

Green Capital Requirements

by Martin Oehmke and Christian Opp

Discussion by Cecilia Parlato

NYU Stern

March 18, 2022

Overview

Question How do green capital requirements affect bank lending?

This paper Framework to study green capital requirements positively and normatively.

Main model ingredients

- ▶ Tension between profitability vs. sustainability
- ▶ Sources of inefficiency
 - ▶ Deposit insurance - DWL from subsidy to risky loans
 - ▶ Carbon externalities

Model

- ▶ Banks lend to two type of firms
 - ▶ Clean (C) and Dirty (D)
 - ▶ Risky projects with fixed scale I

$$NPV_D > NPV_C$$

- ▶ 2 sources of inefficiencies
 - ▶ Cost of deposit insurance: λPUT_q
 - ▶ Carbon externalities: $\phi_D > \phi_C = 0$
- ▶ Regulator chooses capital requirements \underline{e}_q
- ▶ Return per project type for bank

$$r_E^q(\underline{e}_q) = \frac{NPV_q + PUT_q(\underline{e}_q)}{I\underline{e}_q}$$

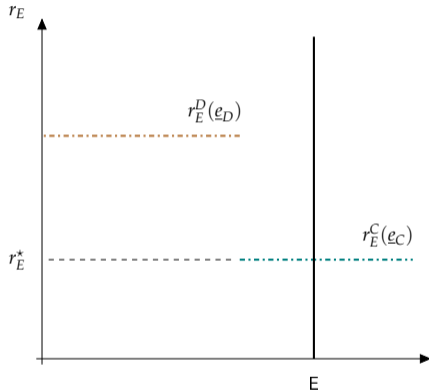
Model

- ▶ Banks lend to two type of firms
 - ▶ Clean (C) and Dirty (D)
 - ▶ Risky projects with fixed scale I

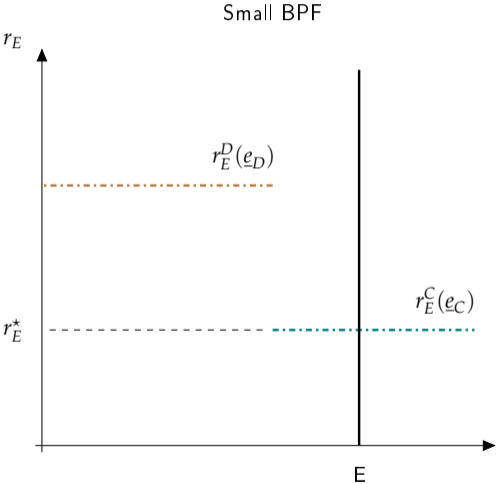
$$NPV_D > NPV_C$$

- ▶ 2 sources of inefficiencies
 - ▶ Cost of deposit insurance: λPUT_q
 - ▶ Carbon externalities: $\phi_D > \phi_C = 0$
- ▶ Regulator chooses capital requirements \underline{e}_q
- ▶ Return per project type for bank

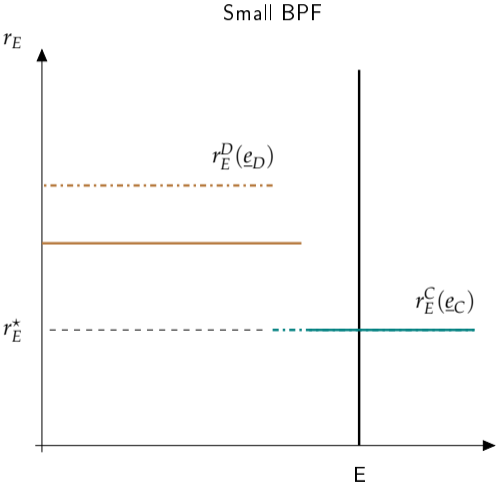
$$r_E^q(\underline{e}_q) = \frac{NPV_q + PUT_q(\underline{e}_q)}{I\underline{e}_q}$$



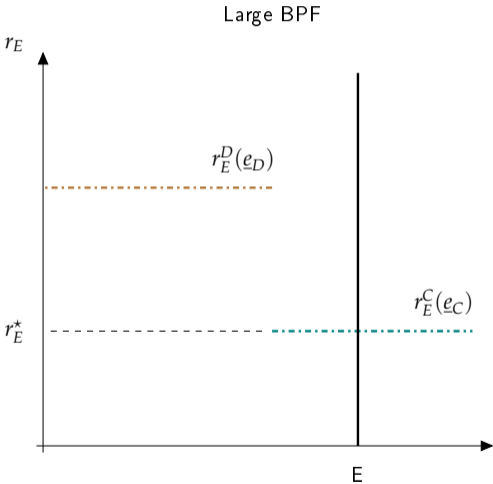
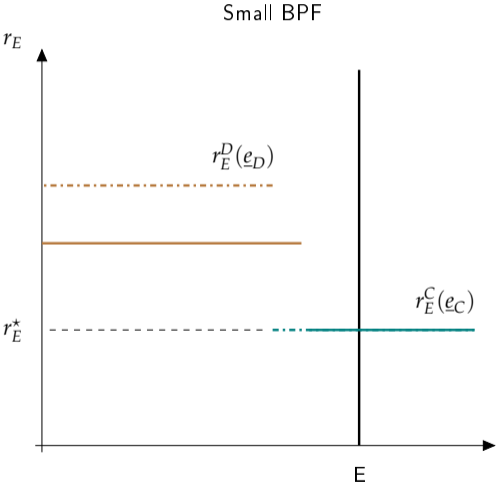
Brown Penalizing Factor - $\uparrow \underline{e}_D$



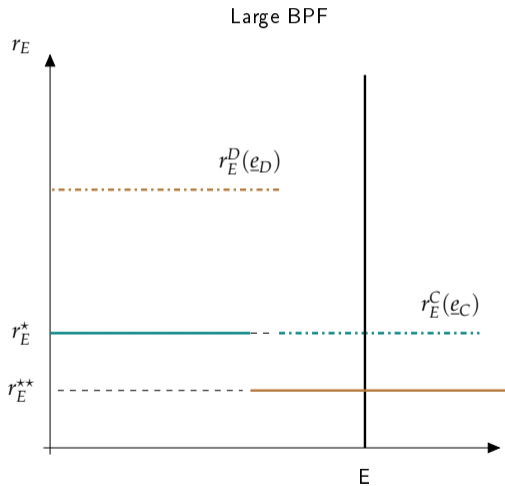
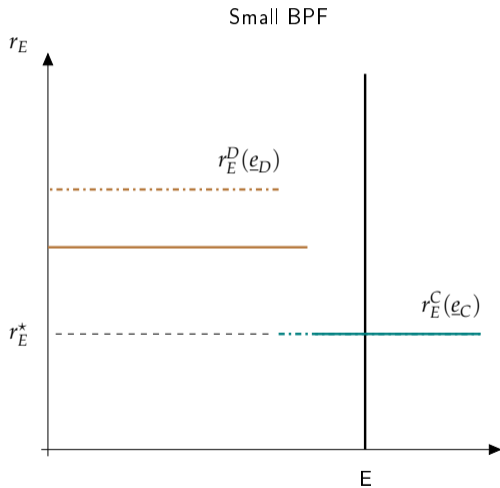
Brown Penalizing Factor - $\uparrow \underline{e}_D$



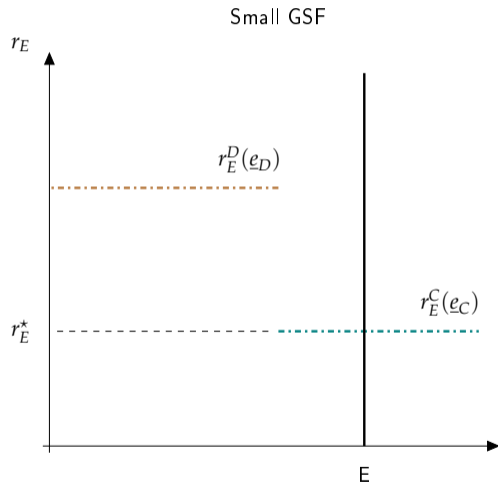
Brown Penalizing Factor - $\uparrow \underline{e}_D$



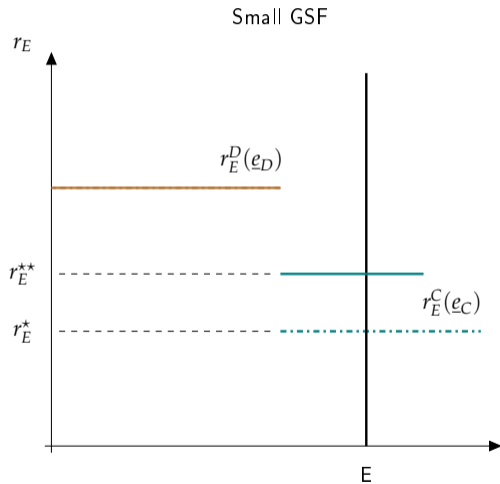
Brown Penalizing Factor - $\uparrow \underline{e}_D$



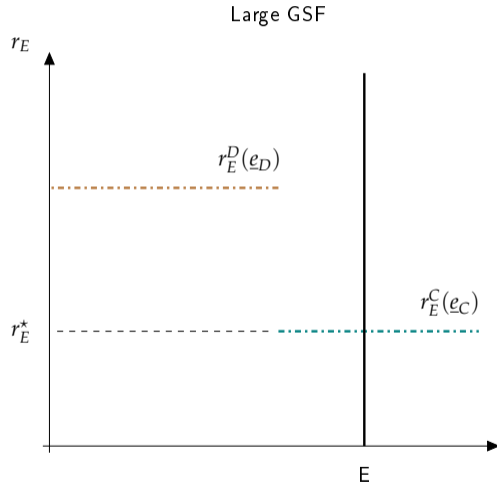
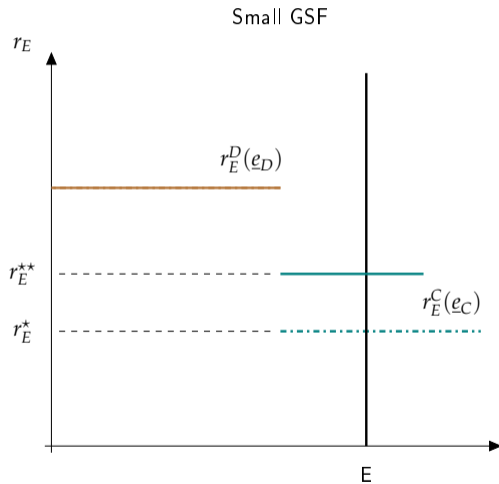
Green Supporting Factor - $\downarrow \underline{e}_C$



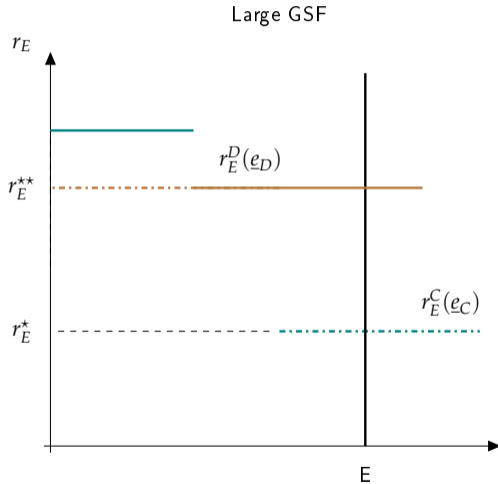
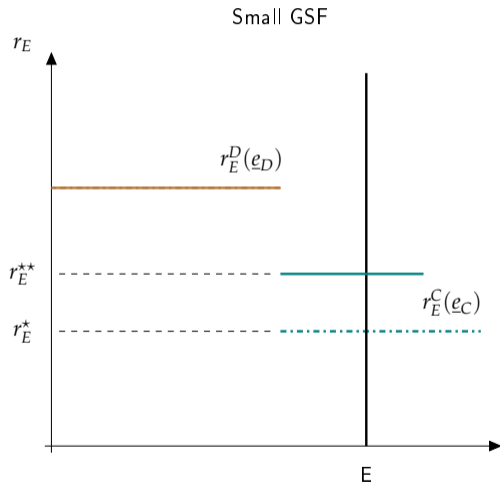
Green Supporting Factor - $\downarrow \underline{e}_C$



Green Supporting Factor - $\downarrow \underline{e}_C$



Green Supporting Factor - $\downarrow \underline{e}_C$



Regulation

- ▶ Sources of inefficiencies: deposit insurance (x2) & carbon externalities
- ▶ Regulatory instruments: capital requirements (x2)
- ▶ In general, cannot implement first best

Regulation

- ▶ Sources of inefficiencies: deposit insurance (x2) & carbon externalities
- ▶ Regulatory instruments: capital requirements (x2)
- ▶ In general, cannot implement first best
- ▶ 2 types of regulator
 - ▶ Prudential regulator: $PPI_q(\underline{e}_q) = \frac{NPV_q - \lambda PUT_q(\underline{e}_q)}{I\underline{e}_q}$
 - ▶ “Green” regulator: $SPI_q(\underline{e}_q) = \frac{NPV_q - \phi_q - \lambda PUT_q(\underline{e}_q)}{I\underline{e}_q}$
- ▶ Regulator takes into account lending equilibrium
- ▶ Optimal capital requirements increase with equity available

Comments/Suggestions

1. Very flexible model to think about capital requirements
 - ▶ Building block highlighting effect of capital requirements
 - ▶ Prudential and Green capital requirements are not so easy!

Comments/Suggestions

1. Very flexible model to think about capital requirements
 - ▶ Building block highlighting effect of capital requirements
 - ▶ Prudential and Green capital requirements are not so easy!
2. Zoom in: Financial stability vs. Sustainability
 - ▶ Comparison between prudential and green capital requirements
 - ▶ How does this trade off depend on climate risk?
 - ▶ Lots of comparative statics for optimal capital requirements!

Comments/Suggestions

1. Very flexible model to think about capital requirements
 - ▶ Building block highlighting effect of capital requirements
 - ▶ Prudential and Green capital requirements are not so easy!
2. Zoom in: Financial stability vs. Sustainability
 - ▶ Comparison between prudential and green capital requirements
 - ▶ How does this trade off depend on climate risk?
 - ▶ Lots of comparative statics for optimal capital requirements!
3. Exploit the (normative) framework more!
 - ▶ Tighter link to climate risk
 - ▶ State-varying capital requirements
 - ▶ Dynamics (?)
 - ▶ today's emissions affect tomorrow's returns/risks
 - ▶ positive externalities from financing clean loans