SEMINAR 6
Problem 2

$b < B$, $B > b + c$

r: funding rate

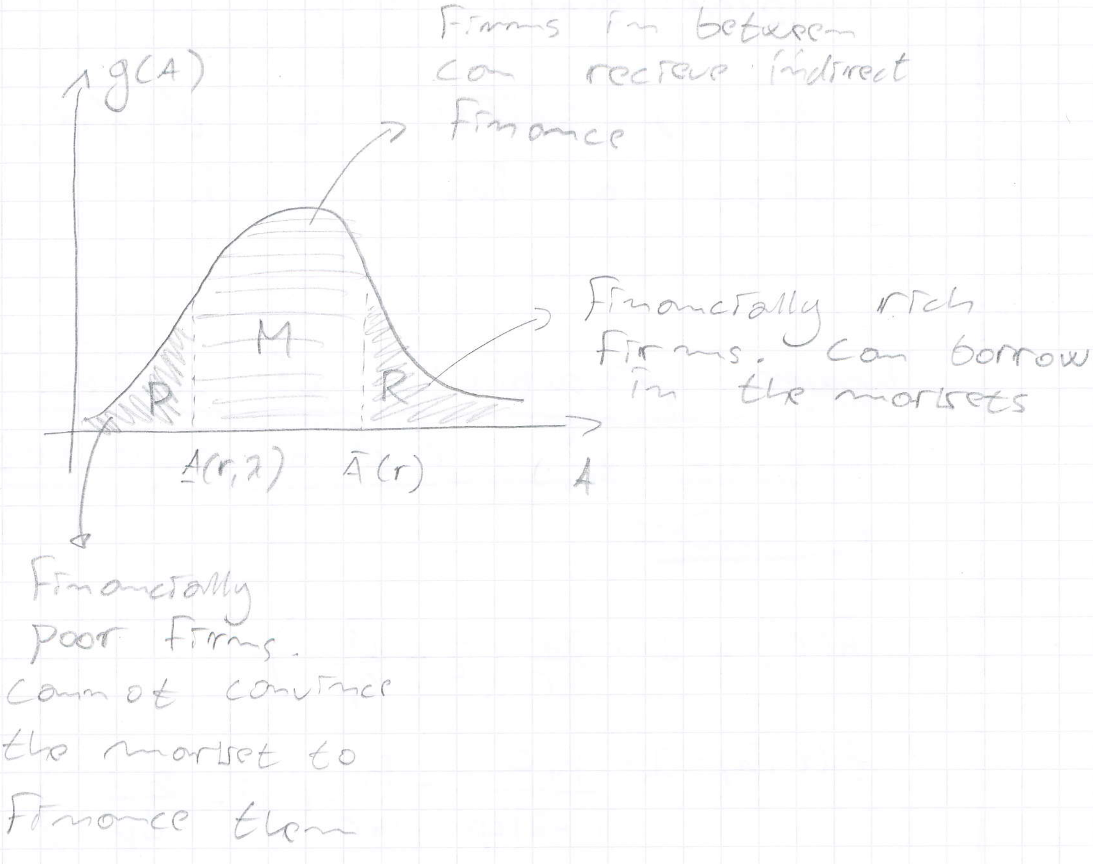
λ: required rate of return from the banks

Firms start with capital: A

Distributed according to $G(A)$

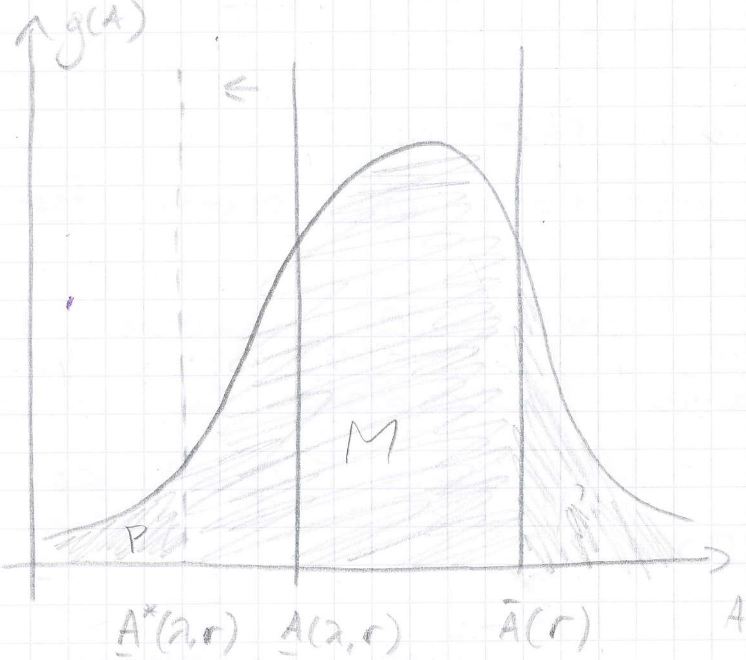
Firms need finance equal to $I - A$

if $I > A$



Expansion in credit:

- leads to a reduction in λ
- Only affects lower threshold
- Threshold for going from "poor" to "medium" is lowered
- More firms elligible for indirect finance



$\underline{A}(\lambda^*,r)$ shifts to $\underline{A}^*(\lambda^*,r)$ after a fall in λ

<u>lower probability of success if working (p_H), and a lower return if success;</u>

$$\bar{A}(r) = I - \frac{p_H}{1+r}\left(R - \frac{B}{\Delta p}\right)$$

$$\underline{A}(r,\lambda) = I - \frac{p_H c}{(1+\lambda)\Delta p} - \frac{p_H}{1+r}\left(R - \frac{b+c}{\Delta p}\right)$$

where $\Delta p = p_H - p_L$

c is the monitoring cost

And $\bar{A}(r) = I - \frac{p_H R}{1+r} + \frac{p_H B}{(1+r)(p_H - p_L)}$

$$\underline{A}(\lambda,r) = I - \frac{p_H c}{(1+\lambda)(p_H - p_L)} - \frac{p_H R}{1+r} + \frac{p_H b + p_H c}{(p_H - p_L)(1+r)}$$

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Differentiation of $\bar{A}$ yields:

$$d\bar{A}(R, P_H) = \bar{A}'_R \, dR + A'_{P_H} \, dP_H$$

$$\frac{\partial \bar{A}}{\partial R} = -\frac{P_H}{1+r}$$

$$\frac{\partial \bar{A}}{\partial P_H} = \frac{-R}{1+r} + \left(\frac{B(1+r)(P_H - P_L) - P_H B(1+r)}{[(1+r)(P_H - P_L)]^2} \right)$$

$$\frac{\partial \bar{A}}{\partial P_H} = \frac{-R}{1+r} + \frac{B}{(1+r)(P_H - P_L)} - \frac{P_H B(1+r)}{[(1+r)(P_H - P_L)]^2}$$

Then:

$$\boxed{d\bar{A} = -\frac{R}{1+r} dR + \left(\frac{B}{(1+r)(P_H - P_L)} - \frac{R}{1+r} - \frac{P_H B(1+r)}{[(1+r)(P_H - P_L)]^2} \right) dP_H}$$

And differentiating $\underline{A}$ yields

$$d\underline{A}(R, P_H) = \underline{A}'_R \, dR + \underline{A}'_{P_H} \, dP_H$$

$$\underline{A}'_R = -\frac{P_H}{1+r}$$

$$\underline{A}'_{P_H} = \frac{-C(1+\lambda)(P_H - P_L) + P_H C(1+\lambda)(P_H - P_L)}{[(1+\lambda)(P_H - P_L)]^2} - \frac{R}{1+r}$$

$$+ \frac{(b+c)(P_H - P_L)(1+r) - (b+c)(1+r)P_H}{[(P_H - P_L)(1+r)]^2}$$

Then:

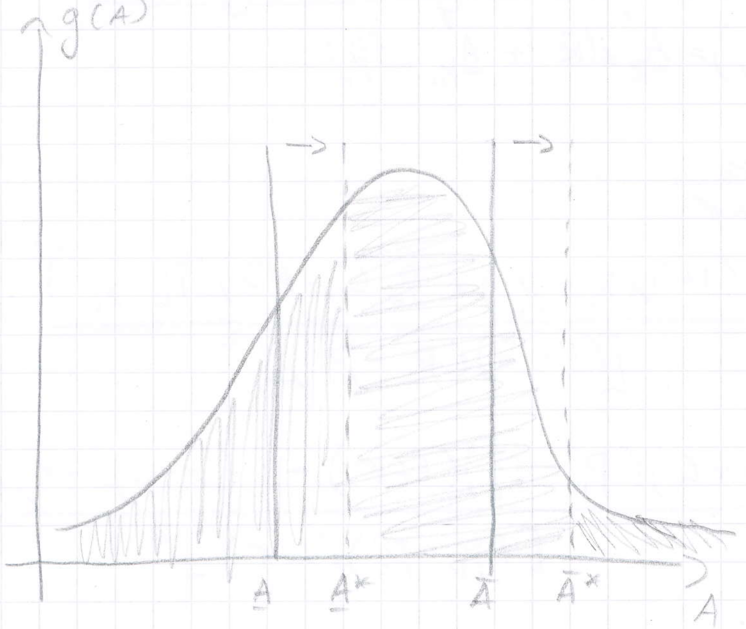
$$\boxed{d\underline{A} = -\frac{P_H}{1+r} dR + \left(\frac{b+c}{(P_H - P_L)(1+r)} - \frac{R}{1+r} - \frac{C(1+\lambda)(P_H - P_L)}{[(1+\lambda)(P_H - P_L)]^2} + \frac{P_H C(1+\lambda)(P_H - P_L)}{[(1+\lambda)(P_H - P_L)]^2} - \frac{(b+c)(1+r)P_H}{[(P_H - P_L)(1+r)]^2} \right) dP_H}$$

When both the probability for success and the return on a successfull investment falls, it is reasonable to expect that

$\Delta \bar{A} > 0$, $\Delta \bar{A} \approx \bar{A}'_R \Delta R + \bar{A}'_{p_H} \Delta p_H$, $\Delta R < 0$

$\Delta \underline{A} > 0$, $\Delta \underline{A} \approx \underline{A}'_R \Delta R + \underline{A}'_{p_H} \Delta p_H$, $\Delta p_H < 0$

That being said, there are effects pulling in the opposite direction. The effects of a reduction in p_H has both positive and negative terms.

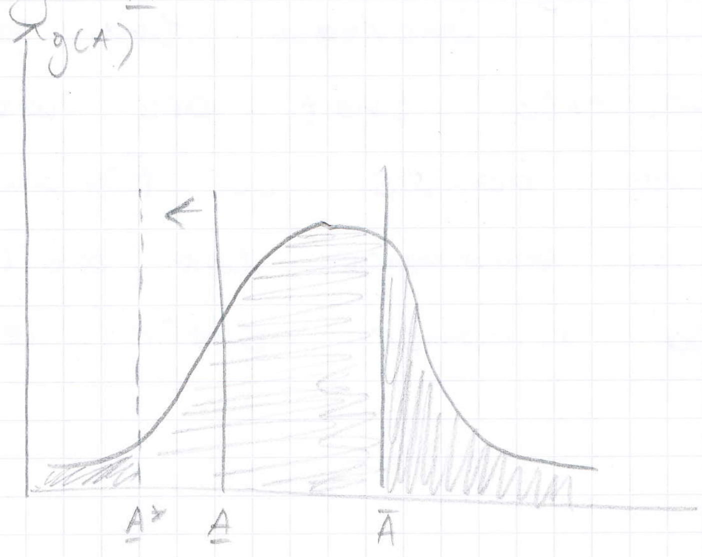


The result is that the number of poor firms increases, while there will be fewer rich firms. The change in the number of firms in the middle will be ambigous.

Banks monitor more effectively

Only $\underline{A}$ will be affected by a reduction in c and b.

Intuitively speaking, a lower monitoring cost and opportunity cost of working under monitoring will increase the number of firms elligible for bank finance; by lowering $\underline{A}$



Reduction in lending capacity

Ignoring the warning that Holmström and Tirole gave against using this model for policy recommendations. The government (or central bank rather) could intervene in the interbank market to lower the funding cost for banks. This would increase the number of projects that are worthwhile for the banks to finance. It would also enhance the ability of banks to finance their lending