NCF, March 9th

Slides from first half of today's lecture

These slides were requested and are put out as-are (I know the file becomes biggg).
A few notes to those who did not attend:

- These slides cover only (slightly less than) the first 45 min. My usual mode is chalk and board, but for this more explanatory part I found slides more appropriate.
- The full information case is not part of the model, only presented for reference. At the end of last slide, we arrive at the question why the principal cannot just propose the menu of $\{a_0, a_1\}$ (the answer is that both types would choose the latter), and then the chalk+board part starts.
  (Oh, and a detail forgotten: quantities and prices are always assumed nonnegative.)
- I guess it is less likely that I'll use slides when we continue doing calculations – my attitude is that calculations should not be presented quicker than can be written – so don't *expect* more slides posted. (That's not definite, more files might show up.)

– Nils

The "Principal – agent" model

Principal (P) wants to hire agent (A) of unknown – to P – efficiency.

(0) A gets to know his/her type
(1) P offers A a contract
(2) A takes it or leaves it
(3) The contract is fulfilled, if accepted

P designs the contract and has the bargaining power.

→ If P had full information (a case we'll review for comparison), P would fix A's profit to zero

→ standing assumption:

- A accepts at zero profit
- If A is profit-wise indifferent between two alternatives, then A will choose what benefits P.

→ So: Any profit to A is information rent.

More on the setup:

Re (3) & (1).

Fulfilled - no uncertainty here;

Contract items are both observable and verifiable

↓ observable: P (and A) knows if & when fulfilled

↓ verifiable: to third party, e.g. court of law

Payment and deliverable quantity are observable and verifiable

"Type" is not, and is thus not part of contract.

Re (1) and (2)

Contract is a menu of

(quantity, payment transfer) pairs.

→ Agent may choose (0,0)

(rejection, "leave it")

regardless of whether specified

on menu

→ For our convenience, (0,0) may

or may not be a "menu item".

So: A may choose any menu item

or (0,0)

Turns out: with two types,

we can do with only two menu

items.

Re (c):

Agent's type affects only the cost function.

Notation: Book uses overscore ($\bar{\theta}$) (e.g.) for high-cost, underscore ($\underline{\theta}$) for low-cost (a.k.a. "efficient") type.

I will use subscripts

$\theta_1 = \bar{\theta}$ high cost

$\theta_0 = \underline{\theta}$ low cost

Type 1 : high cost

Type 0 : low cost

Notation:

Quantity: q

Payment transfer: t

P's value : $S(q) - t$

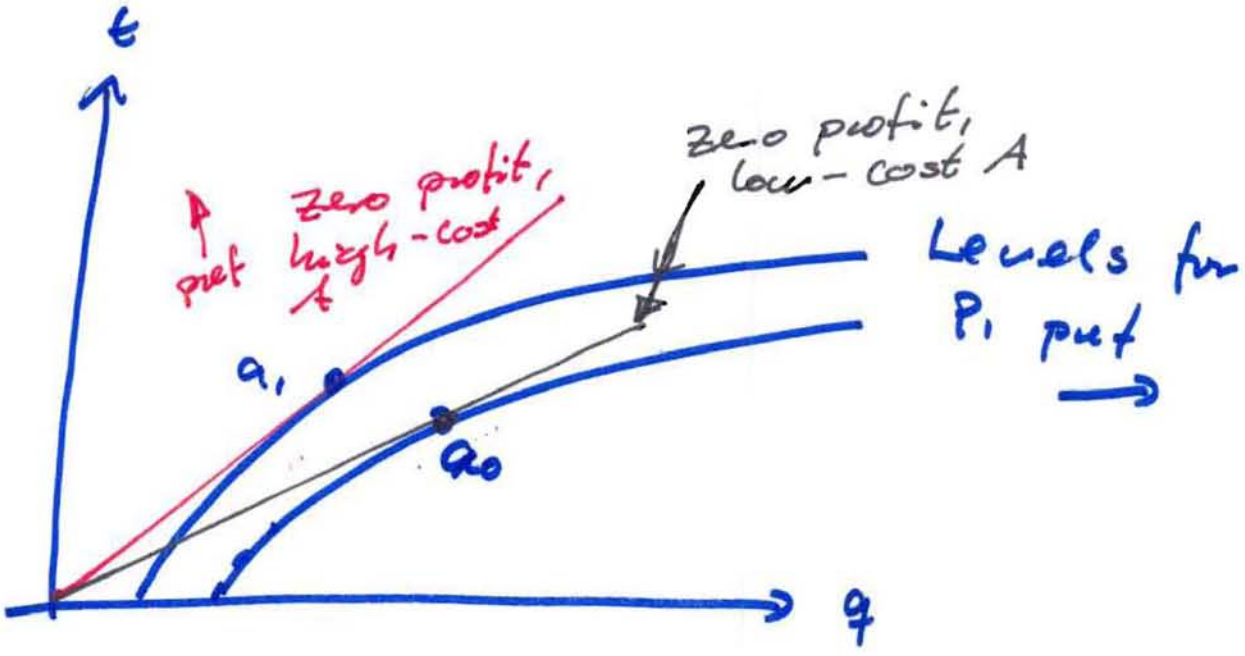
A's value : $t - C_i(q)$

where $i \in \{0, 1\}$ is A's type

Model case: $C_i(q) = \theta_i q + F$

where book fixes $F = 0$.

For comparison: the case where A's type is known to P



Fixes contract at zero profit for A, so that marginal values ~~eq~~ match.

q_0 for type 0

q_1 for type 1