

Take Home Exam #1

DUE AT THE BEGINNING OF CLASS ON MONDAY, FEBRUARY 24

Answer *each* of the following two questions. The goal of each essay is to see how well you are able to apply the tools discussed in class to a real-life situation. For each question, your answer should clearly state the relevant economic theory and how it relates to the problem at hand. Be sure to address all of the issues raised in each question, and to *explain* your positions.

Finally, take the time to think before you write. Well-thought out, well-written answers will be rewarded. A direct, concise explanation is better than a five-page treatise. In addition, pay attention to the target audience. Some of the questions below ask you to write a memo that provides analysis for someone with limited economics expertise. Such memos should be written in a professional manner. The assignments page of the class web site provides a link to an article with suggestions for effective professional writing. For each question, I have provided guidelines as to the appropriate length for each answer (single-spaced answers are acceptable, although not necessary). Choose the level of detail needed to fit your answer within the guideline. I am not just looking for how much you know, but how well you are able to communicate what you do know, which includes filtering through information to highlight the most relevant points.

The exams are due AT THE BEGINNING OF CLASS on MONDAY, FEBRUARY 24. Late exams give you an unfair advantage over other students in the class. As a result, late exams will be marked down one grade for each day late, starting AT THE BEGINNING OF CLASS on MONDAY, FEBRUARY 24. If you will not be in class on Monday, it is your responsibility to get the exam to me BEFORE CLASS. Do not just leave the exam in my mailbox, as I need to know when you hand the exam in. There is a sign-in sheet at the front desk of CPR for this purpose.

As you work on your answers, you are permitted to consult written sources, including the lecture notes and readings. However, the final product should be your own work. As a result, you should not discuss the exam with other students in the class until the exams have been handed in on Monday.

And now, the questions...

I. Evaluating R&D (2-4 pages)

You have been asked to advise TechResearch, a small consulting firm preparing a report on biotechnology research in the United States. As part of the report, they have been asked to provide data on both the current state of biotechnology research and its historical evolution. Their report will be limited to publicly available data sources. As an expert in science and technology policy, you have been asked to advise TechResearch on the strengths and weaknesses of their potential data sources. These are:

- *Patent data:* TechResearch will search patent databases to identify patents pertaining to biotechnology.
- *Publication data:* Similarly, TechResearch will search databases of published journal articles to identify scientific articles pertaining to biotechnology.
- *R&D data:* Finally, TechResearch plans to obtain data on R&D expenditures by firms working in the biotechnology field. Because they only have access to publicly available data, their data will only include R&D expenditures from firms that are large enough to be publicly traded companies on the U.S. stock market (and thus required to report key financial data to investors).

Please explain the strengths and weaknesses of each data source, paying particular attention to what each source measures and does not measure. Consider how well each data source provides information on both the current state of biotechnology research as well as providing an accurate representation of the history of biotechnology research in the United States

As the team members preparing this report have training in economics, you can assume that readers of the memo will understand basic technical economic terms.

II. Patents for Software (2-4 pages)

Patents for software are controversial both in the United States and in Europe. While the U.S. takes a lenient view towards software patents, Europe has been more critical. While Europe allows limited software patents, to be patentable in Europe, an invention must be of a technical nature. Thus, in Europe there must be a physical effect that results from the program for a computer program to be patentable.

Over concerns that a recent proposal for a unified European patent could lead to expanded acceptability of software patents in Europe, in 2013 the German parliament considered a motion to make copyrights, rather than patents, the only acceptable intellectual property for software.

As an expert on science and technology policy, you have been asked by a member of the German parliament to provide advice before voting on the proposal. Using the U.S. experience as a guide, you have been asked to evaluate both the pros and cons of allowing software patents. Your memo should include a recommendation to the member of parliament to either support or oppose the proposed ruling. In making this recommendation, please consider how any changes are likely to impact German IT firms, as well as the welfare of German citizens, who are may be affected by changes in the availability of electronic products. Please be advised that this parliament member has little economic training, so the memo should address these issues in clear, intuitive language that is understandable by non-economists.