Consumer Durables, Monetary Policy, and the Green Transition

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Outline

- Summary
- Revisiting the climate policy context (ETS 1/2)
- The Role of Government Recycling
- Some Thoughts on Calibration
- Carbon Taxes and CO_2 Inflation in Practice

Motivation

Green transition tradeoffs for monetary policy

- Output – inflation tradeoff (e.g., Del Negro et al., 2023, Coenen et al., 2024)
- Transition progress – inflation tradeoff (this paper)

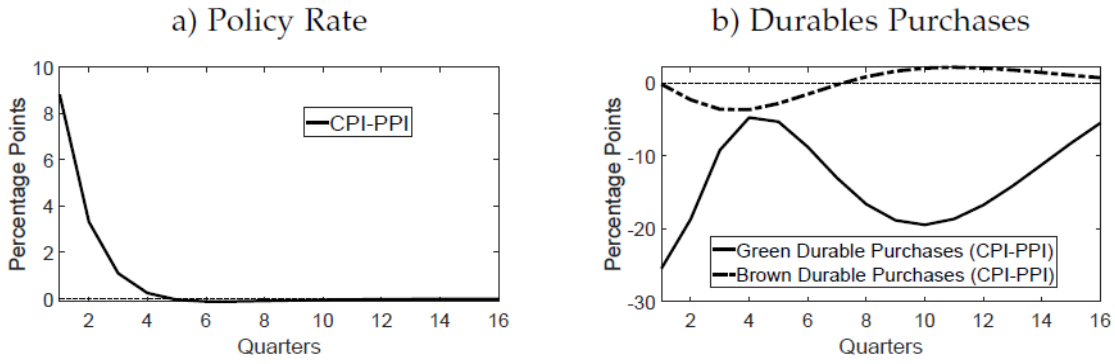
Paper's Contribution

- Assess the implications of ETS 2 for households and monetary policy.
- Develop & calibrate NK DSGE model with brown/green durables and non-durable goods.
- Key: Durables (and especially green durables) are more sensitive to monetary policy.

Implications of a Permanent CO_2 Price Shock

- Transition progress depends on target of monetary policy
- PPI: Excluding carbon price component

Figure 4: Impact of monetary policy on the green transition



$\Rightarrow$ Stock of green durables is higher under PPI targeting at the cost of higher headline inflation.

Revisiting the Context I

ETS emission coverage:

- ETS 1: electricity and heat generation, industrial manufacturing and aviation sectors.
- ETS 2: *fuel* combustion in buildings and road transport (e.g., ICE vehicles, heating w/ gas or oil).

ETS 1/2 affect consumer prices in several ways:

- tax on downstream (pay at the pump) brown energy consumption.
- filters through final (durable) goods prices via higher input/production/transportation costs.

$\rightarrow$ Energy transition: Modeling energy production and use, green/brown energy inputs, green/brown energy consumption by households.

Revisiting the Context II

CO_2 tax in the model:

- Emissions increase with the stock of brown durables and face the tax.
- ETS 2 relates to fuel combustion of durables.
- CO_2 prices may lead households to consume less energy. $\leftrightarrow$ use brown durables less despite having the same stock.

Revisiting the Context III

The Norwegian car tax system:

A story entirely focused on brown durables taxation

- Durable goods' stock usage:
  - ICE vehicles are subject to an annual road tax
  - EVs exempt or subject to reduced rate.
  - This is a tax paid on the stock, whether it was used or not.
- ALSO Durable purchases:
  - ICE vehicle purchases face a registration tax calculated by a combination of weight, CO2 and NOx emissions (and VAT).
  - EVs are exempt from registration tax and VAT.
  - Add a tax on brown durable purchases?

The Role of Government Recycling

Here: Revenues are lump-sum transferred back to HH

1. Revenues of ETS2 are only partially transferred back:
   - ▷ "A share of the revenues will be used to support vulnerable households and micro-enterprises through a dedicated Social Climate Fund (SCF)." (EC, Climate Action)
2. Use revenues to finance green durable subsidies ($\rightarrow$ Norwegian car tax system).
3. How costly is it for the government to offset the effect of monetary policy on the green transition/green durable stock?
   - ▷ Quantifying the trade-off in terms of government spending (in addition to inflation).

Some Thoughts on Calibration

1. Are green durables more durable (depreciate by less) than brown durables?
   - ▷ Economics of EVs literature: depreciate more (Schloter, 2022), similar (Figenbaum, 2022, for Norway)
   - ▷ Possible arguments going both ways:
     - Regulatory risk ($\rightarrow$ at risk of becoming stranded assets)
     - Government incentives (tax breaks, or subsidies for green durables, uncertainty about future policies)
     - consumer perceptions (environmental awareness, skepticism about durability/long-term maintenance)
     - Faster technological advancements in green durables (e.g., battery technology in EVs) and obsolescence.
2. How is the brown durable share obtained?

Carbon Taxes and CO_2 Inflation in Practice

- Why do we think of PPI as core? (✓in newest version)
- CO_2 inflation in practice:
  - Look through (PPI target) vs. respond (CPI target) to CO_2 inflation.
  - Here it's just direct as there are no emissions from production.
  - In real life consumers associate carbon taxes with both direct and indirect CO_2 inflation.
  - How can a central bank (CB) distinguish? How can a CB quantify what's CO_2 inflation in the CPI? Do central banks actually get the choice to look through?

Conclusion

- Intriguing paper highlighting new considerations for monetary policy.
- Another step forward in shedding light on the trade-offs policymakers face during the green transition.
- Continued need to carefully model alternative/different climate policies to understand the economic effects and the implications for monetary policy. (taxing brown energy consumption, green investment subsidies, taxing brown goods, etc.)

References

Coenen, G., M. Lozej, and R. Priftis (2024). "Macroeconomic effects of carbon transition policies: An assessment based on the ECBâs new area-wide model with a disaggregated energy sector." European Economic Review 167, 104798.
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