

Exam 3

Answer Any **Two Questions**. Answer all parts to each question.

1. Answer All Parts to this Question

Consider a small country, such as Malaysia, which produces steel. The Malaysian domestic demand and supply curves for steel are given by:

$$D = 2000 - 2P^c; \quad S = 3P^f$$

where P^c is the price Malaysian consumers pay for steel and P^f is the price at which Malaysian firms can sell their steel (measured in \$/ton). In the absence of any domestic taxes or subsidies, the consumer and producer prices are the same ($P^c = P^f$). Assume domestic steel **production** creates pollution which harms other producers and consumers in the Malaysian economy, and that estimates indicate that the economic costs of this pollution are **\$100/ton**. Finally, assume that Malaysia can buy or sell steel on world markets at the (given) price of **\$525/ton**.

- (a) Find the autarky (no trade) equilibrium price in Malaysia, assuming no domestic taxes or subsidies. Is this equilibrium efficient? Explain. **(6 points)**
- (b) Suppose Malaysia opens itself to world markets and allows free trade in steel. First discuss whether Malaysia must, in all cases, benefit from free trade *then calculate the changes in welfare for this specific case (numerical answers are required)*. **(10 points)**
- (c) What is the optimal government policy (if any) to deal with the pollution created by steel production? Are trade policies part of this optimal policy? Be specific. **(6 points)**
- (d) If only trade policy can be used, indicate the appropriate type of (second best) trade policy. If this policy is chosen to result in the *same level of domestic production* as the policy in part (c), find the welfare consequences of this policy as compared to the optimal policy in part (c). (A numerical answer is required). **(8 points)**
- (e) Find the *optimal* (second best) trade policy and compare its magnitude to your answer from part (c) for the optimal government policy (a numerical answer is required). **(10 points)**
- (f) Finally, suppose the world price of steel is **\$300/ton** (rather than **\$525/ton**).
- i. Assuming no domestic policy is used to deal with the pollution, can free trade hurt the country in this case? Explain your answer. **(5 points)**
- ii. If only trade policy can be used, is the appropriate trade policy an import tariff or an import subsidy? Explain your answer (you do not have to do any calculations). **(5 points)**

2. Answer all parts to this question.

(a) Assume the following supply and demand curves for tractors in Mexico:

$$D = 6000 - 3P^d; \quad S = P^d$$

where P^d is the price of tractors in Mexico. Assume Mexico is a small country and can buy identical tractors (at given prices) from either Japan or the US. The prices charged by firms in each country are: $P^j = 800$; $P^{us} = 1000$.

(You do not need to use the following fact, but the reason US prices are above Japanese prices is the US has its own import tariffs on tractors).

- i. Initially Mexico has an import tariff of 50% on tractors, no matter where they are produced. Calculate the Mexican price and the level of steel imports from each country. **(5 points)**
 - ii. Suppose Mexico forms a free trade area (FTA) with the US, and thus eliminates all tariffs on tractors (and other) imports from the US. Tariffs on goods from Japan are left unchanged. *How does the removal of tariffs on US tractors affect Mexican imports and from whom Mexico imports? Calculate the welfare consequences for Mexico from this policy change* (i.e., calculate the changes in consumer surplus, producer surplus and government tariff revenue and the overall effect). **(12 points)**
 - iii. Suppose Mexico, before joining the FTA, converted its tariffs on imports from Japan into quotas equal to the level of imports under the tariff. After the FTA with the US is formed, Mexican importers will be permitted to import as many tractors, tariff free, from Japan as they imported before the FTA was formed (tractor imports from the US are unrestricted and tariff free). Use your answers to parts (i) and (ii) to show how the removal of tariffs on US products affects: (1) total Mexican imports and (2) from where the imports come. In this case can the formation of the FTA hurt Mexico? Explain (you do not need to give a numerical answer but you should use your answer from part ii in helping to explain your reasoning). **(8 points)**
- (b) Assume the US and Saudi Arabia are the only countries which trade in oil (so each country affects world price). Supply and demand curves in each country are:

$$US: \quad S^{us} = 3P_o^{us}; \quad D^{us} = 2000 - 7P_o^{us}; \quad \text{Import Demand: } I^{us} = 2000 - 10P_o^{us}$$

$$Saudi Arabia: \quad S^{SA} = 9P_o^{SA}; \quad D^j = 200 - P_o^{SA}; \quad \text{Export Supply: } X^{SA} = 10P_o^{SA} - 200$$

- i. Show graphically how the free trade equilibrium price is determined and calculate this free trade price. **(5 points)**
- ii. Assume the US imposes a \$60/barrel tariff on oil imports. **Show graphically** how this tariff affects: (i) the price of oil in the US and in Saudi Arabia; (ii) the amount of oil traded; (iii) US welfare; (iv) Saudi Arabian welfare; and (v) world welfare. Can this tariff raise US welfare? Can it increase world welfare (which is the sum of producer surplus, consumer surplus and tariff revenue for each country)? **(No calculations are needed but you must clearly label your graph to show your answer to each part).** **(10 points)**

(question 2(b) continued on next page)

- iii. How would your answer to part (ii) change if the US tariff were removed but Saudi Arabia imposed its own export tariff of \$60/barrel? (A brief answer is expected here) **(5 points)**
- iv. If each country uses a tariff to raise its own welfare, is it possible that both countries wind up worse off but neither has the incentive to remove the tariff? Explain. **(5 points)**

3. Answer all parts to this question.

(a) Consider a small country, such as Switzerland, which produces two goods (watches and textiles), using two inputs (skilled labor and unskilled labor). Further, suppose the production assumptions of the Heckscher-Ohlin model apply, and that watch production is relatively intensive in skilled labor, while textile production is relatively intensive in unskilled labor. Finally, assume that under free trade Switzerland imports textiles and exports watches.

- i. How will an import tariff (on textiles) affect output prices, the production of each good, and the real return to each type of labor in Switzerland? Use a graph to show how the tariff affects the output of each good in Switzerland and **also** how it affects welfare. **(9 points)**
- ii. Suppose Switzerland allows a limited number of unskilled foreign workers to enter the country. If domestic goods prices are unchanged by this inflow of workers, how will this inflow of workers affect output levels, the amount of imports into (and exports from) Switzerland and factor prices in Switzerland? **(8 points)**
- iii. Can the immigration discussed above make Switzerland worse off, assuming immigrants are paid the same wage as other unskilled Swiss workers? Explain carefully and discuss whether your answer would be different if Switzerland used an import quota instead of a tariff. **(8 points)**

(b) Consider a Ricardian model with two goods (F , food, and C , clothing) and three countries (US, Europe, China). The labor productivity in each country is given by:

	Output per day		
	US	Europe	China
Clothing	8	16	4
Food	24	16	2

- i. Assuming no trade, state the autarky relative price of clothing in each country. What can you conclude about ranking the real wage in each country? Be as specific as possible. **(5 points)**
- ii. Suppose the US and Europe sign a free trade agreement (FTA), but neither country trades with China. What will the pattern of trade between the US and Europe be and what happens to the relative price of clothing in each country as a result of this trade agreement? How does this free trade agreement affect the real wage in the US and Europe? Be specific. **(7 points)**
- iii. Suppose the free trade agreement between the US and Europe is extended to include China. How will allowing China to join this free trade agreement affect: (i) the relative price of clothing in each country?; (ii) the real wage in each country?; and (iii) what good each country will export? Do all countries benefit from China joining the FTA? Be as specific as possible. **(7 points)**
- iv. Does allowing China to join the free trade agreement make it possible for world production of all goods to increase (compared to the case where there was only free trade between the US and Europe)? Carefully explain your answer. **(6 points)**