

**Economics 39S: Second Midterm**

Please be concise and to the point. Print your name on your exam and turn it in with your blue books. You have 65 minutes. The exam has 50 points. Answer Part I and *either* question 1 or 2 from Part II. Good luck!

**Part I (30 points).** A few years ago, *The Council on Foreign Relations* published a backgrounder article with the title “Is ‘Made in China 2025’ a Threat to Global Trade?” The article begins as follows:

The Chinese government has launched “Made in China 2025,” a state-led industrial policy that seeks to make China dominant in global high-tech manufacturing. The program aims to use government subsidies, mobilize state-owned enterprises, and pursue intellectual property acquisition to catch up with—and then surpass—Western technological prowess in advanced industries. ...

Released in 2015, Made in China 2025 is the government’s ten year plan to update China’s manufacturing base by rapidly developing ten high-tech industries. Chief among these are electric cars and other new energy vehicles, next-generation information technology (IT) and telecommunications, and advanced robotics and artificial intelligence. ...

China 2025 reflects Beijing’s longstanding development goals. Since the market reforms of leader Deng Xiaoping in the 1980s, the ruling Chinese Communist Party (CCP) has pursued a mixed economy that combines socialist planning with elements of private enterprise.

In recent decades, the CCP has taken steps to shift the economy away from resource extraction and low value-added, low wage manufacturing—largely mining, energy, and consumer goods such as clothing and footwear, which make up almost half of the country’s economy—to a high-tech, high-productivity economy.

You are about to start a summer internship with President Biden’s Council of Economic Advisers, and this article has caught the eye of the President. He would like you to do a little preparatory work before your first official day on the job, in order to help him assess whether he should be concerned about the Made in China 2025 initiative. In particular, President Biden would like to know whether, and if so, why, he should care if the Made in China 2025 program marks a change from an older industrial policy, where the Chinese government used a variety of incentives to encourage efforts to *improve technologies in its traditional export goods* such as clothing and footwear, to a new industrial policy, where the Chinese government instead encourages efforts to *improve technologies in high-tech goods that it does not currently export*. To provide President Biden with the knowledge he is seeking, please answer the following 2 questions:

- (a) Using the 2-good (clothing and electric vehicles) 2-country (US and China) Ricardian trade model, with the US and China trading freely and with China the large country producing both goods and exporting clothing and the US the small country producing only electric vehicles and importing clothing, show President Biden that US national utility will be higher if China pursues (i) an industrial policy that results in a better Chinese technology *for producing the good it exports* than if China pursues (ii) an industrial policy that results in a better Chinese technology *for producing the good it imports*. [You may assume for your analysis in this problem that the Chinese improvements in technology are never so great as to alter the original pattern of trade between China and the US].
- (b) President Biden recalls reading that something called “export-biased growth” in a country is good for

the country's trading partners. But he can't quite remember what this term means. Please remind him what export-biased growth means, and show him that your results from part (a)(i) can be interpreted using this term.

**Part II.** Answer *either* question 1 or question 2 below.

**1. (20 points)** ChatGPT, the artificial intelligence chatbot developed by OpenAI and released in November 2022, seems destined to change the world in important ways, both positive and negative. One potential positive impact is that its use could increase labor productivity across all sectors and across all countries of the world, reducing the amount of labor required to produce one unit of any good in either country.

Using the Continuum-of-Goods 2-Country Ricardian Trade Model studied in class, where foreign-country variables are denoted with a "\*" and home-country variables are denoted with no "\*", and with  $z \in [0,1]$  indexing goods in order of decreasing home-country technological advantage (i.e., with  $z$  indexing goods in order of decreasing  $\ell^*(z)/\ell(z)$ , the ratio of foreign unit-labor requirements to home unit-labor requirements) and with all goods traded freely between the two countries, assess the implications of the introduction of ChatGPT for competitiveness between the home and foreign country and for the home-country and foreign-country real wage under the assumption that the impact of ChatGPT is to *cut in half the amount of labor required in each country to produce one unit of any good*  $z \in [0,1]$ .

**2. (20 points)** President Biden is worried about the impacts of China's industrial policy on the income distribution in the US and, being a politician, he cares only about the short run. And he is particularly concerned about the impacts on the US income distribution if China pursues an industrial policy that leads to export-biased growth in China, which he believes will benefit the US economy as a whole but which he is worried might benefit some groups in the US at the expense of others.

Please use the Specific Factors Model -- with US capital specific to the US production of clothing, with US land specific to the US production of electric vehicles, and with US labor perfectly mobile between US production of clothing and electric vehicles, and with the US exporting electric vehicles and China exporting clothing -- to confirm that the US economy will gain as a whole (in terms of its national utility) from export-based growth in China, and to assess the short run impact of this growth on the US income distribution across US capitalists, US land-owners and US labor.

**Extra Credit (2 points)** Pose a question on a trade policy topic that you might be asked by a prospective employer during a job interview, and provide an answer that is supported by the models we have covered in Econ 39 this Spring but that is translated into words and intuitive statements that your prospective employer could appreciate without having taken Econ 39 herself.