Homework 6

due October 16, 2018

Industrial Economics
ICEF, HSE & UoL
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Homework must be on the instructor's desk at K9 by 15:10 sharp. Submissions at any other time or manner will be ignored. Any paper which does not resemble work by a student of a world-class institution (not in A4 sheets, not clean, illegible, unnamed, unstapled, unlabeled tasks, final results not in boxes etc.) will be penalized with up to 50 points at the discretion of the grader. Do not submit your work in plastic covers. Copying in homework will be penalized with a 0 in that assignment and an additional penalty of 10 points in the course homework average. Students who give their homework away for others to copy from will be penalized with 0 in that assignment and a penalty of 30 points in their course homework average. Repeated offenders will be terminated from the course.

1. Consider a duopoly in which inverse demand is given by $P = 120 - Q$. Marginal cost of each firm is currently 60 and the firms compete by simultaneously setting quantities. For everything below assume complete and perfect information.
   (a) What is the equilibrium quantity for each firm, the equilibrium price and the profit of each firm? [10p]

   Now assume that firm 1 develops a new technology that reduces its own marginal cost to 30.
   (b) If firm 1 keeps this innovation only for itself, what will be the new equilibrium levels of output, price and profits of the two firms? [10p]
   (c) If firm 1 licenses the innovation to firm 2 for a fee r per unit of output firm 2 produces, calculate firm 1's profit as a function of r. What is the profit-maximizing value of r for firm 1? [20p]
   (d) Assume now that firm 1 licenses the innovation to firm 2 for only a fixed fee L. What is the maximum fee that firm 1 can charge? [20p]
   (e) Will firm 1 prefer to withhold the technology, license it for r or license it for L? What would consumers prefer? [10p]

2. Untel and AMDD produce computer chips. Market demand is given by $P = 120 - 20Q$, (Q is the total quantity in millions). Marginal cost for Untel is \$20, while for AMDD it is \$40.
   (a) Suppose that firms compete by simultaneously setting quantities. What would be the output of each firm? What would be the industry price? What would be the profit of each firm? [10p]
   (b) Assume that the two firms collude. What will be the profit maximizing output in total? How much will be produced by each firm? What will be the profit earned by each? [20p]

Good aftrenoon!
"…but Bill Gates, Steve Jobs, Mark Zuckerberg and many others became successful without being good students. Work experience is what matters, not education." This is what many students who ruin their student performance for the sake of some job say in order to rationalize their choices. It is wrong in several levels:

1. Gates, Jobs, Zuckerberg and others are the 0.1% of dropouts who knew what they were doing and became successful on their own. The rest 99.9% would earn more if they had stayed in education.
2. Gates, Jobs, Zuckerberg and others did not intend to be hired. They created their own paths, started their own companies and shaped new industries. This involved risks. Today, we know their names because the risks they took came up. Some equally competent people took similar risks who did not come up and thus no one ever heard about their sad stories.
3. Gates, Jobs, Zuckerberg and others did not drop out because they were failing with their studies. They dropped out because their area of interest was new, very fast developing and the knowledge they would have acquired at the university was objectively not useful in the pursuit of their goals.

4. Finally, Gates, Jobs, Zuckerberg and the others did not “half-performed” in their studies because they needed a diploma to write in their CV. They understood that their priorities were different; they dropped out of university completely; took massive risks; and pursued their plan full-time. Because successful people do something right or they do not do it at all.

So, graduating with 4/10 does not make you Bill Gates, Steve Jobs or Mark Zuckerberg.

Kosmas

Estimated completion time: 80 min
Difficulty level (normalized to UoL standards): 1. 5/5 2. 3/5
Direct your homework questions to Valeriya Popova