Finance, Money, and Climate Change

Markus Brunnermeier
Jean-Pierre Landau

Economic Policy

10. Dec. 2021
“all hands on deck” are needed

Green finance

“greening” of monetary policy
Poll Questions

1. ESG is an effective climate policy tool?
   a. Yes   b. No

2. What should be the preferred option to incentivize pollution reduction?
   a. Pigouvian tax
   b. Tradeable pollution permits
   c. Green finance

3. Monetary policy should contribute to climate policy?
   a. Yes
   b. No
Policy Functions - à la Richard Musgrave

- Allocation
  - Of resources/production capacity
  - Risk: endogenous risk

- Redistribution

- Stability (price/financial): Central Banks
Policy Instruments: specialized or multi-purpose

- Greening” of existing policies: How to evaluate?

1. **Effectiveness** in addressing climate
2. **Interference** with original policy area
   - In the extreme: Should generosity of health policy depend on CO2 output?

- Consequences
  - Diminishing accountability
  - Weaken independence
Policy Horizon: The “tragedy of the horizons”

- **Climate change** decades
  - Cumulative process
  - Local shock at first (idiosyncratic)
  - No resilience due to tipping points

- **Financial stability** 8-10 years
  - Financial cycle: build-up of risk erupted during crisis
  - Volatility paradox: Resilience vs. Robustness
  - Climate interaction: extra climate (policy) risk

- **Monetary policy** 2 years
  - Cyclical
    - NK: Degree of price stickiness
  - Macro-fin: long-run effects possible
  - Climate interaction: impact on $r^*$
Roadmap

- Basic concepts
- Green finance
- Green monetary policy
Green finance: Sources of climate risks

- Tax pollution vs. tax risk associated with pollution

- Types of risks – “stranded assets”
  - Directly from climate events
  - Uncertainties of existing climate policies
  - Uncertainties of future climate policies
Green finance: Sources of climate risks

- Tax pollution vs. tax risk associated with pollution

- Types of risks - “stranded assets”
  - Directly from climate events
  - Uncertainties of existing climate policies
  - Uncertainties of future climate policies

- Incorporated in
  - Stress tests
  - Internal Capital Adequacy Assessment Process (ICAAP)
  - Portfolio of insurance companies, institutional investors, asset managers
  - Parallel and integrated climate and macro scenarios
Green finance: Sources of climate risks

- Tax pollution vs. tax risk associated with pollution

- Types of risks - “stranded assets”
  - Directly from climate events
  - Uncertainties of existing climate policies
  - Uncertainties of future climate policies

- Self-fulfilling prophecy – “climate dominance”

```
Strong (limited)
Political resistance and lobbying

Limited (Strict)
Climate risk provisioning

×

Limited (lots of)
“stranded assets”

justifies
```
Green finance: “Uncertainty tax”

- Pigouvia...Policy uncertainty “tax”
  (legislation risk premium)
  - Can be Pigouvis...steering towards green
  - No tax revenue...socially waisted in risk premia
    (goes to capital investors to compensate their disutility)
Green finance: Time inconsistency - resilience

- **Fix**, clear policy path that Remoes policy uncertainty
  - Pre-specified price of CO2/carbon
  - Removing uncertainty – stimulates private investments (given low $i$)
    - Reduces risk premium
  - Pre-specified quantity of CO2 emissions
    - Implemented with fixed tradable permits
- **Flexibility** – resilience (adapt, react)
  - Esp. when tipping points become apparent

Ex-ante

Time Inconsistency

Ex-post
Green finance: Input distortions

- Tax capital/funding of polluting firm
  Distorting wrong adjustment margin
- \( Y = A F(\text{Labor, Capital, Pollution}) \)
  - Distort labor capital ratio
    - \( \Rightarrow \) tilt towards less capital intensive production
  - Risky firms: distort more
Green finance: Implementation

- Implementation via bank regulation
  - Risk weights
  - Challenges - taxonomy
    - Green investments might be intrinsically riskier (esp. for new technologies)
    - Going back to 1970s, “directed credit” (lobbying, crony capitalism, ...)
    - Who decides what is green/non-green? - “greenwashing”

- ESG ratings
  - Low correlation among ESG ratings (incentives) [Rigobon et al (2020)]
  - Low correlation with actual emissions [Elmat et al. (2021)]
Roadmap

- Basic concepts
- Green finance
- Green monetary policy
Green monetary policy: Principle

- Central bank policy produces spillovers
  - Principle of Market Neutrality (asset purchases)
    - Economic: Ignores market failure
    - Political: Doesn’t contribute to overall policy
Green monetary policy: Impact on $r^*$

- $r^*$ = guide whether MoPo is contractionary or expansionary
- Driven by structural forces
- MoPo space given ELB (reversal interest rate)

- $r^*$ increases due to investment demand
- $r^*$ decreases due to
  - Lower consumption growth
  - Increased risk (precautionary savings)

$$r^{f*} = \rho + \gamma \mu_c - \frac{\gamma}{2} (\gamma + 1) \sigma_c^2$$
Green monetary policy: Instruments

- Modulate haircuts
- Reorient asset purchases towards “green” securities (credit policy)
- Readjust existing central bank balance sheet
Green monetary policy: Central bank independence

- Not relevant for countries without CB independence (or autocracies)
  - Resource allocation and redistribution is assigned to elected bodies

- Well specified mandate for central banks
  - US Fed: dual/triple mandate
  - ECB: hierarchical (lexicographic): price stability first support overall EU objectives

- Central bank select *its* preferred secondary objective? Should an elected body select secondary objective? (why not do it directly via Pigouvian taxes?)

- Drags central banks deeper in political roam
Conclusion

- Tragedy of the horizon
- 3 Functions of policy: allocation, redistribution, stability
- Greening of instruments (multi-purpose)

- Green finance
  - Climate events, policy uncertainty
  - “Climate risk dominance”
  - Greenwashing, ESG rating
  - Do risk charges distort right margin?
  - Risk is a bad Pigouvian “tax”, planning certainty, time-inconsistency

- Green Monetary Policy
  - Increased supply shocks
  - Affects $r^*$
  - Threatens central bank independence?