NOVA SCHOOL OF BUSINESS & ECONOMICS

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Time: 2:00

INDUSTRIAL ORGANIZATION
(B.S. in Economics and B.S. in Management)

Final exam (resit season)

Answer each question on a separate sheet of paper. Good luck!

1. [15 minutes; 4 points] The following statement was recently made by a former student of this course:

> "Requiring all firms to immediately publicize price changes may facilitate them setting high prices without explicitly colluding."

Comment in no more than ten lines (graphs, if any, excluded) while agreeing or disagreeing.

2. [15 minutes; 4 points] Jane Theory, the best student in her class, said:

> "If most or all consumers do not search for bargains (lower prices), monopoly pricing may be optimal from each firm's perspective."

Comment in no more than ten lines (graphs, if any, excluded) while agreeing or disagreeing.

3. [45 minutes; 6 points] Two small *farturas* (a fried sweet that the Portuguese are quite fond of) stalls, A and B, compete in price, which they set simultaneously and independently every year at the beginning of the local annual fair. Both produce *farturas* of equal quality, which are in fact indistinguishable, doing so at the same constant marginal and average cost c. When they both quote the same price, they share the quantity demanded equally. They expect to attend the local annual fair forever. Denote the yearly monopoly profit from participating in the local annual fair by π^M, the (common) monopoly price of doing so by p^M, and the discount factor by δ. If firms are able to collude, they do so optimally.

(i) Can the two firms tacitly collude? Under which circumstances? Quantify and explain.

Firm A publicly and credibly announces that it will attend the local annual fair this year (2024) and every even year afterwards (2026, 2028,...), while skipping it in odd years (2025, 2027,...).

(ii) Are the two firms able to tacitly collude? Under which circumstances? Quantify and explain.

Suppose that $\frac{1}{2} < \delta < \frac{1}{\sqrt{2}}$.

(iii) What price will *farturas* fetch in odd years? Explain.

(iv) And in even years? Explain.

(v) Do consumers benefit from firm A's decision to quit the market in odd years? Quantify and explain.

(vi) Can we say that firm A's decision reduced market competition? Explain.

4. [45 minutes; 6 points] Three firms, A, B, and C, supply a market for a homogeneous good whose *lifetime* demand is $q = 10 - p$. All firms produce the good at a constant marginal and average cost of 4. These firms compete in quantities, which they choose simultaneously and independently.

(i) What quantity will each firm choose? What will each firm's profit be? Quantify and explain.

Assume now that firms A and B merge and let M denote the merged entity. The constant marginal and average cost of the merged entity is $c \leq 4$. Firm C's marginal and average cost remains equal to 4.

(ii) What quantity will each firm choose? What will each firm's profit be? Quantify and explain. (Hint: both equilibrium quantities and profits will be a function of c).

If you did not solve question (ii), assume that $q_M^* = \frac{14-2c}{3}$ and $q_C^* = \frac{2+c}{3}$.

(iii) Assume that $c = 4$. Is the merger profitable for the merged entity? Quantify.

(iv) Explain the intuition underlying the previous result. (Hint: there are two effects in play, a pricing effect and a quantity effect).

(v) Assume that $c = 1$. Is the merger profitable for the merged entity? Quantify and explain the intuition.

(vi) Is there a threshold value for c below which the merger is welfare enhancing? Quantify and explain.

(vii) Explain why the merger reduces total surplus when c is high, while raising it when it is low.

(viii) Is there a threshold value for c below which this merger reduces firm C's profits? Quantify and explain the intuition.