



# How Unconventional is Green Monetary Policy?

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# Disclaimer

- The views expressed in this presentation are those of the authors and do not necessarily represent the views of the IMF or its Executive Board.

# Model

# What are the key ingredients?

- Standard representative agent economy with preferences defined over a final consumption good
- $N$  intermediate goods produced with capital and labor which produce carbon emissions ( $\varepsilon$ )
- Carbon emissions reduce present and future TFP
- Financial intermediaries hold capital using a costly technology (assume integrated financial system)—measure of fin. friction

$$h(k_t^i, d_t) = \frac{1}{2} \frac{\rho}{\sum_{n=1}^N k_{t,n}^i + d_t} \left( \sum_{n=1}^N (k_{n_t}^i)^2 \sigma_n^2 + d_t^2 \sigma_d^2 \right)$$

# What are the key ingredients?

- Government has a different technology to hold capital (financed with debt):

$$h(\bar{k}_t) = \frac{1}{2} \frac{\bar{\rho}}{\sum_{n=1}^N \bar{k}_{t,n}} \sum_{n=1}^N \bar{k}_{t,n}^2 \sigma_n^2.$$

- Government purchases of private assets can help because private agents will not totally undo them

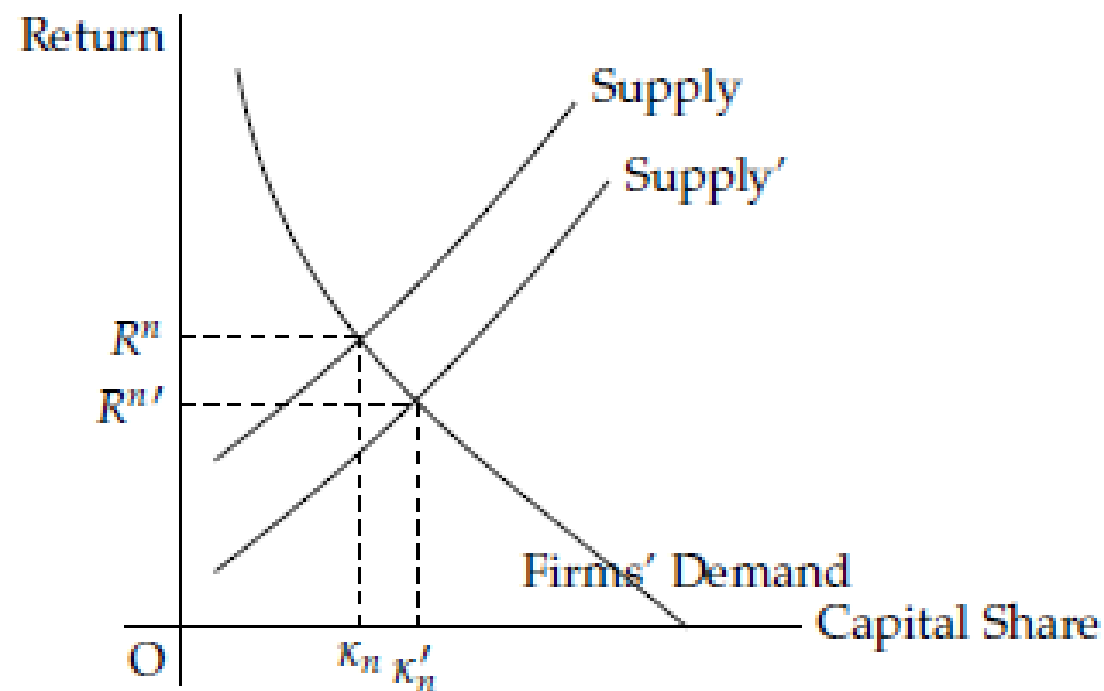


Figure 1: Government directs funds towards green sector

# Findings

# Key results

- Market neutrality (i.e., asset purchases will not change relative premia): government holds minimum cost portfolio—overweighs safer sectors
- With integrated financial system, market neutrality  $\neq$  capital neutrality, in general
- Optimal portfolio is convex combination of market portfolio and of market neutral portfolio (i.e., government will not hold either)

$$K_t = \frac{\rho}{\delta_t \rho + \tilde{\rho}} K_t + \left( 1 - \frac{\rho}{\delta_t \rho + \tilde{\rho}} \right) K_t^*$$

# Key results

- If carbon tax exists, optimal government asset purchases are independent of  $\varepsilon$
- If carbon tax not available, optimal asset purchases will be tilted toward green assets
- Regardless of  $\varepsilon$ , optimal purchases tilted toward riskier sectors (relative to market neutral portfolio)
- If government does not care about risk, it should undo any differences in premia across sectors (very different than market neutrality)



# Some questions

# Should we do green QE?

- Paper suggests it could help, but optimal carbon tax better
- To answer question, should also consider different policymakers (with different objectives) decide asset purchases and taxes
- Consider simple static Stackelberg game as in Davig and Gurkaynak (2015) where central bank decides monetary policy (asset purchases) and fiscal authority sets taxes (carbon tax)
- Assume tax authority faces some cost in raising carbon tax
- Using QE to address climate externality may discourage tax authority from implementing optimal carbon tax: Optimal QE may not be “optimal”

# Should QE not be green?

- Theory suggests policymakers with biased preferences should cooperate (see Bodenstein et al. 2019)
- If carbon taxes and asset purchases cannot be decided by same policymaker, having one policymaker internalize the bias in the other policymaker improves outcomes (i.e., brings solution closer to cooperative solution)
- Bottom line: key to consider strategic interactions between policymakers

# What else can be done by authors?

- Paper has unique ECB bond holdings data but...
- Model delivers no obvious implications to be tested with empirics
- ECB bond purchases mimic bond market issuance, which is heavily tilted toward brown sectors...
- And indicates frictions larger for green industries (will this remain true in the future?)
- But how far is current portfolio from optimal QE given no carbon tax? How far is it assuming actual carbon tax? Assuming optimal carbon tax? Assuming bank-based intermediation?

# What else can be done by authors?

- Climate costs could become more central to discussion
- Should the ECB's portfolio be greener? Should it be more overweight in riskier sectors (not necessarily greener)?
- How does this play against standard monetary policy objections (e.g., price stability)?
- What consequences would optimal QE have on central bank balance sheets (and its ability to conduct monetary policy in the future)?