
Final Exam

You have until 3:30pm to complete the exam, be certain to use your time wisely. Answer all questions directly on the exam. You may use printouts of the required readings and study guide questions with any notes you have written on those printouts. No other materials may be used during the exam. Answer questions completely but concisely. Including additional incorrect information in an otherwise correct answer may result in a loss of points. Remember to put your name on the exam. Good luck!

Name:

1. (15 points) Goldin and Katz discuss how changes in technology from the Industrial Revolution to the twentieth century changed the demand for skill. Suppose we want to assess whether earlier technological change was skill-biased. One earlier major technological change we have talked about briefly is the improvement in ocean-going ship design. Suppose that we could pinpoint an important change in shipping technology that occurred in the Netherlands in the mid-1600s. How would you empirically determine whether this technological change was skill-biased? Explain what data you would need, what comparisons you would make, and how those comparisons would be used to determine whether the change was skill-biased or not. (Note that you do not need to say anything specific about shipping technology in your answer).

2. (20 points) One thing we discussed in class was how the rise of the machine building sector enabled British technology to be easily exported to other countries. Suppose that as the machine building sector develops, it does two things for an industrializing country. First, it reduces the cost of machines in that country. Second, it improves the average quality of the machines, making each machine more productive. On a clearly labeled graph with capital on the vertical axis and labor on the horizontal axis, use isocost and isoquant curves to show the effect this will have on the industrializing country's optimal levels of labor and capital. You can assume that the country decides to keep total output the same during the growth of the machine building sector. Provide a written explanation of the changes shown on your graph.

3. (20 points) In class we focused on how improvements in technology or efficiency during industrialization translated into increased payments to the various factors of production. Suppose that we begin to pass very strict environmental and safety regulations that gradually reduce the efficiency of manufacturing over time, leading to less output from any given combination of capital, labor and land. Using our growth accounting framework and drawing on the discussions from class on the distribution of gains from industrialization, explain how this would affect landowners, owners of capital, and workers. Be certain to address how you would expect the magnitude of the effects to compare across each group.

4. (25 points) Bleakley's work on hookworm eradication demonstrates how public health efforts can dramatically improve health, educational, and occupational outcomes of individuals.
- (a) Explain why causality may go in the opposite direction. In other words, why might public health efforts be driven by improvements in income rather than the other way around?
 - (b) Does Bleakley's approach rule out this possibility of reverse causality? Fully explain your answer.
 - (c) In class we discussed Almond's work on the 1918 influenza pandemic. Children in utero during the pandemic ended up with lower educational attainments and incomes and higher rates of disability as adults compared to children born just before or after the pandemic. Would you expect the effect of childhood health on educational attainment to be bigger in Almond's influenza study or Bleakley's hookworm study? When answering, consider how educational institutions and economic development may depend on the average health of the population.

5. (20 points) Consider Jared Diamond's discussion of geography and development. In Diamond's view, there are two crucial elements predicting development: having a good endowment of plants and animals and being situated along an east-west axis.
- (a) Explain why each of these elements is critical to Diamond's explanation of development.
 - (b) We discussed the many ways in which the Industrial Revolution made geography less important. To what extent did industrialization diminish the importance of having an abundance of useful plants and animals?
 - (c) To what extent did the industrialization diminish the importance of being situated along an east-west axis?