

Green Capital Requirements

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Motivation

- ▶ In the absence of a carbon tax, we have too many polluting firms.
- ▶ An alternative to carbon taxation could be to make financing of polluting firms more expensive: ESG finance / SRI (Oehmke and Opp 2019).
- ▶ But financing of firms is still mostly bank-based.
- ▶ Should we then use regulation to tilt bank portfolios towards greener firms?
- ▶ This paper considers:
 - ▶ Brown penalizing factor.
 - ▶ Green subsidizing factor.
- ▶ Conclusion is we should probably not use them.

1. The Model - Mickey Mouse Version



The Economy

- ▶ Two types of loans:
 - ▶ Clean: repay $1 + r_C$.
 - ▶ Dirty: repay $1 + r_D > 1 + r_C$.
- ▶ Economy can:
 - ▶ Grow with probability p : all loans repaid.
 - ▶ Enter a recession with probability $1 - p$: $1 - q$ loans repaid.
- ▶ Assume $[p + (1 - p)q](1 + r_C) = \tilde{X}_C > 1$.

The Bank

- ▶ Bank lends L_C and L_D and finances itself with D and E , both perfectly priced. Lending L costs $\gamma(L)$.
- ▶ Deposits perfectly insured by the government at no cost.
- ▶ Regulator sets risk weights \underline{e}_C and \underline{e}_D and capital regulation:

$$E \geq \underline{e}_C L_C + \underline{e}_D L_D$$

- ▶ Bank shareholders get:

$$\begin{aligned} & p \times [(1 + r_C)L_C + (1 + r_D)L_D - D] \\ + & (1 - p) \times \max[0, (1 - q)[(1 + r_C)L_C + (1 + r_D)L_D] - D] \\ - & E \\ - & \gamma(L_C + L_D) \end{aligned}$$

Limits of the Brown Penalizing Factor

- ▶ Assume $\underline{e}_D \geq q$ and $\underline{e}_C \geq q$: bank cannot default.
- ▶ Then D is well priced and Modigliani-Miller holds.
- ▶ Then no matter how high \underline{e}_D , the bank will always prefer dirty loans.
- ▶ “Brown Penalizing Factor” is not a tax: it’s a removal of the deposit insurance subsidy.
- ▶ If banks are safe or deposit insurance is well-priced the impact of this factor is null.

Cost of the Green Supporting Factor

- ▶ Assume $\underline{e}_D \geq q$ and $\underline{e}_C < 1 - (1 - q)(1 + r_C)$: bank defaults if it has enough clean loans.

- ▶ If only dirty loans, marginal value of a loan is:

$$\bar{X}_D - 1 - \gamma'(L)$$

- ▶ If only clean loans, marginal value of a loan is:

$$\bar{X}_C - 1 + \underbrace{(1 - p)[(1 - \underline{e}_C) - (1 - q)(1 + r_C)]}_{\text{Deposit insurance put}} - \gamma'(L)$$

- ▶ If put large enough relative to $\bar{X}_D - \bar{X}_C$ then bank invests only in clean loans.
- ▶ “Green Supporting Factor” is not a regulation: it’s a subsidy to clean loans via the deposit insurance fund.

Equilibrium Effects

- ▶ Not in this toy model: equilibrium effects of regulation.
- ▶ Very nice result in the paper, if bank equity is scarce:
 - ▶ Brown penalizing factor has a substitution effect: $\searrow L_D$.
 - ▶ Also an “income effect”: $\searrow L_D$ and $\searrow L_C$.
 - ▶ If dirty firms are more profitable, banks prioritize them but have less equity to lend to clean firms: unintended consequence of brown penalizing factor is less lending to clean firms.
- ▶ BTW: “substitution effect” and “income effect” good for intuition but also a bit misleading.

2. Assessment

Strengths

- ▶ Policy messages important and powerful.
- ▶ Trade-off between more theoretical purity and more policy relevance solved rather elegantly.
- ▶ Simple framework that can be used to think about many related policy questions (extensions etc.).
- ▶ Overall I don't see much to improve upon!

One Question

- ▶ For some political reason there is no carbon tax to correct the externality.
- ▶ Hence we are in the world of the theory of the second best.
- ▶ Perhaps there is a symmetric constraint that some bank subsidies need to be maintained (political economy).
- ▶ If so, “green capital requirements” are a sort of Faustian bargain: public support to banks vs. directing credit towards socially desirable objectives.
- ▶ By the standards of banking, perhaps not such a bad bargain (compare with, e.g., Koetter and Popov 2021).

3. Going Further
(not for this paper)

(More) General Equilibrium

- ▶ No reason to have banks in the model, they are assumed to be the only intermediary between:
 - ▶ Firms.
 - ▶ Households (depositors).
- ▶ More ambitious follow-up model could have:
 - ▶ Bank finance and market finance.
 - ▶ Rationale for bank finance (monitoring?), that may differ for clean and dirty firms.
- ▶ Such a model could study new and important equilibrium effects:
 - ▶ Can dirty firms substitute with market finance?
 - ▶ Are there costs of pushing clean firms towards banks?

Political Economy - 1

- ▶ Debate on Green Capital Requirements reminds me of Calomiris and Haber (2014): “the banking system is an outcome of political deal making”.
- ▶ Cynical view of green capital requirements could be:
 - ▶ Middle class not ready to pay for green transition via taxes.
 - ▶ Elite allows banks to finance green transition with deposits.
 - ▶ If things go wrong middle class forced to bail-out / recapitalize banks ex post.
- ▶ Seems a very reckless move to me: imagine if the next SVB is a “green” bank.

Political Economy - 2

- ▶ I would prefer applying the Tinbergen rule:
 - ▶ Carbon tax addresses environmental externality.
 - ▶ Income tax distributes the impact more evenly.
 - ▶ Capital requirements ensure banks are solvent.
- ▶ Framework integrating banking regulation, environment, and political economy would be a great tool to think about all these issues with more discipline.

Conclusion

- ▶ First-order and robust policy take-aways.
- ▶ Nice and useful theoretical framework.
- ▶ Just a great paper.
- ▶ Touches upon even more fundamental questions in banking regulation, perhaps for future research!

Thank You!