

## 1<sup>st</sup> Seminar assignment in ECON 4245, week 36 (3-7 Sep)

### A. (from exam fall 2002)

Should a producer of mobile phones, like Nokia, itself produce covers for its phones, or should it buy them from independent suppliers? Discuss this question, putting emphasis on the way in which the presence of contract incompleteness and relationship-specific investments has importance.

### B. Delayed specification.

Consider the reduced model under “Why are contracts incomplete?” on page 28 in Lecture1.

In this special case, only M1 makes investments at time 0. Consider the following contract which gives M1 the right to specify the widget type when he knows it: ”M1 specifies the widget type at time 1. If M2 supplies it, then she receives  $p_1$ . If not, she receives  $p_0$ .”

Let  $p_0 \geq 0$  and  $p_1 > p_0 + C^*$ .

- i) describe what M1 and M2, respectively, will do at time=0 and time=1, i.e. you must answer and explain:
  - a. will M1 invest? why?
  - b. will M2 deliver? why?
- ii) Is this contract subject to renegotiation? Why?
- iii) No matter what you answered on i) and ii), assume now that renegotiation will occur.
  - a. Find an expression for the price after renegotiation.
  - b. Given this price, what can you say about the level of investment?

(Hint: read Hart ch. 4)

### C. Financial contracting and debt

Describe the differences between Aghion&Bolton’s and Hart&Moore’s models as presented in Lecture2. Focus on what kind of real life aspects the models are able to describe and which aspects they are lacking.

### D. Fin. contr. and debt with uncertainty

Consider Hart and Moore’s model from Lecture2. Contracts are incomplete, in particular  $y$  is unverifiable. We’ll now add some uncertainty.

Let  $K=90$ ,  $w=50$  and introduce two states; each will occur with probability  $\frac{1}{2}$ :

State1:  $y_1=60, y_2=100, L=90$

State2:  $y_1=40, y_2=100, L=20$

- i) Assume E gets financing, what will E pay to C at time=1 in State2? Why?
- ii) Will C be willing to provide financing here? Why?
- iii) Assume yes on ii), what will  $f$  be in the two different states?
- iv) Now let the borrowed amount,  $B$ , be higher than the actual financing need,  $B=40+\epsilon$  where  $\epsilon>0$ . What must  $P$  (the amount to pay back) be in order for C to break even?

(Hint to entire D: don't panic and think logically; this is perhaps easier than the lecture notes. Ignore E's participation constraint, just compute expected values where that is needed. If you're in serious trouble, have a look at page 113-114 in Hart, and it should become very easy.)