Beyond Microcredit

Giving the Poor a Way to Save Their Way out of Poverty

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Background

Microfinance Institutions

Institutions that give the poor access to financial services

Group Lending Institutions

Microfinance Institutions that lend to *jointly-liable groups* instead of lending to individuals

Keywords

Savings
Outreach
Poverty trap

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KEYWORDS

Savings Implications of offering *saving opportunities* in *group lending*

Outreach wealth threshold required to participate in a financial institution

. . . either as a *saver* or a *borrower*

Poverty Trap: no *access* to financial institutions, leading to persistent low income.

Dercon's revival of the ICRISAT data set

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MICROFINANCE, SAVINGS AND SUBSIDY

- Microfinance programmes:
  - …should to try to give the poor *access* to financial services
  - v/s …lending to the poor is potentially a profitable proposition
    - *subsidising the cost of capital* v/s *no need for subsidy*

- The paper examines the following proposition

  "subsidy helps give the poor access to the financial services offered by the microfinance programmes"

  - We examine the role of *interest rate policy* in giving the poorest individual *access* to the group-lending microfinance programmes
  - Model based on a case study in Harayana, India. (Aniket, 2005)

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MICROFINANCE

Reccurent theme: individuals with negligible wealth that are too poor to borrow become *credit-worthy* if they *borrow collectively* under *joint-liability contract*

Group Lending: *borrow in groups*

Joint-liability: *inter-linked contracts*

- *Collateral* aligns borrower's incentive with lender's

  poor with no collateralisable wealth left out of credit market

- *Joint-liability* aligns borrowers' incentive with lender's

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First Wave

Compares joint liability with individual lending in terms of lending efficiency

Strands of the literature

Adverse Selection

- Varian (1990), Ghatak (1999, 2000), Van Tassel (1999), Aghion & Gollier (2000)

Moral Hazard

- Ghatak (1999), Stiglitz (1990), Conning (2000)

Auditing and Enforcement

- Besley & Coate (1995), Ghatak (1999)

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Criticism of the First Wave

- Pitt & Khandkar (1998), Aghion & Morduch (2000), Karlan and Morduch (2009)
  - Results from *impact evaluation* exercise gloomy
  - Group lending does not do always do better than individual lending
  - Theory literature under estimates the *practical problems* associated with group lending
  - *Various mechanisms*, other than group lending, used in microfinance

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Second Wave

Look beyond joint liability at the internal mechanism of group lending

Sjostrom and Rai (2005): *cross-reporting*

Jain and Mansuri (2003): *periodicity of loans*

Aniket (2010): *Role of Savings, negative assortative matching in wealth*

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Moral Hazard Strand

Recurrent Theme: it is more efficient to *incentivize effort collectively* for the group rather than individually

Ghatak (1999): incentivizing effort less expensive

Varian (1990): collective project choices more prudent

Conning (2000): incentivizing complementary tasks leads to multiple equilibria

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CASESTUDY

- *Case-study of a Microfinance Institution in Harayana*

  Documents the innovative design features of India's new national microfinance programme.

  - Lender lends only to *groups* not individuals
  - Individuals may join a *group* as either a borrower or a saver

    (depending on their cash-wealth)

    - Borrowers partly self-finance their project
    - Savers (non-borrower) co-finance the borrower's project (and get a premium interest rate on their savings)

  - We observed
    - *Intra-group income heterogeneity*
    - *savers were poorer than borrowers*

OBJECTIVE

- The paper examines the following proposition

  "subsidy helps give the poor access to the financial services offered by the microfinance programmes"

  - *Subsidy:* lowering the opportunity cost of capital
  - *Access:* wealth-thresholds to participate
  - *Optimal Cost of Capital:*

    Poorest saver ⇢ Borrower (1 loan-cycle)

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ENVIRONMENT

- opportunity cost of capital ρ
- Impoverished Agent k
  - Risk neutral
  - Cash wealth $w_k < 1$
  - Reservation income 0

Lender

Risk neutral

No access to monitoring technology

Faces a competitive loan market $\Rightarrow$ zero profit condition)

Project that succeeds with probability π^i

$$\rho = \pi^i r$$

Borrower's Project & Effort Level

- Borrower's project

$$1 \text{ unit of capital} \longrightarrow \begin{cases} \bar{x} & \text{with probability } \pi^i \\ 0 & \text{with probability } (1-\pi^i) \end{cases}$$

- Borrower chooses effort level $i = \{H, L\}$

$$\pi^i = \begin{cases} \pi^h & \text{(High effort level)} \\ \pi^l & \text{(Low effort level)} \end{cases}$$

- Borrower's effort unobservable
- Agent's reservation income is 0

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Effort level & Private Benefits

Effort	Cost of action	Private Benefits
High	0	0
Low	0	$B(c)$

- Monitoring with intensity c curtails private benefits B
  - cost of monitoring with intensity c is c
  - monitoring is unobservable
- Private benefits are non transferable amongst agents

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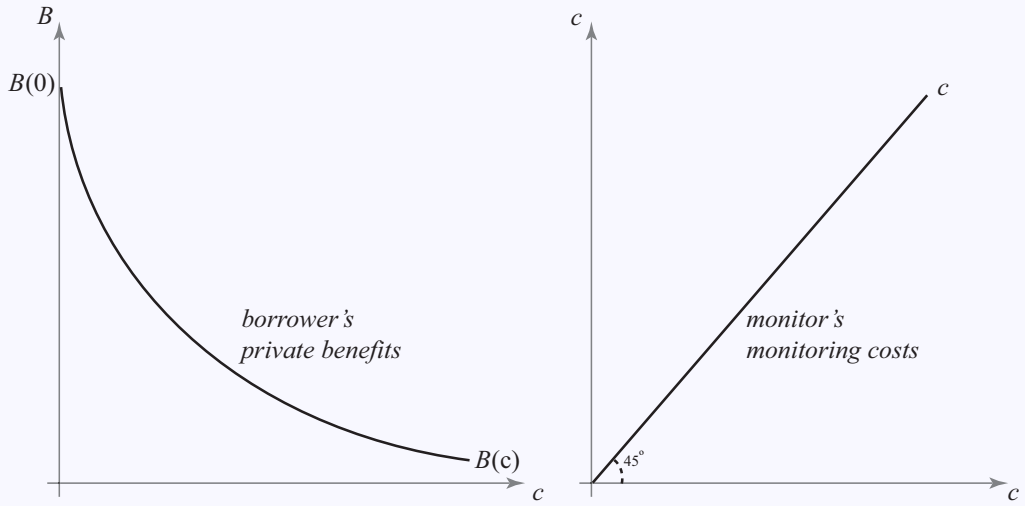
Monitoring



Assumption (Monitoring function)

i. $B(c)$ *is continuous and twice differentiable*

ii. $B(0) > 0$, $\lim_{c \to \infty} B(c) = 0$

iii. $B'(c) < 0$, $B''(c) > 0$;

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Environment

- opportunity cost of capital ρ
- Impoverished Agent k
  - Risk neutral
  - Cash wealth $w_k < 1$
  - Reservation income 0
- Lender
  - Risk neutral
  - No access to monitoring technology
  - Lends at rate r in a competitive loan market
    - For project that succeeds with probability π^i

$$\rho = \pi^i r \qquad \text{(L-ZPC)}$$

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KEY VARIABLES FOR INDIVIDUAL LENDING

ρ opportunity *cost* of capital.

directly gives us r

w_b borrower's *self investment* in her project

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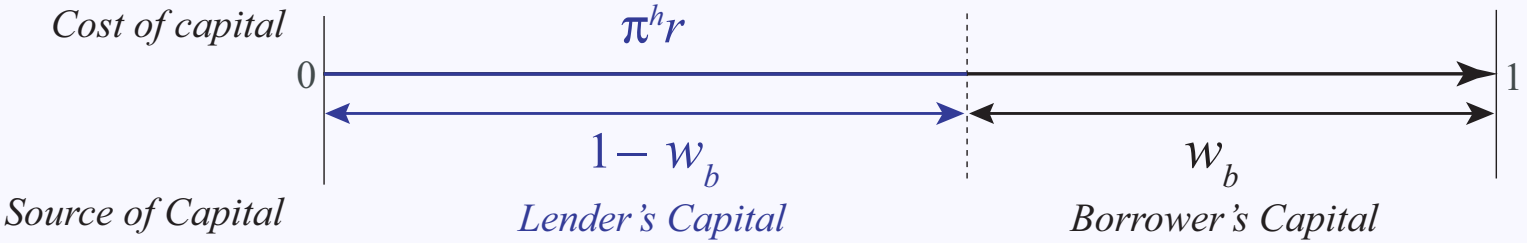
Individual Lending

- Borrower's payoff:

$$\begin{cases} b_s = \bar{x} - r(1 - w_b) & \text{success} \ldots \pi^h \\ b_f = 0 & \text{failure} \ldots (1 - \pi^h) \end{cases}$$

(borrower's incentive for high effort is increasing in w_b)



- Lender's objective function: $\pi^h r(1 - w_b)$ (decreasing in w_b)
- Lender's zero profit condition: $\rho = \pi^h r$

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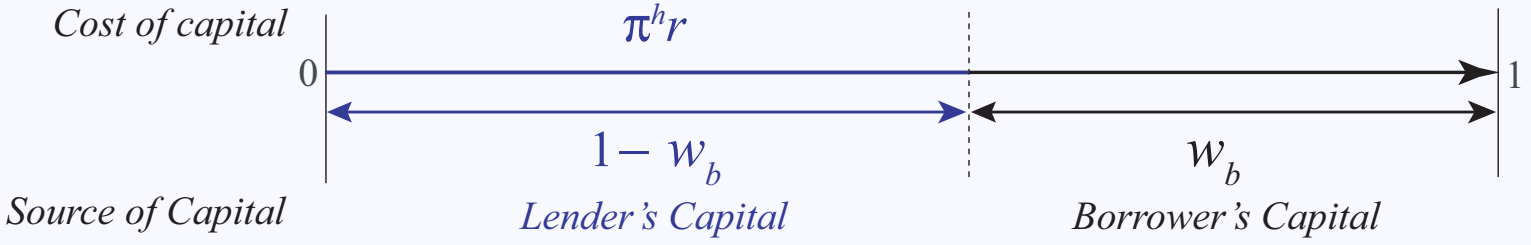
Individual Lending



$$\max \ \pi^h r(1-w_b)$$

$$E[b_i \mid H] \geqslant \rho w_b \qquad \text{(B-PC)}$$

$$E[b_i \mid H] \geqslant E[b_i \mid L] + B(0) \qquad \text{(B-ICC)}$$

$$r = \frac{\rho}{\pi^h} \qquad \text{(L-ZPC)}$$

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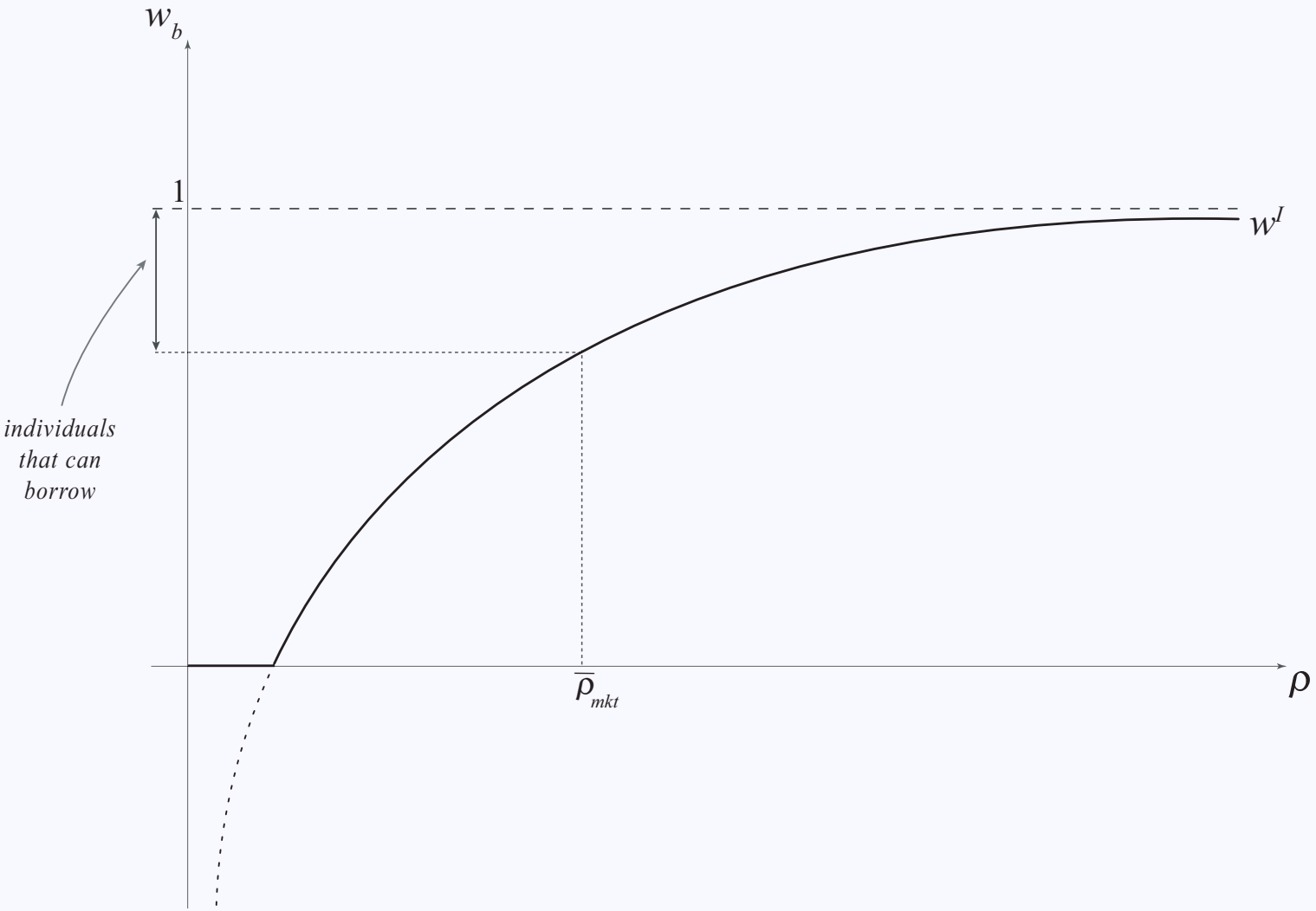
Individual Lending without Subsidy

- Lender offers the borrower a contract (r, w^I) where $r = \frac{\rho}{\pi^h}$



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Individual Lending *with Subsidy*

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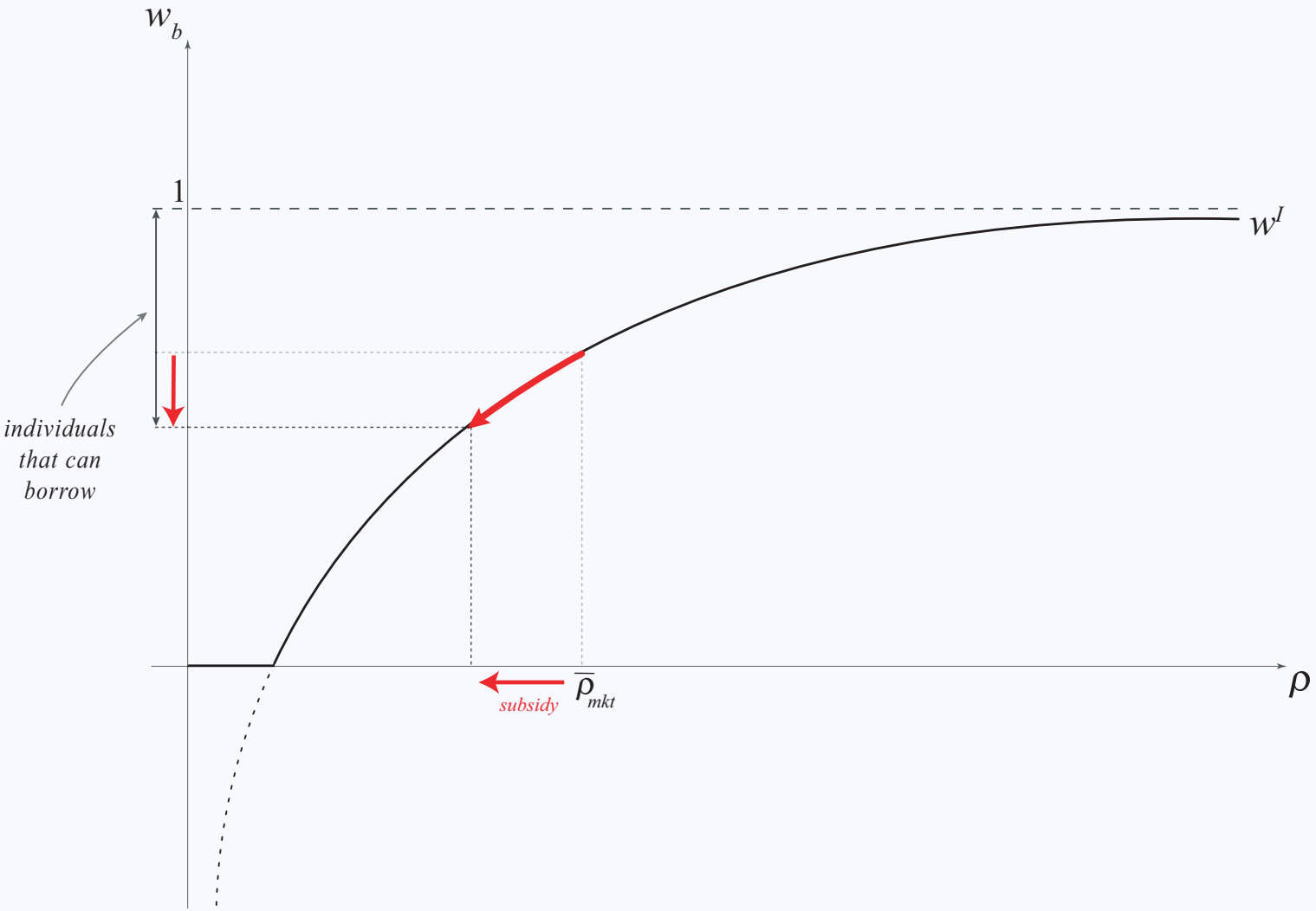

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Key Variables for Group Lending

ρ opportunity *cost* of capital.

directly gives us r

w_b borrower's *self investment* in her project

c intensity with which the *saver* monitors the *borrower*

. . . giving her incentive to monitor the borrower

w_s saver's *equity stake* in borrower's project

R returns offered to the borrower

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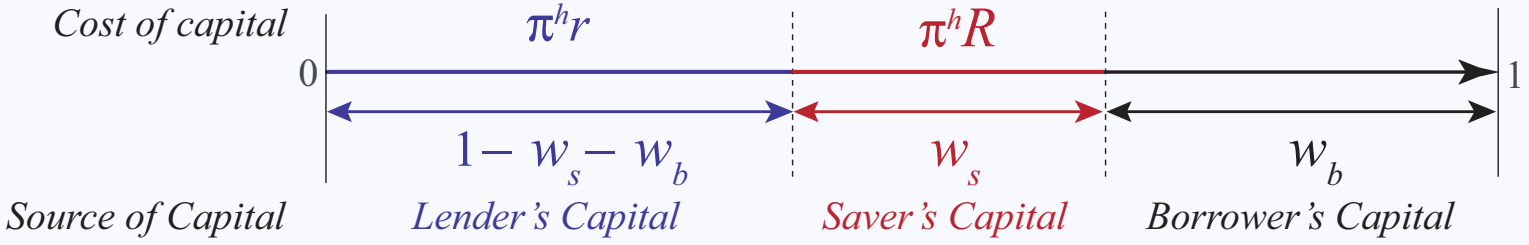
Saving in a Group

- Saver co-finances borrower's project with w_s
  - Saver's payoff:

$$\begin{cases} s_s = R\,w_s & \text{success} \ldots \pi^h \\ s_f = 0 & \text{failure} \ldots (1-\pi^h) \end{cases}$$



  - Borrower's payoff:

$$\begin{cases} b_s = \bar{x} - R\,w_s - r\,(1-w_s-w_b) & \text{success} \ldots \pi^h \\ b_f = 0 & \text{failure} \ldots (1-\pi^h) \end{cases}$$

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TIMING

t=1 The Lender offers a group-contract.

Saver's contract	(w_s^*, R^*)
Borrower's contracts	(w_b^*, r)

t=2 The agents self-select into roles of *saver* and *borrower* according to their wealth. They subsequently pair up to form a group.

t=3 Group borrows $(1 - w_b^* - w_s^*)$ from lender

- Borrower invests 1 unit of capital in the project.

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TIMING

t=4 The saver chooses monitoring intensity c.

t=5 The borrower chooses effort level.

t=6 The project's outcome is realised.

- If the project **succeeds**, $\bar{x}$ gets distributed as follows:

$$\begin{aligned} \text{Saver:} \quad & R^* w_s^* \\ \text{Lender:} \quad & r(1 - w_s^* - w_b^*) \\ \text{Borrower:} \quad & \bar{x} - R^* w_s^* - r(1 - w_s^* - w_b^*) \end{aligned}$$

- If the project **fails**, everyone gets 0

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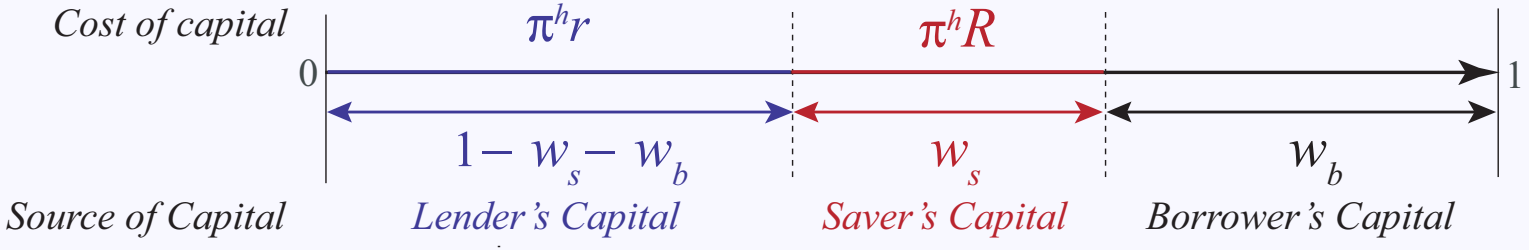
Lender's Problem



$$\max \ \pi^h r(1-w_s-w_b)$$

$$E[s_i \mid H] - c \geqslant \rho w_s \qquad \text{(S-PC)}$$

$$E[s_i \mid H] - c \geqslant E[s_i \mid L] \qquad \text{(S-ICC)}$$

$$E[b_i \mid H] \geqslant \rho w_b \qquad \text{(B-PC)}$$

$$E[b_i \mid H] \geqslant E[b_i \mid L] + B(c) \qquad \text{(B-ICC)}$$

$$r = \frac{\rho}{\pi^h} \qquad \text{(L-ZPC)}$$

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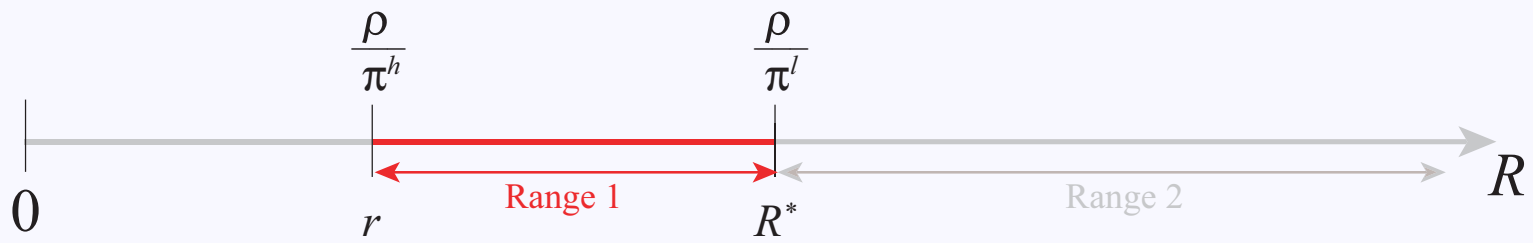

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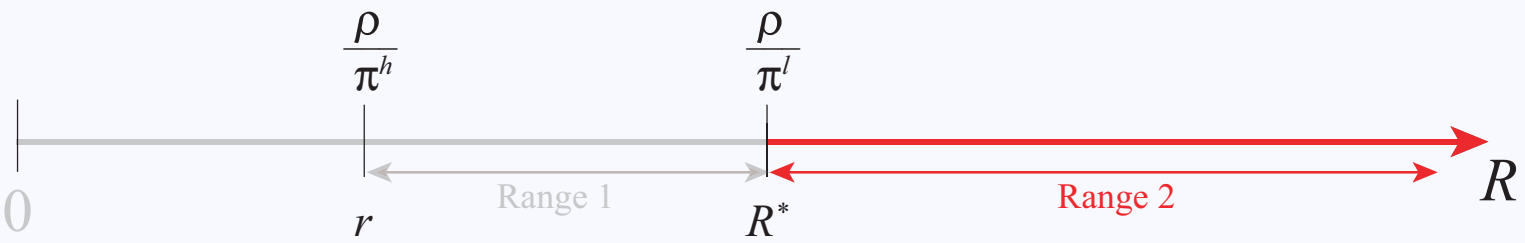

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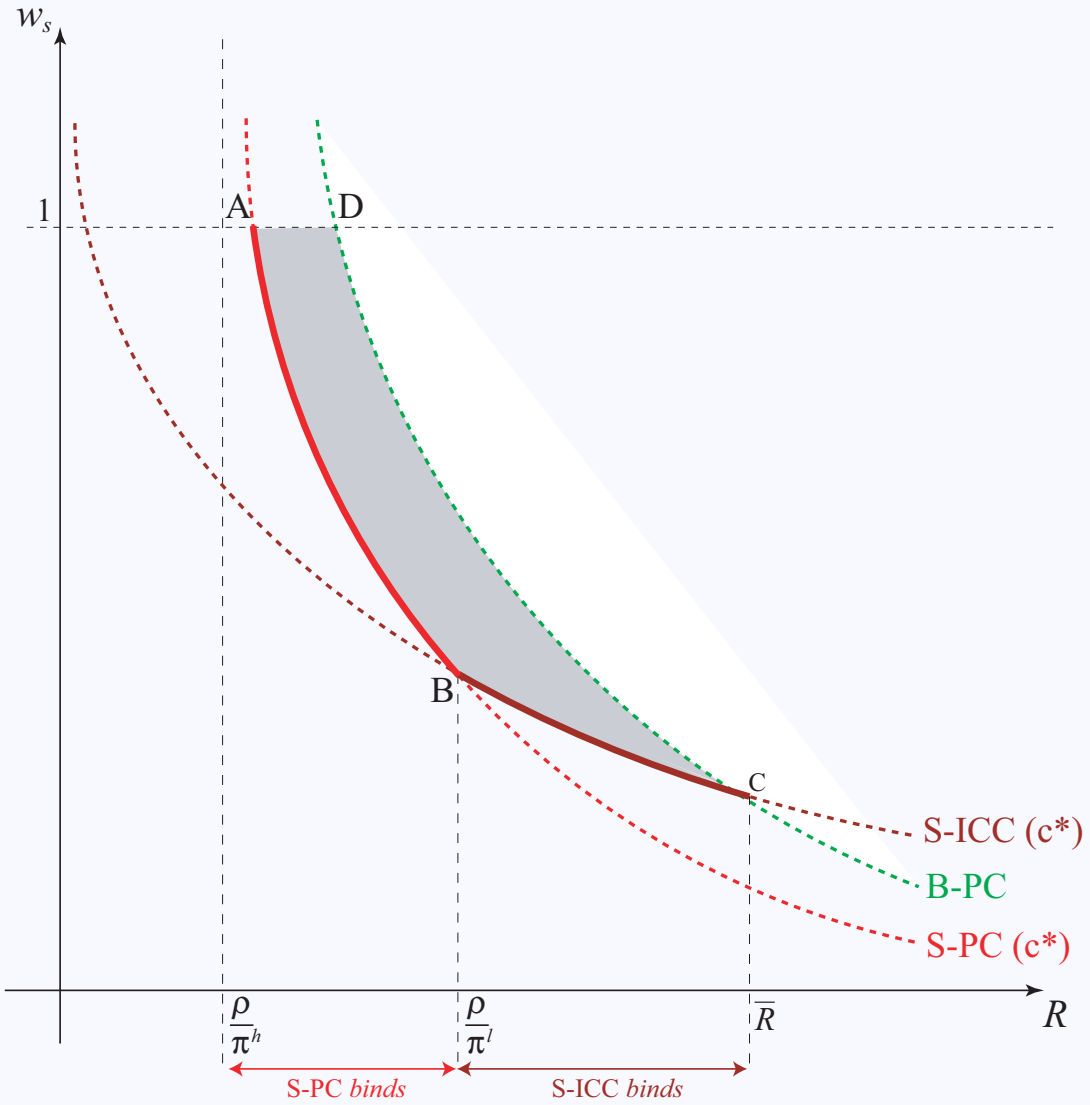
The Three Constraints



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Lender's Problem after substitutions

$$\begin{aligned}\phi &= \pi^h r\left[1-\left(w_b\left(R, w_s(R,c), c\right)+w_s(R,c)\right)\right] \\ &= \begin{cases}\pi^h \bar{x}-\pi^h\left(\dfrac{B(c)}{\Delta\pi}+\dfrac{c}{\pi^h-\frac{\rho}{R}}\right) & \text{for } \frac{\rho}{\pi^h} < R \leqslant \frac{\rho}{\pi^l} \\ \pi^h \bar{x}-\pi^h\left(\dfrac{B(c)+c}{\Delta\pi}\right) & \text{for } \quad R \geqslant \frac{\rho}{\pi^l}\end{cases}\end{aligned}$$

- Optimal c as a function of R is given by the following function

$$B'(c) = \max\left[-\left(\frac{\pi^h-\pi^l}{\pi^h-\frac{\rho}{R}}\right), -1\right]$$

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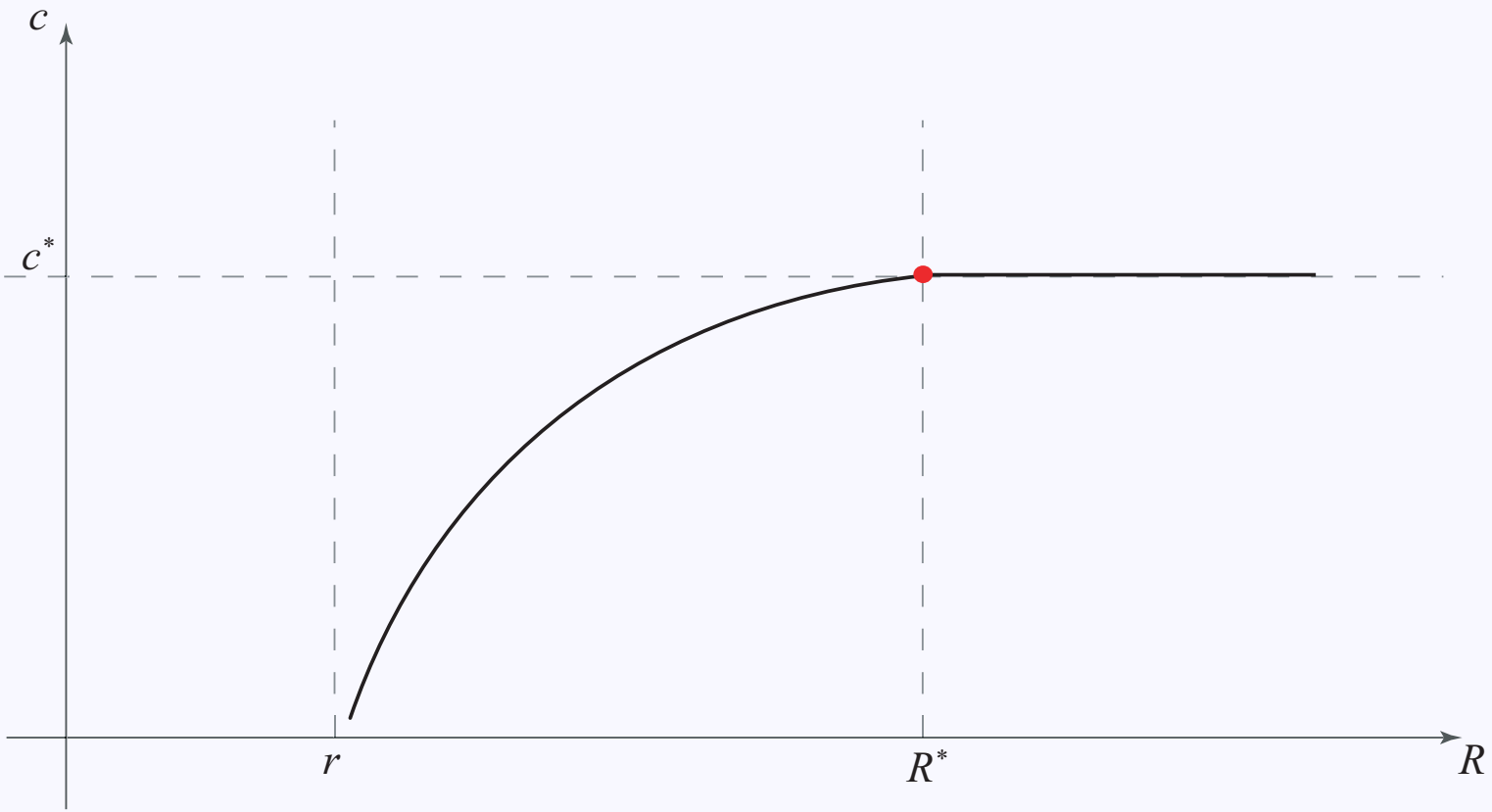
Lender's Problem

$$\phi = \pi^h r\left[1-\left(w_b\left(R, w_s(R,c), c\right)+w_s\left(R,c\right)\right)\right]$$



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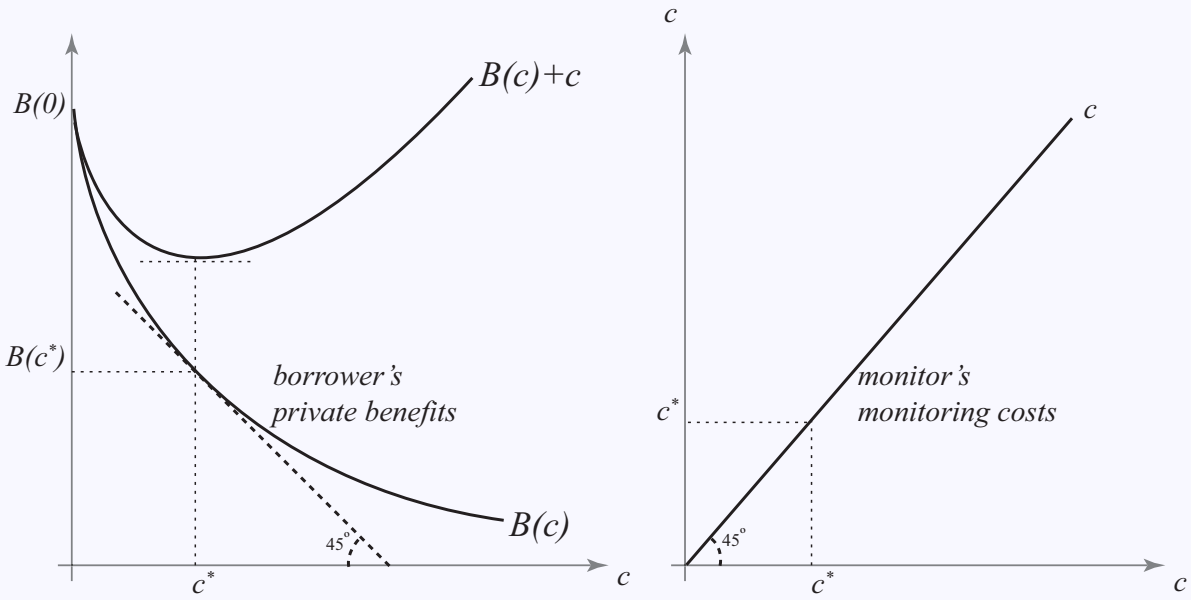
Optimal Contract



Proposition

For projects $\pi^h \bar{x} \geqslant \rho + c^*$, the lender induces the saver to monitor with intensity c^* by setting $R^* = \frac{\rho}{\pi^l}$, where $B'(c^*) = -1$.

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RENTS

Proposition

With the optimal contract (R^*, c^*)*, the borrower gets positive rents and the saver gets zero rents.*

- Lender's objective function is
  - increasing in R in the range (r, R^*)
  - unrelated to R if $R > R^*$
- R is a transfer from the borrower to the saver
  - At $R = R^*$, the saver gets zero rent, compensating her for opportunity cost of capital & cost of monitoring.
  - if R increases from R^*, borrower's rent decreases as saver starts getting positive rents

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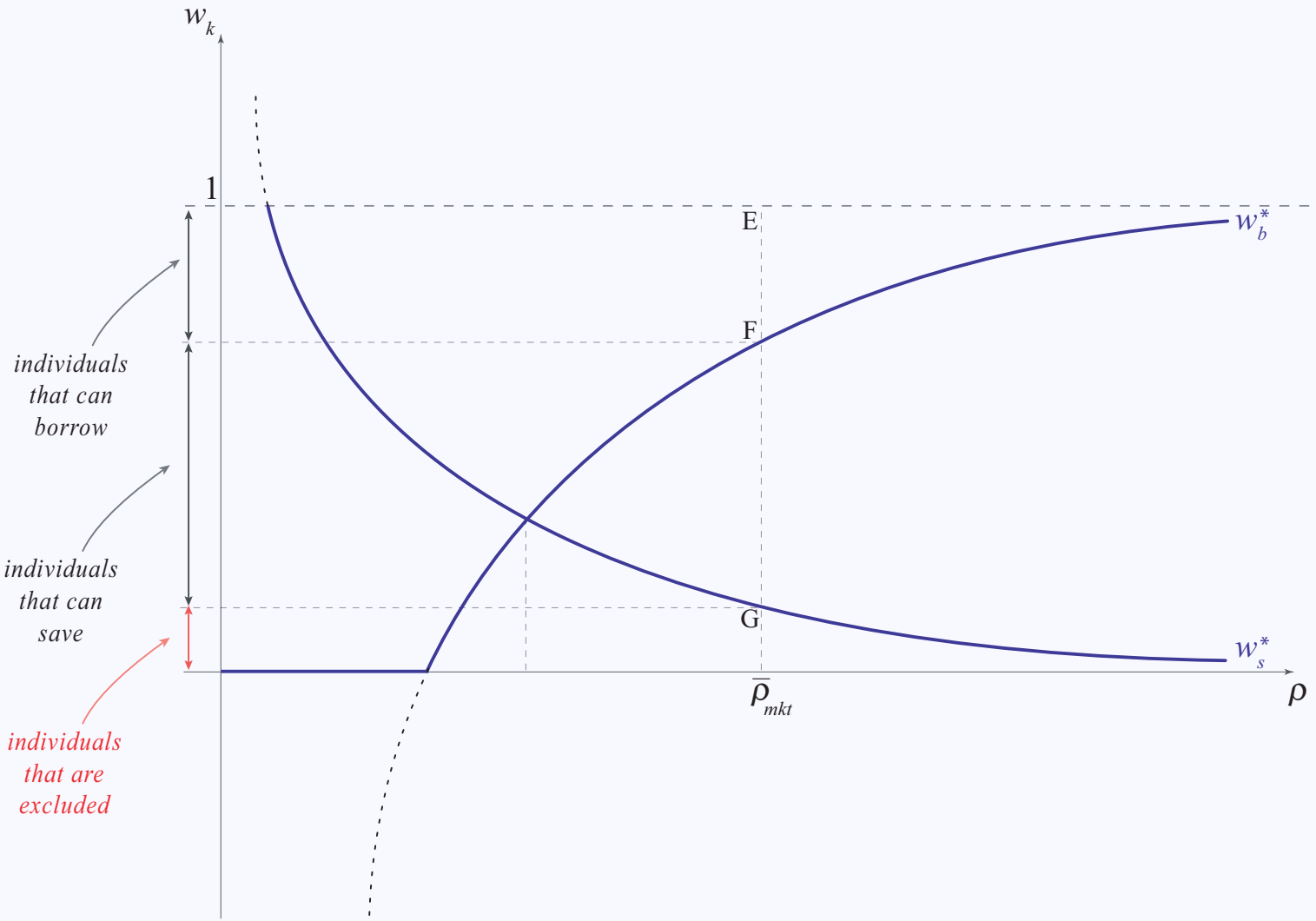
Minimum Wealth Required & Interest Rate

Saver gets a contract (R^*, w_s^*) and borrower gets a contract (r, w_b^*)



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Group Lending v Individual Lending

Proposition (Group Lending v Individual Lending)

Group lending is only feasible if $\rho > \tilde{\rho}$

- For $\rho \leqslant \tilde{\rho}$
  - wealth required to be a saver is *more than* that to be a borrower
- With saver getting zero rents, agents with sufficient wealth will prefer to be borrowers rather than savers

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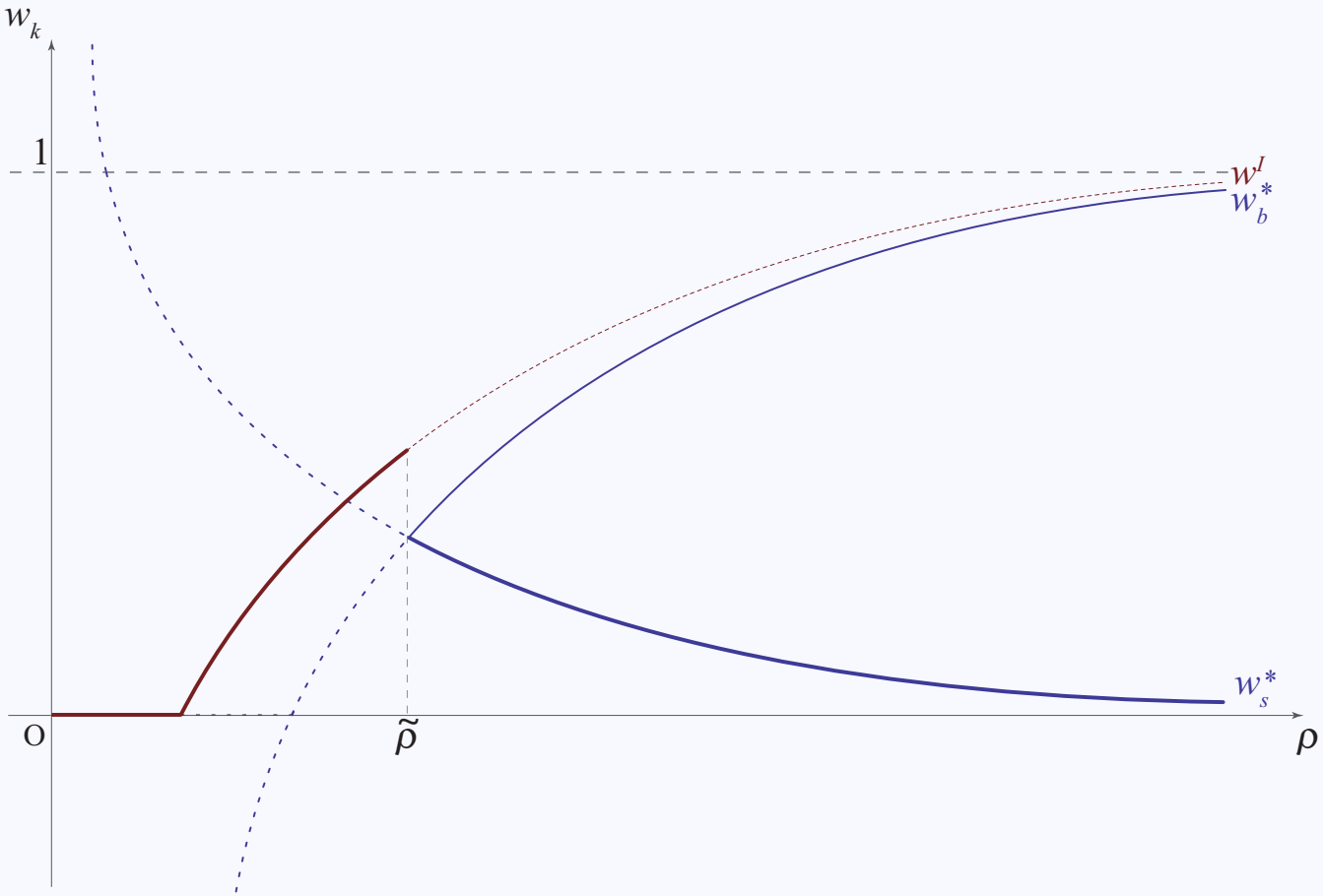

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Group Lending v Individual Lending

Proposition (Pairing-up)

If $\rho > \tilde{\rho}$, a potential borrower will always prefer to pair up with a potential saver and not a potential borrower and vice versa.

- $\odot$ For a potential borrower, pairing up with another potential borrower leads to competition for credit. (*savers get no rent*)

$\Rightarrow$ Pairing with a agent who can only save ensures timely credit.

- $\odot$ A potential saver can only get premium on her saving by pairing with a potential borrower.

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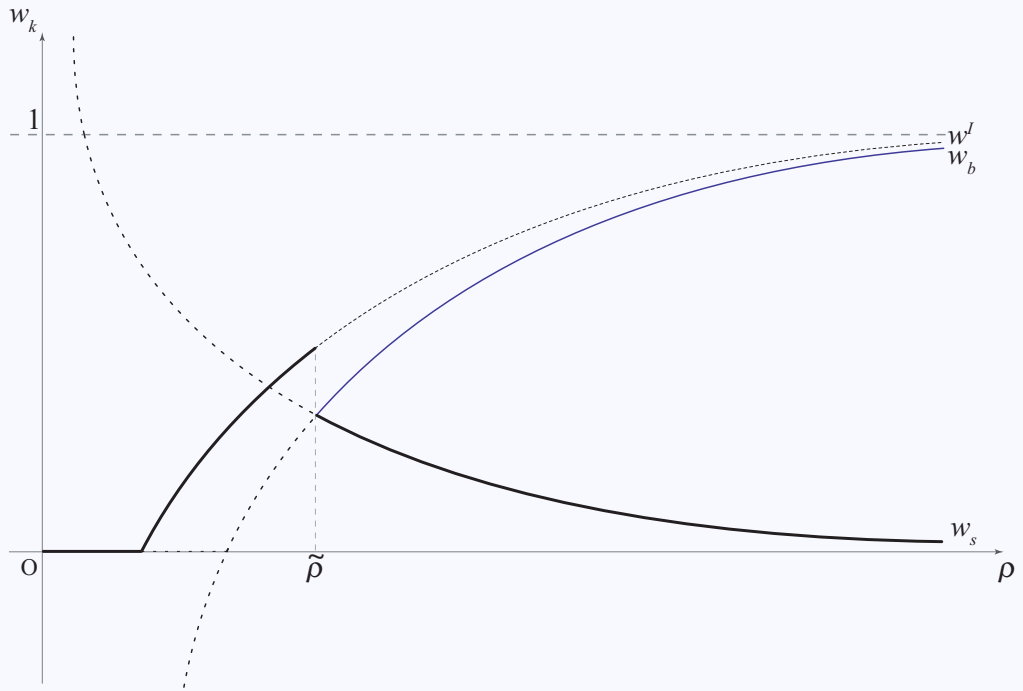
Interest Rate Policy

Proposition

Subsidising the cost of capital decreases the wealth required to participate in the group as a borrower. Conversely, it increases the wealth required to participate in the group as a saver.



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Escaping the Poverty Trap

Proposition

Subsidising the cost of capital decreases the wealth required to participate in the group as a borrower. Conversely, it increases the wealth required to participate in the group as a saver.

Proposition (Escaping the Poverty Trap)

There exists a $\hat{\rho}$ such that for all $\rho \in (\tilde{\rho}, \hat{\rho}]$ the savers are able to accumulate enough wealth to be able to borrow in the next period, if the current project succeeds.

$\rho \in (\tilde{\rho}, \hat{\rho}]$ allows the savers to become borrowers with probability π^h. At $\hat{\rho}$ the poorest person can be reached subject to the constraint $w_s^* R \geqslant w_b^*$.

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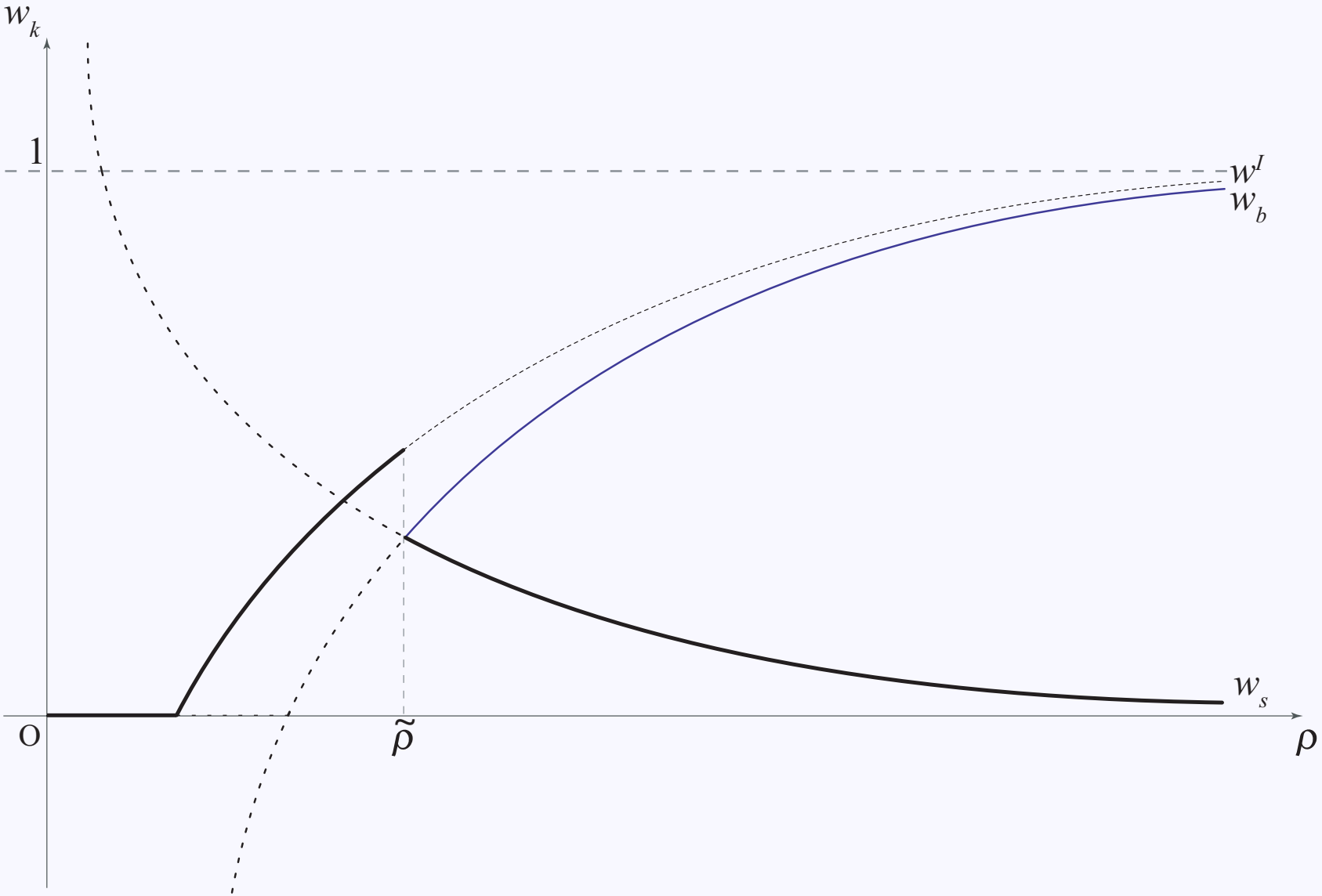
Escaping the Poverty Trap



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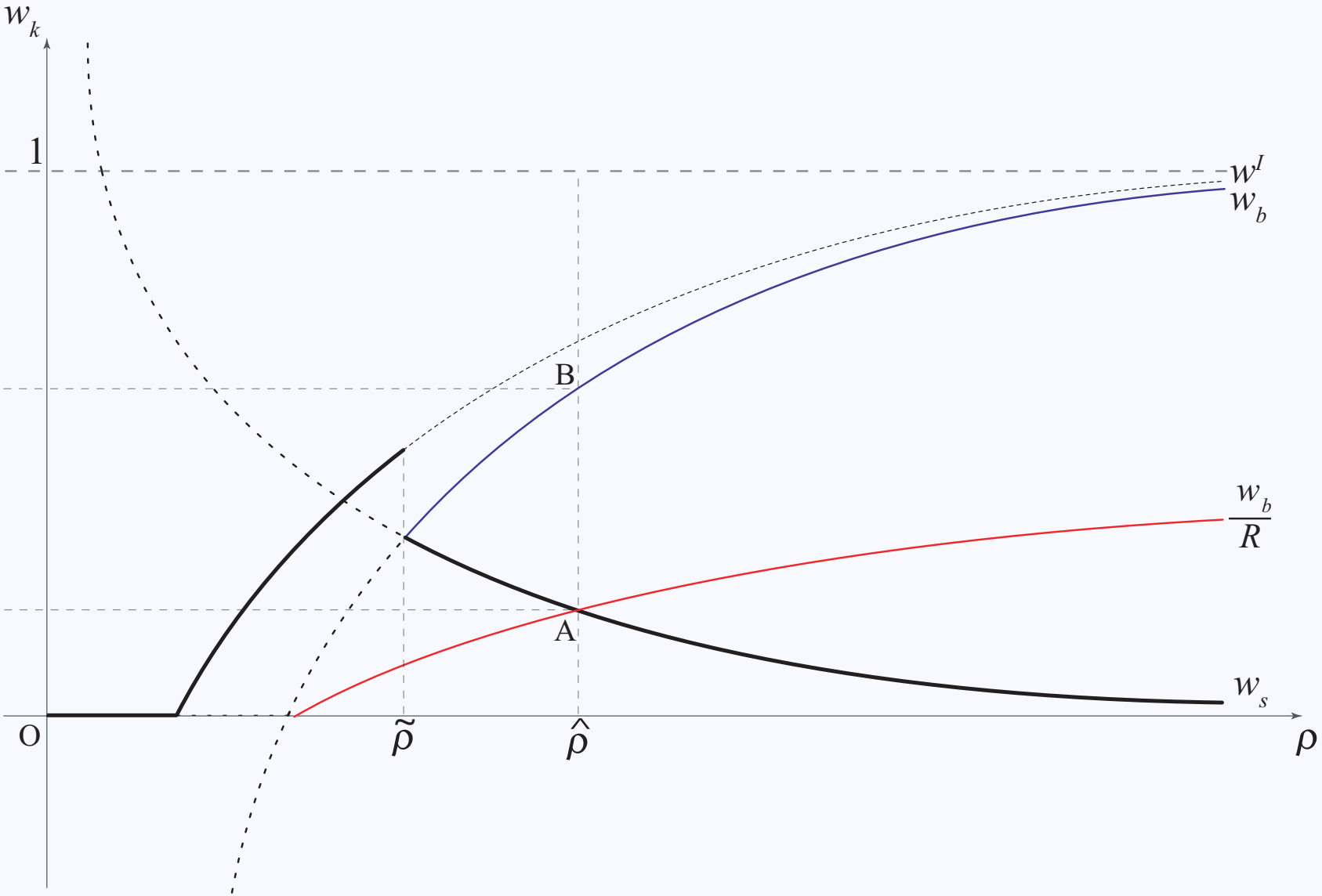

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Optimal Interest Rate ρ

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Proposition (Escaping the Poverty Trap)

There exists a $\hat{\rho}$ such that for all $\rho \in (\tilde{\rho}, \hat{\rho}]$ the savers are able to accumulate enough wealth to be able to borrow in the next period, if the current project succeeds.

- $\rho \in (\tilde{\rho}, \hat{\rho}]$ allows the savers to become borrowers with probability π^h. At $\hat{\rho}$ the poorest person can be reached subject to the constraint that she *escapes the poverty trap* in one period.

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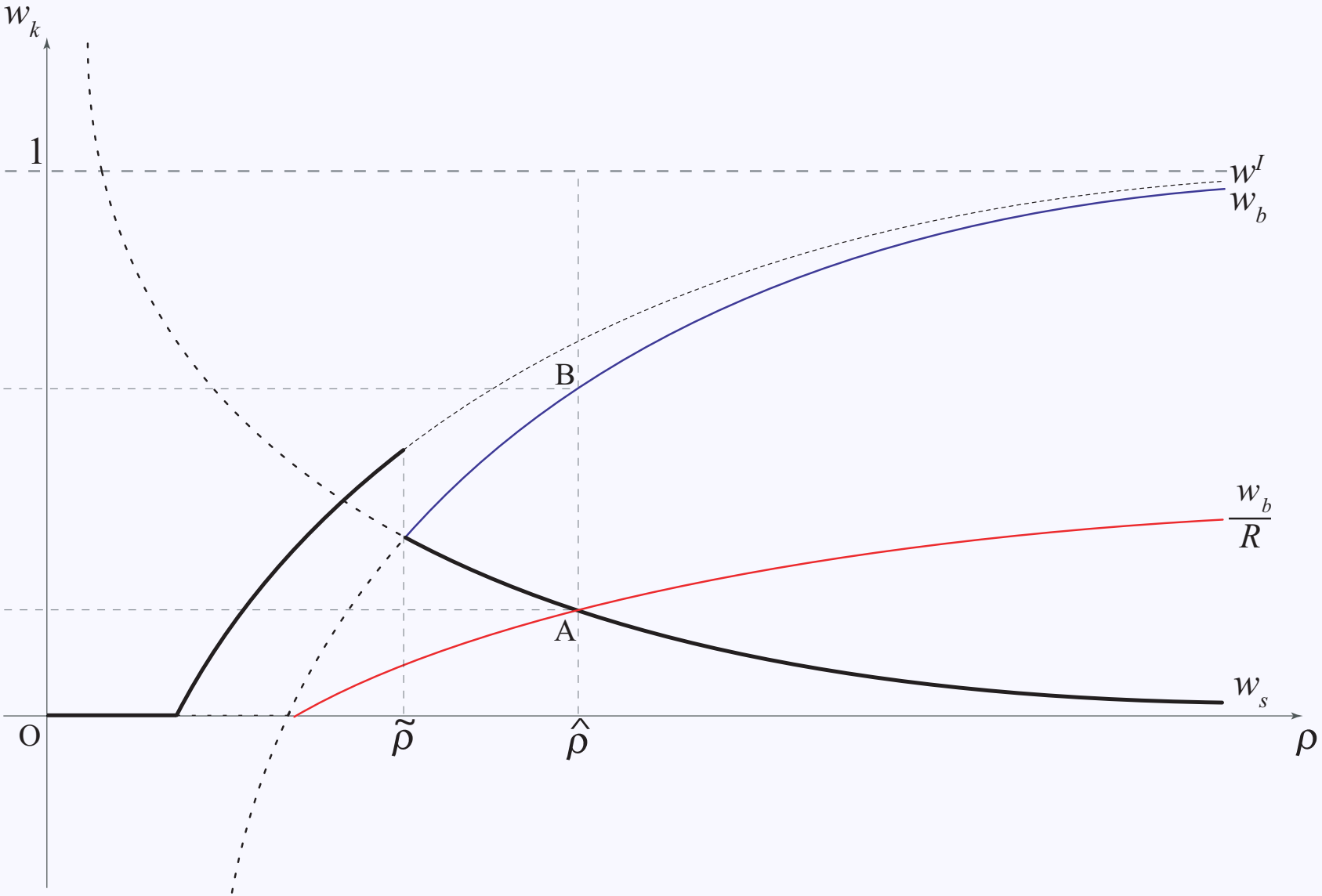
Escaping the Poverty Trap



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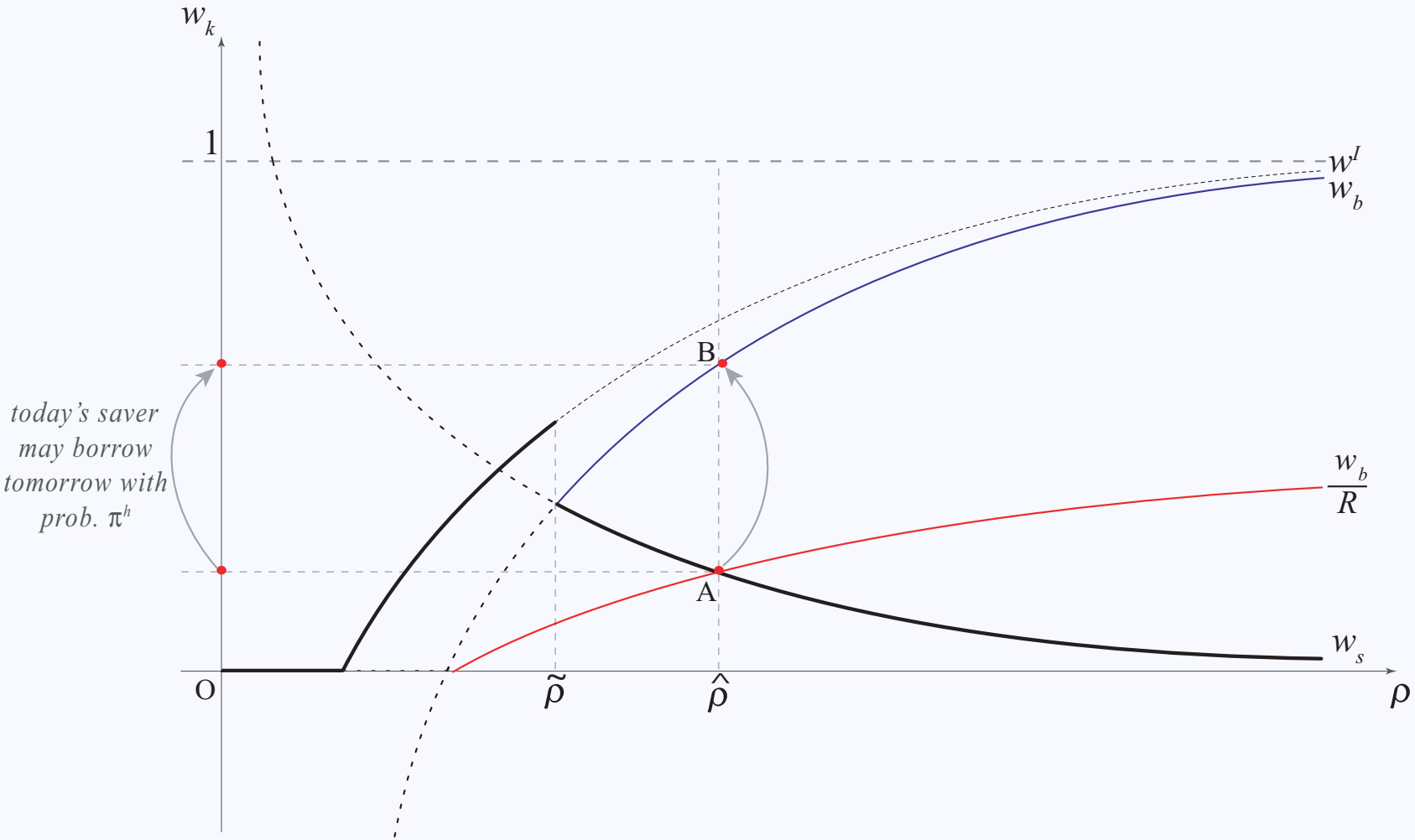
Optimal Interest Rate ρ



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Conclusion

- *Does Subsidising the Cost of Capital Really Help the Poorest? An Analysis of Saving Opportunities in Group Lending*
  - Subsidising the cost of capital (interest rate) *reduces* ↓ the cash-wealth required to participate in the group as a borrower, thus reaching out to poorer borrowers.
  - Conversely, it *increases* ↑ the cash-wealth required to participate as a saver, thus curtailing the opportunity for the poorest to enrich themselves.
- There exists an optimal cost of capital at which the *poorest* savers today can become tomorrow's borrowers.

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CONCLUSIONS

Mature Capital Markets allow savers to match with borrowers

task of monitoring is delegated to financial institutions

Financial institutions have a distinct advantage in monitoring projects (borrowers)

Rural Financial Markets savers may have the advantage in monitoring projects (borrowers)

Microfinance institutions should physically match the savers and borrowers and lend to the resulting collective entity

Matching savers and borrower within group maybe more efficient than through capital markets

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CONCLUSIONS

Very low returns for saving in rural financial markets

Cost of borrowing very high

. . . cost of financial intermediation high

The difference between saving and borrowing returns determines the long run wealth distribution (Matsuyama)

Matching savers and borrower within group maybe more efficient than through capital markets

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