How Unconventional is Green Monetary Policy?
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• 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

$$h(k^i_t, d_t) = \frac{1}{2} \frac{\rho}{\sum_{n=1}^{N} k^i_{t,n} + d_t} \left( \sum_{n=1}^{N} (k^i_{nt})^2 \sigma_n^2 + d_t^2 \sigma_d^2 \right)$$
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.
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 ≠ capital neutrality, in general

• Optimal portfolio is convex combination of market portfolio and of market neutral portfolio (i.e., government will not hold either)

\[ \kappa_t = \frac{\rho}{\delta_t \rho + \tilde{\rho}} \kappa_t + \left(1 - \frac{\rho}{\delta_t \rho + \tilde{\rho}}\right) \kappa^*_t \]
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)?