**Theory of Corporate Finance, ECN 5355**

**Homework for lecture 4, due 26 October (before class)**

**Problem 1:** Assume that a project has a probability of success of *pH=0.8* if the borrower behaves and *pL=0.3* if the borrower misbehaves. The size of the necessary investment is *I = $800*. If successful, the project earns *R=*$1,200. If she misbehaves, the borrower can secure a private benefit *B=$150*. The risk-free interest rate is zero.

a) How much income can the borrower maximally pledge if the project is successful? How much is the expected pledgeable income? How much is the agency rent?

b) How much of her own wealth does the borrower need to invest?

c) What is the net present value of the project, what is the surplus of the borrower if she invests the minimum amount of her own wealth?

d) How small would the private benefit B need to be to allow for a contract where no own wealth of the borrower is invested?