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Session 1

Semestre 1

Master 1 Econometrics, Statistics, Economics & Economié Droit
Epreuve: Understanding Real World Organisations
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ANSWER TWO QUESTIONS

1) What is a "hold-up problem"? Can the wish to avoid hold-up problems help to explain why some firms are large while others are small?

A hold-up problem may occur when two or more parties are in an economic relationship in which a) one or more of them make relationship-specific investments (defined as investments whose payoff is higher when that relationship continues than when it does not), and b) the division of the returns to the investments cannot be contractually determined in advance but must be negotiated after the investment costs have been sunk. The other party can threaten to pay only a return that does not cover the full costs of the investment but which the investing party cannot credibly threaten to refuse.

Answers receive 5/10 for correctly defining hold-up problems, an extra mark or two for giving real-world examples, and an extra 2 or maximum 3 points for explaining (with an example) that when two independent firms merge the incentive for engaging in hold-up behavior diminishes (but does not completely disappear if there remain some differences in objectives between subsidiary divisions of the merged firm).

2) Can the theory of platforms explain why some religions emphasize the high cost of membership for their adherents?

Answers receive 5/10 for noting that the attractiveness of a platform to its adherents depends on the quantity and quality of other people who use the platform, and that this is often true of religions which offer not just particular services but also access to other members of good character and trustworthiness. Platform competition is thus characterized by network externalities. Extra marks for noting that:

a) network externalities can be one-sided (each person values the total quantity or quality of members on the platform) or two-sided (members of one type – eg men – value the quantity and quality of members of another type – eg women). Some religions also function as marriage markets for example or can connect some memebrs (eg warriors or martyrs) to others who provide financial donations.
b) The "price" of membership of religious organizations can be financial (eg paying tithes) or in kind, due to restrictions on diet or behavior.
c) The price of membership can be high for two separate reasons – first because it reflects the network benefits of membership, and secondly because a high price serves to screen committed (therefore high-quality) members.

3) In what ways is competition between rival armies, gangs or mafia organizations similar to competition between firms, and in what ways is it different?

Answers receive 5/10 for noting that armies, gangs and mafias are like firms in that they typically compete with each other in a given territory, usually seeking to gain revenue by providing services to those whom pay them. The services typically consist of protection and are usually provided additionally to any threats of

extortion or violence. What makes them different from most firms is that the threats of extortion or violence constitute a "bad" additionally to the "good" they provide in terms of services.

Additional marks for answers that a) give good examples of competition between armies, gangs or mafias; b) note that because they provide bads as well as goods, the effect of competition on citizen welfare is ambiguous.

Up to 3 additional marks for a model which solves for consumer welfare.

4) Do we have a satisfactory way to explain why voters elect politicians they know are lying to them?

Answers receive 5/10 for noting that although most voters would prefer to elect politicians who do not tell lies, the willingness to tell lies may be an observable signal that is positively correlated with an unobservable characteristic that voters value – such as being an outsider who does not belong to the establishment. Extra marks for a) giving good examples of relevant unobservable characteristics, b) specifying a simple model with two characteristics, one observable and one unobservable, that explains this intuition, c) explaining why voters might be willing to value the benefit of the unobservable characteristic above the cost of the observable signal at some times but not at others (eg because at some times but not others the establishment's prosperity benefits the rest).

5) Two firms are in a duopoly position on a market. Each is trying to choose between setting a high or a low price for its product. Prices are set simultaneously once per year and cannot be changed until the following year. If both set low prices they will each make annual profits of €200m, while if they both set high prices they will each make annual profits of €400m. If one of them, however, sets a low price while the other sets a high price, the firm with the low price will capture a large market share and make €600m. The profit for the firm with the lower market share in this case would be €100m if it is firm 1 and zero if it is firm 2. The two firms have discount factors of G1 and G2, which are not necessarily the same.

   a) Calculate the lowest values of the discount factors which would enable the outcome in which both firms set a high price to be sustained as a sub-game perfect equilibrium of an infinitely repeated game by the threat that if either firm sets a low price, its rival will set low prices for ever, starting in the following year.

   $G1, G2 \geq ½$ (calculated because $200 \leq G1.(400-200)/(1-G1)$.

   b) Would your answers be different if, each year, firm 1 first set its price and then firm 2 could observe this price before deciding which price of its own to set?

   Yes because firm 1 could not gain at all from deviating to a low price since firm 2 would set a low price in the same period.

   c) Suppose that each firm has a subjective probability equal to p that its rival will set a high price in the current year, and (1-p) that it will set a low price. Calculate, as a function of p, the values of G1 and G2 at which the two firms will be just indifferent

between setting a high price and setting a low price. You should assume that, if both firms set a high price this year, they will do so for ever in the future.

If firm 1 sets a high price the expected payoff V1 = p(4+ 4*G1/(1-G1)) + (1-p)(1+2*G1/(1-G1)).

If firm 1 sets a low price V1 = p*(6 + 2*G1/(1-G1)) + (1-p)(2+2*G1/(1-G1)).

from which, by subtracting the top expression from the bottom one, we have that (6p-4p) - 2p*G1/(1-G1) + (1-p)(2 - 1) = 0

which yields G1 = (1+p)/(1+3p)

The equivalent calculation for firm 2 is different just in the expression for a payoff from a high price, which is V2 = p(4+ 4*G2/(1-G2)) + (1-p)(0 + 2*G2/(1-G2))

Low price expression is the same as for firm 1:

V2 = p*(6 + 2*G2/(1-G2)) + (1-p)(2+2*G2/(1-G2)).

Subtracting the high price expression from the low price expression yields (1-G2)(2p) - 2p*G2 + 2(1-p)(1-G2) = 0

G2 = 1/(1+p)

When p=1 (the case for part a of the question), G1=G2=1/2.

To summarize:

G1 = (1+p)/(1+3p)

G2 = 1/(1+p)

d) Why do you think the two firms might have different discount factors?

They might be of different sizes, one might be owner-managed while the other is run by managers who have different goals from the owners, they might make products with different life-cycles.