The political economy of environmental policy with overlapping generations

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the Gist of it

- Previous analysis of climate policy ignores the effect of policy on asset prices.
- Asset prices provide a mechanism for transferring future benefits to agents currently alive.
- Using an OLG model one can investigate the intertemporal and intratemporal welfare effect of climate policy…

… this leads to challenges in coventional wisdom that current agents must sacrifice to benefit the future.

Environmental Policy

The Conventional View

- Current efforts improve future stocks, creating benefits in the future.
- Implies tradeoff between current and future consumption (utility).

  Focus on optimal level of abatement (effort), discount rates, carbon tax.
- A representative agent at any point in time.

  No possibility of conflict amongst agents alive at a point in time.
- An infinitely-lived agent.

  No possibility of conflict amongst agents alive at different points in time.
- Previous analysis is based on models with fixed asset prices

  Price of investment good equal to normalized price of consumption good

In an OLG world

- Environmental policy improves future environmental stock.
- Assets (capital stock, land) capitalize those future benefits.
- Asset owners (the old) capture these benefits.
- Environmental policy lowers *current* real return to capital, while still increasing the real price of capital.
- Environmental policy lowers current real wage, harming the young.
- An increase in future environmental stock increases the future real wage; leading to higher welfare for future young generations.
- Current wage (unlike current asset price) does not capitalize those future benefits; labor only lasts one unit of time.

Value of the Asset

A first order condition requires that the price the manufacturing firm satisfies MRS = MRT:

$$\frac{u'(c_t^{young})}{\beta u'(c_{t+1}^{old})} = 1 + r_t = \frac{\pi_{t+1} + p_{t+1}(1-\delta)}{p_t}$$

which implies that asset price equals PDV of future profits, which is increasing in future resource stock.

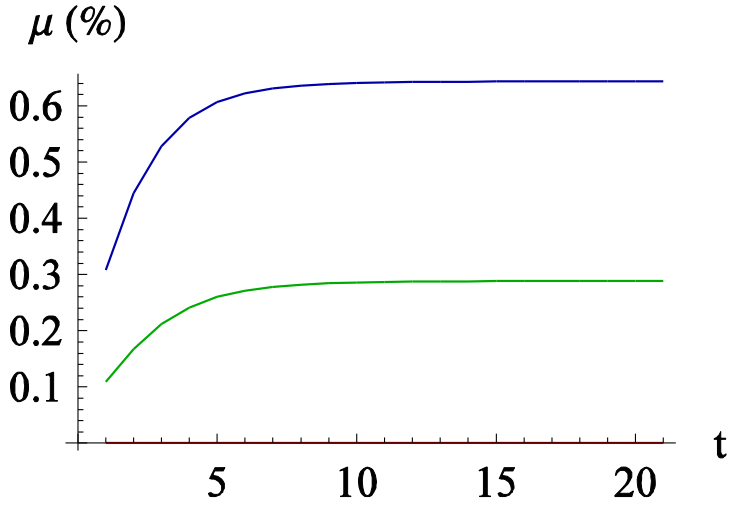
$$p_t = \sum_{i=0}^{\infty} \prod_{h=0}^{i} (1 + r_{t+h})^{-1} (1-\delta)^i \pi_{t+i+1}$$

Dynamic equilibrium

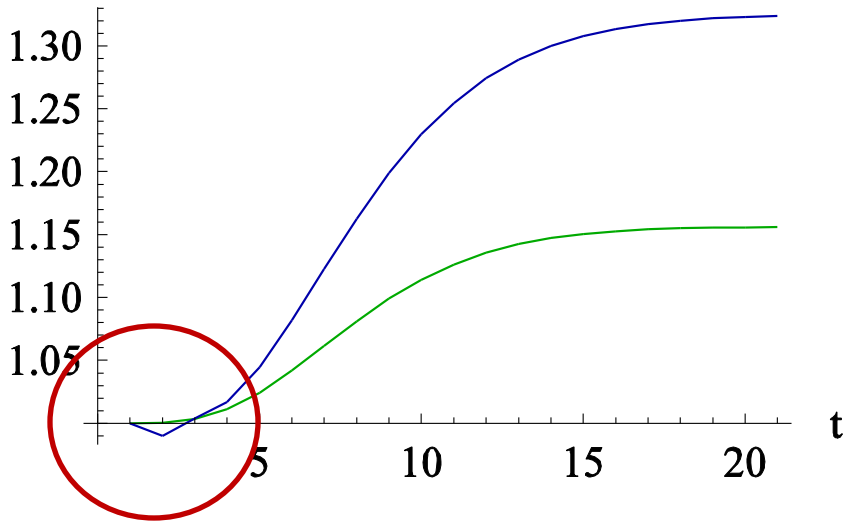
Markov Perfect with Probabilistic Voting

Selected equilibrium paths: MPE (green) and Social Planner (blue)

Abatement (% of emissions)



W_t^{LT} Life-Time Welfare (rel. to BAU)



No sacrifice under MPE !

Conclusions

- Standard analysis of dynamic environmental policy (implicitly) *assumes* a conflict across agents at different points in time and *assumes away* conflict among agents alive at the same point in time.
- Asset prices matter.
- An OLG setting shows that asset-rich (the old) benefit and asset-poor (the young) are harmed by environmental policy, absent transfers.
- Since conflict is between those currently alive, they **can** strike a bargain through a political economy process: The winners can compensate the losers so that both benefit.
- It may be wrong to think that climate policy will reduce the welfare of those alive when policy is instituted provided that the rich compensate the poor.