

Problem set 9 (November 11, 2016)

Question 2

The model can be found on the lecture slides on the Holmstrom-Tirole model.

An entrepreneur/firm chooses direct financing if $A > \bar{A} = I - \frac{P_H}{r} \left(y - \frac{B}{P_H - P_L} \right)$

A firm chooses bank financing if $A \in (\underline{A}, \bar{A})$ where $\underline{A} = I - \frac{P_H}{r} \left(y - \frac{b+C - \frac{P_H}{\lambda P_L} Cr}{P_H - P_L} \right)$.

Every firm that chooses bank financing borrows from a bank $I_b = \frac{P_L C}{\lambda(P_H - P_L)}$.

The demand for bank funds is equal to: $I_b(\lambda) [G(\bar{A}) - G(\underline{A})]$.

Total supply of funds (total= bank+"uninformed"):

$$S(r) + \int_0^{\underline{A}} Ag(A)dA + K_b.$$

Total demand for funds:

$$\int_{\underline{A}}^{\bar{A}} [I - A] g(A)dA.$$

1) Consider the effect of an expansion in supply of bank funds K_b .

As a result, λ must decrease, so that $I_b(\lambda)$ increases. As λ decreases, \underline{A} also decreases: more firms have access to bank financing. So a decrease in λ generates an increase in the demand for bank funds, and ensures that the market for bank funds is in equilibrium.

The effect of an expansion in K_b or r is ambiguous: at the same time (a) I_b increases, so firms that had access to bank financing before the increase in K_b now need less uninformed funds and (b) more firms have access to bank financing, and these firms will demand also uninformed funds. Effect (a) decreases the demand for uninformed funds, effect (b) increases the demand for uninformed funds. If the overall effect is a net increase (respectively decrease) in the demand for uninformed funds, then we should expect r to increase (respectively, decrease).

2) Consider the effect of a lower P_H .

As a result, you can check that both \bar{A} and \underline{A} increase and $I_b(\lambda)$ also increases.

So there is less total demand for funds, and more supply of funds from firms that as a result of the decrease in P_H do not have access to any type of financing anymore (those are the firms with $A < \underline{A}$ after the change in P_H and $A > \underline{A}$ before the change in P_H). An increase in total demand for funds should most likely induce an increase in the demand for uninformed funds, while the increase in $I_b(\lambda)$ will reduce the demand for uninformed funds (hence the overall effect on r is ambiguous). The overall effect on λ is also ambiguous: the increase in \underline{A} reduces the demand for bank funds, while the increase in \bar{A} increases the demand for bank funds.

3) Consider the effect of a reduction in the monitoring cost C .

A reduction in C induces a reduction in $I_b(\lambda)$ and a reduction in \underline{A} . So the demand for uninformed funds will increase as more firms will demand uninformed funds (as a result of a decrease in $I_b(\lambda)$ and \underline{A}), while at the same there is less supply of uninformed funds from firms with $A < \underline{A}$. Hence the overall effect will be an increase in r . The effect on λ is ambiguous: as \underline{A} decreases there is more demand for bank funds, while as $I_b(\lambda)$ decreases there is less demand for bank funds. As the overall effect on the demand for bank funds is ambiguous, also the effect on the “price” of bank funds (λ) is ambiguous.