PhDBA 279C - Corporate Strategy and Technology

Wednesday December 17th, 2008

9AM-Noon

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Instructions. This is a take home exam, emailed to you at 9AM on December 17th, 2008. You have three hours to complete the exam, which you should return to Donna Seaward either through email (dseaward@haas.berkeley.edu) or personally at her office (F631, phone: 642-4849). The exam is strictly individual. Students should NOT communicate at any point during the alloted exam time. You must answer any two of the three questions contained in this exam.

Questions

1. Two firms, 1 and 2, are located respectively in points a and $1-b>a\geq 0$ of the linear city with total length 1. Consumers have unit mass and are uniformly distributed on the line. Each firm produces a good at zero marginal cost, but consumers face quadratic transportation costs. A consumer located in x faces costs $t\left(x-a\right)^2$ when buying from firm 1, and costs $t\left(1-b-x\right)^2$ when buying from firm 2. All consumers buy at most one unit from at most one firm. All consumers obtain direct utility (that is, gross of price paid and transportation costs) v_1 when consuming from firm 1, and utility v_2 when consuming the good produced by firm 2. Therefore, the overall utility that a consumer located at x obtains when buying from firm i is, $v_i-p_i-T_i$, where p_i is the price of the good sold by firm i, and T_i is the transportation cost paid to buy from firm i. Now consider the two stage game where in the first stage firms choose location, and in the second stage they choose prices (and consider that the market is covered and both firms sell). Then answer the following two questions.

   (a) Demonstrate formally whether the following statement is true or false: "When goods of different quality are available (i.e., $v_1\neq v_2$), the effect of transportation costs on price margins are amplified, and this is true for both firms."

   (b) A well known result is that if $v_1=v_2$, then "maximum differentiation" obtains in the first stage. But in the real world firms may have introduced uneven innovations to product quality, so perhaps v_1 is NOT equal to v_2. Does the maximum differentiation result survive if $v_1\neq v_2$? Demonstrate formally, with reference to the demand and competition effects stemming from location choice.

2. As we discussed in class, the literature on 'dynamic capabilities' has perhaps suffered from inadequate attention to conceptual and analytic rigor. That said, also as discussed, the concepts themselves may capture an important part of the relationship between internal firm organization and the structure and strategy of particular industries.

   Given this latter point, and in an attempt to 'see how far on can get' to make this literature useful, provide answers to the following:

   (a) What would be a precise, succinct and analytically most useful definition of a 'capability,' 'dynamic capability' and 'competence' of the firm? Explain briefly the mapping from the literature to your definitions.

   (b) How are the above concepts distinct?

   (c) Develop an example–either generically or specific to a particular industry–of how one may evaluate this literature empirically:

      1. What hypotheses would you test?
      2. How would you operationalize and measure dependent and key independent variables?
      3. How would you identify cause and effect?

3. Consider a relationship between a seller (S) and a buyer (B). S can produce up to one unit of a service valued by B, using asset A in production. Ex ante S is drawn from a large pool of sellers having cost c of production, and B is drawn from a large pool of buyers having valuation v for the output, with $v > c$. S can exert cost-reducing effort $e \geq 0$, which costs him $\frac{1}{2}e^2$ in utility terms. This cost reduction has an *asset-specific* component of se and a *relationship-specific* component of σe. Specifically, S's cost after such an investment will be $c - se - \sigma e$ when he uses asset A and trades with B, and $c - se$ when he uses asset A, but produces for another buyer. Similarly, B can undertake value-enhancing investment $y \geq 0$, which costs him $\frac{1}{2}y^2$ in utility terms. This value increase has an *asset-specific* component of by and a *relationship-specific* component of βy. Symmetrically, B's value after such an investment will be $v + by + \beta y$ when he uses asset A and trades with S, and $v + by$ when he uses asset A, but procures from another seller.

   After investments have been made, S and B bargain about the optimal level of trade, dividing the surplus over their outside options equally. Each of them has the option to switch to another partner who has not made any specific investment.

   A deterministic control structure is where one or both of the parties own the asset, where ownership conveys the owner with the right to "walk away" with the asset, where joint ownership gives each owner veto power over the use of the asset. Describe all possible deterministic control arrangements between S and B and what total surplus they create. Under which conditions (values of the parameters s, σ, b, β) is each deterministic control structure optimal?