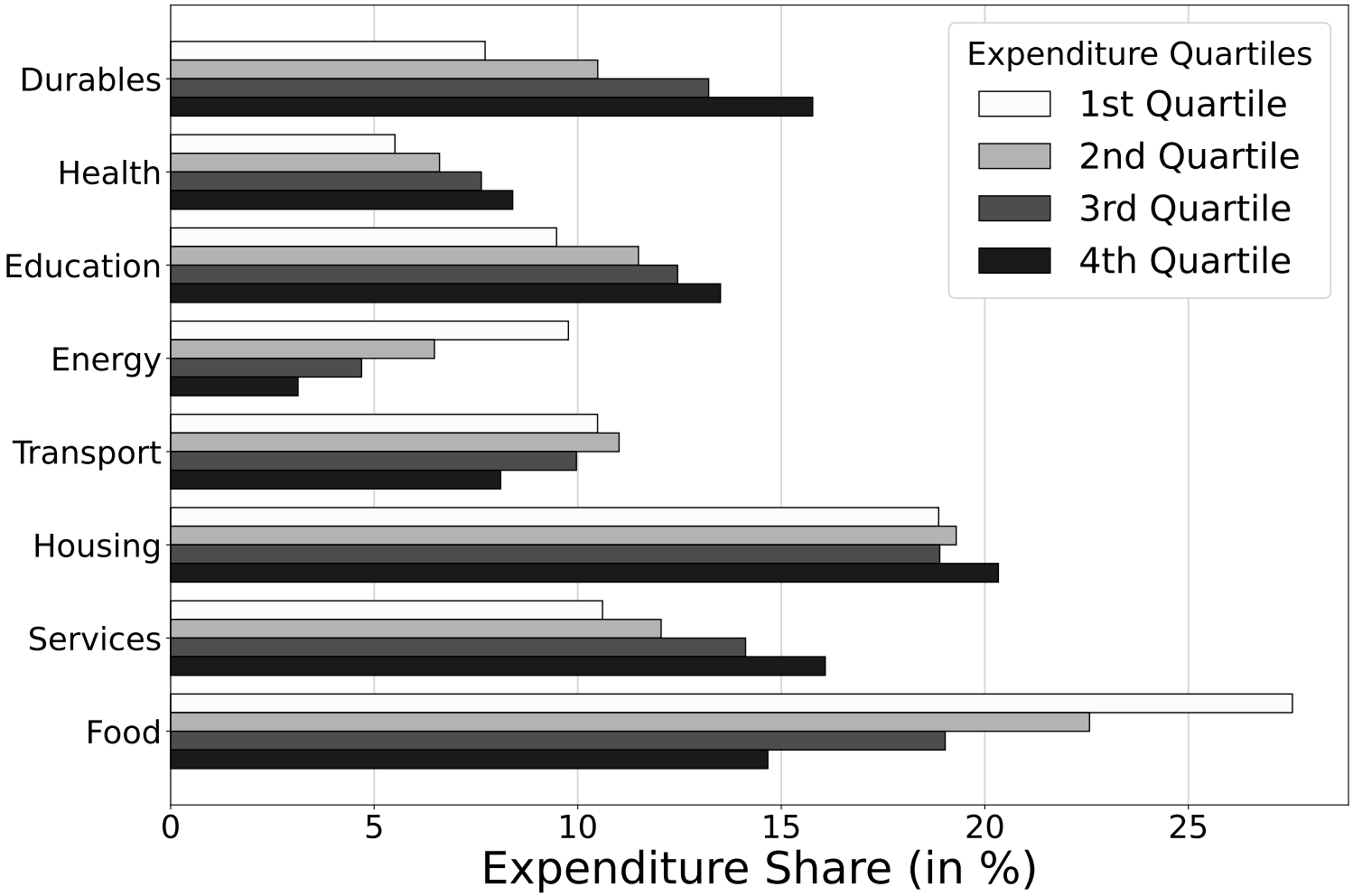


Figure: Expenditure shares across expenditure quartiles

Demand elasticities

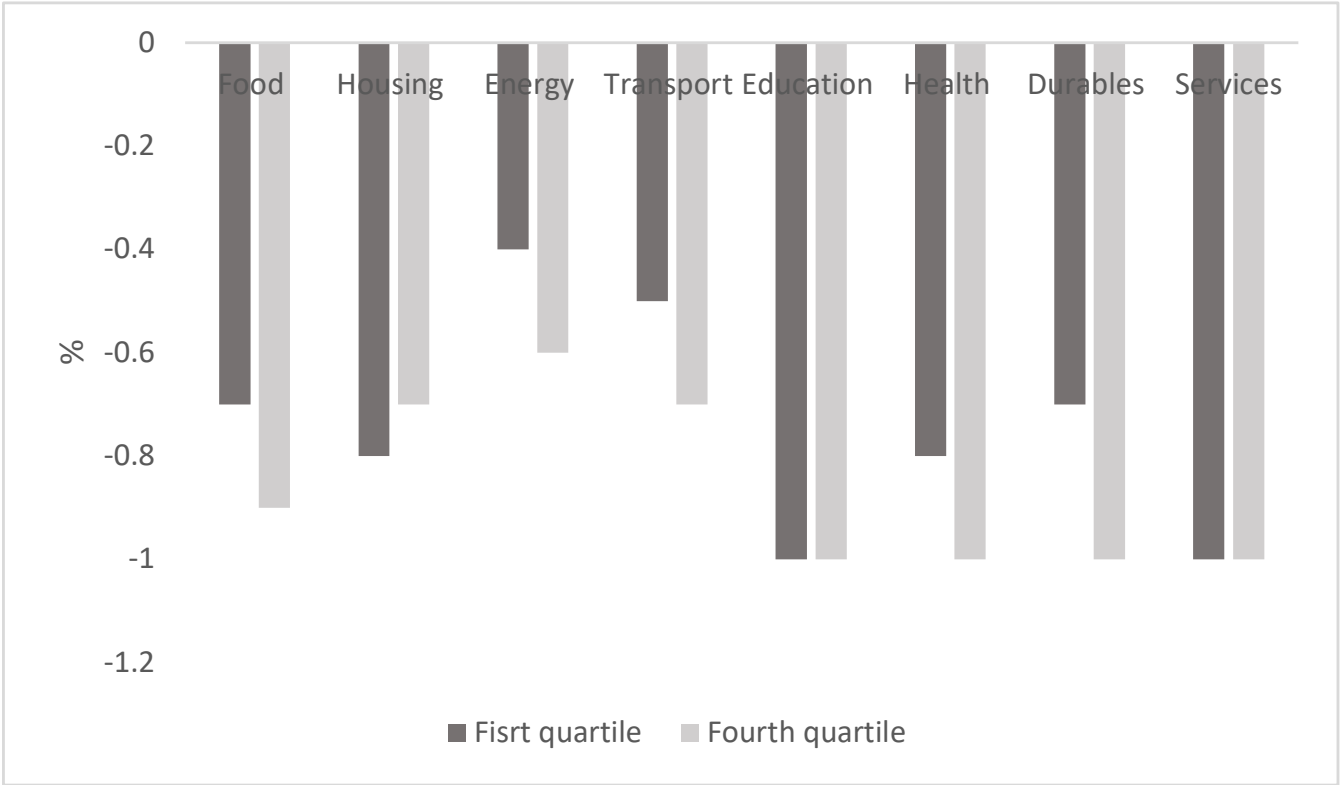


Figure: Changes in the demand for 1% in the commodity price

Key Finding

Simulations

- Low base rate (4%)
- Variable rate (based on embedded emissions)
- Recycling mechanism (3 scenarios)

Key Finding

Under this scheme, we obtained an increase of 14% in VAT tax revenue and a reduction in emissions of 6%. Carbon taxes have to be 120 Euro per ton above the levels in 2016.

Findings: Results of Microsimulation

Green VAT &...	Emissions	Hours	Consumption	GINI expenditure
...no recycling	-6.16	-0.88	-1.06	0.48
...Transfers (+5%)	-5.14	-0.88	-0.15	1.96
...Income tax (-4%)	-5.22	-0.72	0.21	-0.20

Table: Changes in percent under different reform scenarios

Key Findings

Under the scheme emissions fall between 5% and 6%, but labour supply and consumption fall.
Using revenue to cut income taxes mitigates both effects, but weakens effect on emissions.

Findings: Distributional impact

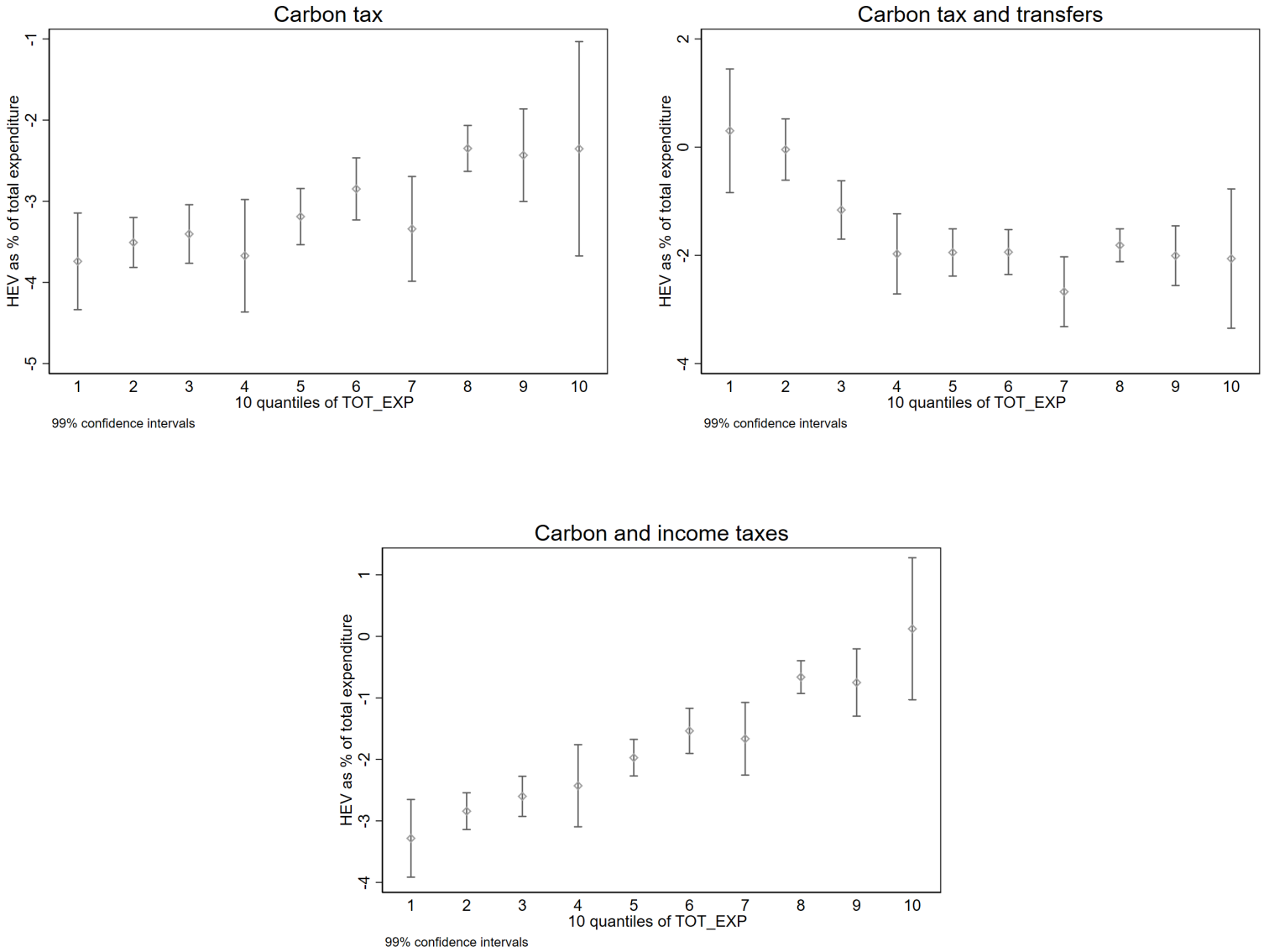


Figure: Cost of the policy across expenditure quartiles

Policy Implications & Limitations

Policy Implications:

- Greening the VAT taxes can lead to emissions reductions in different consumption dimensions
- Recycling can mitigate impact on low expenditure households
- The challenge is to find a balance between transfers and income tax cuts
- Lowest expenditure deciles benefit least from reduced income tax
- Environmental goals need to be weighed against other reasons for VAT differentiation (e.g. EU law, 'merit goods'

Limitations:

- Analysis on aggregated level. In reality, goods and tax rates are differentiated much more finely
- data on import/ export only for emissions, not for expenditure

- miguel.angeltovar@esri.ie