

ECN230 File of Previous Exams, 2005 -2009

No exam for 2009 – sabbatical year

Solutions ECN 230 Final exam Fall 2008

Part 1. Explain whether the following statements are true, false, or whether it depends. If depends is your answer, be sure to explain upon what it depends. (25 points)

- 1.1. A trade restriction in the case of an externality in production can increase welfare, but not in the case of an externality in consumption.

F/D. Externalities in either production or consumption can be cases for gov't intervention. In such cases, free trade will not maximize SW and gov't intervention that corrects for the externality can, in fact, improve SW. But this can happen in either production or consumption externalities. If there are externalities, then P_w is not a correct signal. If trade policy improves P-signal, then SW can improve in the case of production or consumption externality.

- 1.2. A small, net exporting country using an export subsidy will increase its exports at the expense of other exporting countries.

F. A small net exporting country using an export subsidy will increase its exports on the world mkt from a small base and neither affect the world price nor displace exports by other exporters.

- 1.3. Regardless of a country's size, a tariff causes a price differential between foreign and domestic prices. However, for a small country, the tariff would be fully reflected in the domestic price.

T. Government intervention thru trade policy will drive a wedge between domestic prices and border prices (the world price). A tariff would be an example of this. For a small country, the tariff would not affect the world price and the domestic price would be the world price plus the import tariff).

- 1.4. If trade is based only on differences in factor endowments, then allowing the factors to move directly between countries would reduce trade. However, if trade is based on technology differences (or economies of scale), then factor mobility across countries would increase trade.

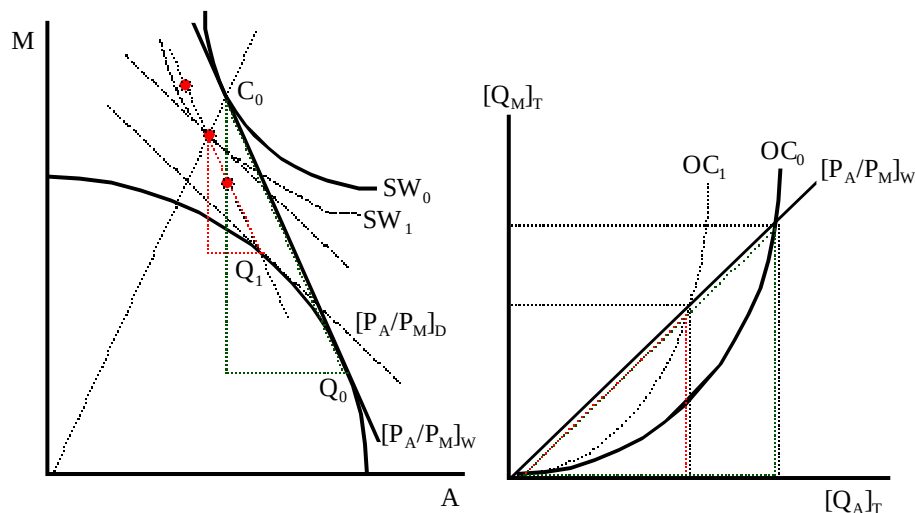
T/D. If trade is based only on differences in factor endowments, then movement of factors between countries would reduce trade (assuming climatic conditions do not matter for prodn) because the factors movements are close substitutes to trade in goods that use those factors. If trade is based on differences in tech (or EOS), then factor mobility across countries can increase trade because the factors work under different tech or to produce differentiated products. This would provide opportunities for more specialization and intra-industry trade.

- 1.5. The more mobile factors are between sectors within an economy, the lower is the economic cost from a change in relative prices from increased trade.

T. Greater factor mobility implies lower economic cost of adjustment. Trade should cause prices of exportables to increase and prices of importables to decrease. If factors can move to the export sector, then the cost of unemployment or under-employment by being employed in the import-competing sector decreases. This would be as if movement along the PPC is smooth.

Part 2. Briefly answer the following questions or respond to the specific statements. Relate your answers to concepts discussed in class and avoid unnecessary information (45 points)

- 2.1. Suppose a small country has an open economy under the assumptions of Heckscher-Ohlin-Samuelson (H-O-S) model. Using the free trade equilibrium as the economy's starting point, think about how tariff protection would affect the general economy. Consider the direction of the economic changes (on production and consumption) and the country's willingness to trade (exports and imports) from the effect of a tariff when responding to the following statements: (15 points)



- 2.1.1 Would it be impossible to conclude that trade as a percentage of gross domestic product (GDP) decreases under the tariff because the production of one good would increase while production of the other would decrease? Explain. (8 pts)

Under a tariff, trade as a %GDP is expected to decrease. In a general eqblm context, $\uparrow P_{\text{import}} \rightarrow \downarrow \text{imports}, \uparrow Q$ of importable, and a relative $\downarrow P_{\text{export}} \rightarrow \downarrow \text{exports}, \downarrow Q$ of exportable. This would imply a less open economic situation, decreasing trade as a % of GDP (where GDP is measured as output along the PPC). In the OC graph, the tariff causes OC to shift the left and the trade triangle becomes smaller. In the H-O-S graph, the free trade triangle, in green, is larger than the restricted trade triangle, in red. Imports and exports decrease (given $TOT = P_A/P_M|_w$). With tariff, the economy moves toward self-sufficiency, which implies there is less trade dependence, i.e., M/Q and X/Q decrease or trade/output decreases.

- 2.1.2 Would it be possible to say that under the tariff consumption of both goods would decrease because welfare is reduced? Explain. (7 pts)

No, it is not possible to say how a tariff would affect consumption of both goods. It could be that consumption of both goods decreases, but the tariff would affect prices, which in turn result in 2 effects, income and substitution effects. For example, it is possible that the new trade triangle, in red, gives the same proportion of consumption of A, M, but the new consumption mix could be any of the three red points presented, in which case consumption of both goods is not required.

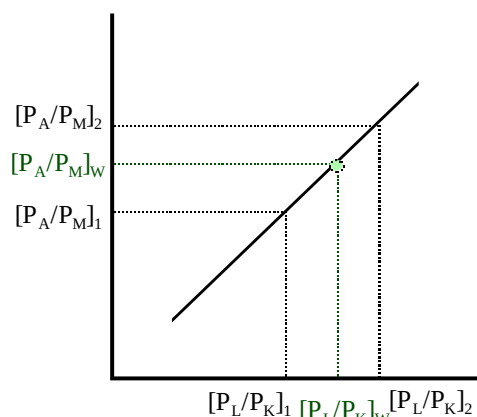
- 2.2. The H-O-S model predicts that relative factor prices across countries converge and that wages in labor-abundant countries increase in response to more trade. Think about how other factors might affect wages and the validity of the Stolper-Samuelson theorem given the model's assumptions when answering the following: (15 points)

- 2.2.1 List factors that can affect wages. (5 pts)

- Supply of labor: endowment, education level, amount of experience
- Demand for labor: number of firms, K-stock, productivity of labor
- K/L ratio and K, L endowment
- Mkt and institutional factors: labor unions, barriers to movement of labor
- Gov't regs: min wage, retirement age, work hours, immigration law
- $P_L = MVP_L = MP_L \times P_{\text{good}}$ (tech, output prices)

- 2.2.2 In some labor abundant countries there has been greater wage inequality, but this is not what the Stolper-Samuelson theorem predicted from the H-O-S model. Could any of the factors you listed help explain why this phenomenon has occurred in some labor-abundant developing countries? Could any of the assumptions of the H-O-S model be a limiting factor? Be specific. (10 pts)

The model assumes that factors are not mobile across countries, factors are perfectly mobile between sectors, within technology is same and no EOS. If K is mobile across countries, then workers in LDCs that have access to the K can experience an increase in productivity of labor and higher wages. If K inflows are not uniform across sectors and factors are not mobile within the country, then L with access to K will have higher wages than L without access to K. This would result in increasingly unequal income (wages).



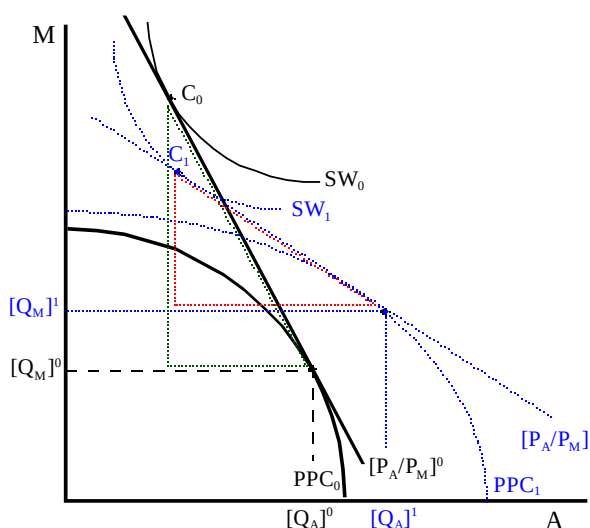
2.3. Consider the meaning of a country's terms of trade when answering the following:

2.3.1 List factors that can affect a country's terms of trade. (5 pts)

- Supply of country's exports (production in the home mkt or in foreign mkts)
Δ factors endowment, tech, Δ factors prices
- Demand for a county's imports (consumption in the home mkt for foreign goods)
Δ income, substitutability of goods
- Policy factors (policies that ↓↑ a country's exports or imports)

2.3.2 Use any factors that you list in 2.3.1 to help explain how a country can experience growth such that its social welfare worsens. Be specific. (10 pts)

Growth: PPC shifts to the right: (1) Δ factor endowment or (2) tech Δ. If growth is sufficiently big, then it affects relative prices, ↓ $[P_A/P_M]$. If growth → ↑ Q_{Exports} of A for a ↓ Q_{Imports} of M (i.e., ↓ TOT), then it is possible that SW ↓. (The red triangle shows more A exported than in the green triangle. Also, there is less M imported in the red triangle than in the green triangle.) In such a case, the negative TOT effect is smaller than the positive growth effect (↑ Y). This is the immiserizing growth case. This could happen when world supply of A increases relative to world demand for A, and/or world supply of M increases more slowly relative to world supply of A.



Part 3. Answer the questions related to the market scenario described in the paragraph below. Be specific and explain your answers to the best of your ability. Label graph(s) clearly and explain them. Define concepts you think will support your answer. (30 points)

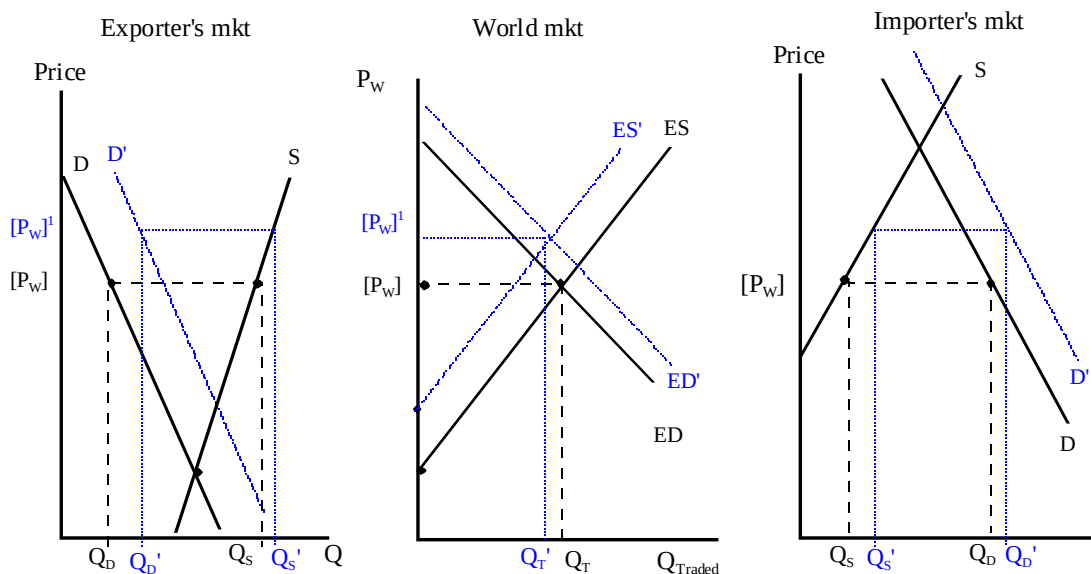
"Global commodity prices have either increased or become more unstable on international markets in the last two years. The commodities that have seen the biggest price spikes [increases] are those which tend to be traded least. Only about 5% of the global production of rice is traded, compared with 13% for maize and 19% for wheat. In 2007, wheat prices rose 77% and rice 16% (see chart 1). These were some of the sharpest rises in food prices ever. But this year the speed of change accelerated. From January to April 2008, rice prices jumped 141%."

"The prices mainly reflect changes in demand—not problems of supply, such as harvest failure. The changes include the gentle upward pressure from people in China and India eating more grain and meat as they grow rich and the sudden, voracious appetites of western biofuels programmes, which convert cereals into fuel." (Source: *The Economist*, "A special report on the world economy" 11 Oct 2008 and "The new face of hunger", 17 Apr 2008)



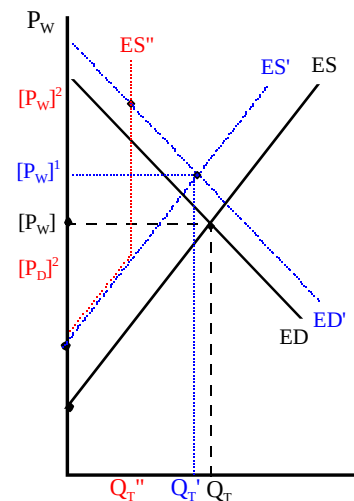
- 3.1. Provide a simple partial equilibrium model (3-panel diagram) of the rice markets in net exporting and importing countries (assume a 2-country world or that all relevant countries are aggregated into net exporters and net importers). Show how an increase in demand in both net exporting and importing countries affects the domestic markets and the world market. (10 points)

The model shows an increase in demand for rice in both the net exporting and importing countries. This raises the price on the world market and reduces the volume traded. What is certain is that the world price increases. Whether volume traded decreases depends on the change in ES relative to ED.



- 3.2 Panicked by rising food prices in 2007, more than 30 governments introduced export restrictions for farm produce. On a new graph, using your result from part 1, model the world market to help you discuss the economic effects that result from governments restricting rice exports given the increased global demand for rice. Explain your results. (10 points)

In the graph an export quota is used to represent the export restriction on rice. The smaller is the volume exported, the higher is the effect on the world price, making the effect of increased demand worse on the international market. However, on the domestic market, the price decreases. In some cases, a complete ban was imposed, which could be shown as an export quota set at zero. In which case, the world eqblm price would be at the ED' vertical intercept and the domestic price at the ES' vertical intercept.



- 3.3. Why would commodities traded least have the more unstable world price or the highest price increases? (5 points)

This has to do with elasticity of ES and ED . The greater is the volume traded and the more substitutes there are, the smaller will be the effect of price from some given change in demand or supply. The more thinly traded a market the greater will be the P -uncertainty. A smaller change in supply or demand is expected to have larger effects on price. Having substitutes implies that demand and supply are more elastic w.r.t. price.

- 3.4. Would freer trade contribute to more stable prices? Explain. (5 points)

Yes. This simple model shows that gov't policy can in fact cause greater P -instability. In the case of the increase in demand, if the analysts are correct that biofuels production explains the bigger part of the increased demand, then gov't is largely to blame for the rapid increase in demand for crops for non-food purposes. In response, as prices increased gov't policy again is responsible for sending prices further upward based on increased scarcity. Markets can be unstable, but gov't policy can make the instability worse when trade policy is used to lower domestic prices at the expense of the world price. The issue also involves free trade versus self-sufficiency or autarky. Gov't intervention has implications for P in short-run and long-run. Gov't intervention in this case made P -differential, $\uparrow P_w$ and $\downarrow P_D$. However, the $\downarrow P_D$ is in fact a tax on ag production precisely when the mkt is saying produce more.

Solutions ECN 230 Final exam Fall 2007

Part 1. Explain whether the following statements are true, false, or whether it depends. If depends is your answer, be sure to explain upon what it depends. (25 points)

- 1.1. A likely consequence of high import protection can be non-competitive behavior on the part of domestic firms.

T/D. High import protection can essentially cut off foreign competition. If domestic firms or producers can achieve a large scale, then the result can be non-competitive behavior if the competition authorities do not regulate their behavior. If a very restrictive quota is used, then the case becomes stronger that non-competitive behavior is possible. Under a tariff, importers who still prefer the import substitute even at higher prices can still purchase unlimited quantities of the good.

- 1.2. An important reason for a government to prefer an import tariff over an import quota is that under an import tariff the government collects revenue whereas under a quota the government cannot collect revenue.

F. The government can collect revenue under either type of import restriction. Under the tariff, the revenue is simply collected as a tax on imports. Under the quota, the government can collect the quota rents by selling the right to import to either domestic importers in the country or the right to export to foreign exporters who want to sell their product on the domestic market.

- 1.3. Suppose capital is immobile within an economy (that is, capital is relatively fixed in the sector in which it is employed). If the country is labor-abundant and moves from autarky (i.e., closed economy) to liberal trade, then the real rate of return to all capital (whether it is employed in the import competing sector or export sector) decreases.

F. Recall, $P_K = P_{\text{output}} \times MP_K$. The move to freer trade will result in changes in market prices for goods produced in different sectors. If capital is employed in a sector in which price increases (the export sector), then that capital will be subject to a higher return because more labor can work with that capital. Suppose it is a machine that can be used on more production shifts because more labor is available (because the $\uparrow P \rightarrow \uparrow Q \rightarrow \uparrow D_L$). The price of the good increases and the productivity of the machine increases, which should imply a higher return to capital. The real rate of return on K will $\downarrow$ in sectors in which $P \downarrow$ (i.e., $\downarrow P_{\text{output}} \rightarrow \downarrow P_K$).

- 1.4. Comparative advantage of an industry depends not only on its productivity relative to the foreign industry, but also on the domestic wage rate relative to the foreign wage rate. So, a country that has higher wages in all industries relative to its trading partners will imply the country cannot gain from trade.

F. Rearrange the expression and substitute L for K in 1.3: $P_{\text{output}} = P_L / MP_L$. Suppose P_L was 10 times higher in North, relative to South. North can still have a comparative advantage (CA) if/when MP_L is more than 10 times higher than in South. Let $= [P_L / MP_L]_S = 1$; if $= [P_L / MP_L]_N = [10/20] = 1/2$, then North has a CA because L is more productive even at higher wage.

- 1.5. Consider a world in which there are increasing opportunity costs in both production and consumption. For trade to be beneficial, tastes and production possibilities must be different across countries.

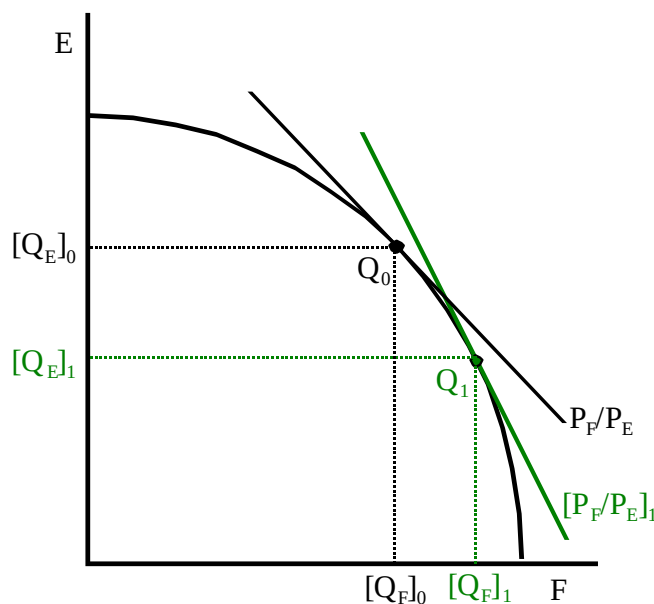
T/D. Tastes (demand-side) and PPC (supply-side) differences need not both be different for trade to benefit both countries. It is enough for either D-side or S-side factors to be different.

Part 2. Briefly answer the following questions or respond to the specific statements. Relate your answers to concepts discussed in class and avoid unnecessary information. (45 points)

2.1. Think about the redistribution of income that occurs with any policy. Suppose that a small country's trade pattern is food product exporter and importer of electronic goods. Consider the economic and welfare implications of policymakers' decision to liberalize the country's trade regime when answering the following: (15 points)

2.1.1 How would you expect prices of food products relative to electronic goods to change, and how would the change in relative prices affect production as the country's trade policy regime becomes more liberal? (10 pts)

$\uparrow [P_F / P_E]$ because trade liberalization $\rightarrow$ an $\uparrow P_F$, the exportable and a $\downarrow P_E$, the importable good. As a result, the price changes are expected to result in a change in production: $\uparrow P_F \rightarrow \uparrow Q_F$ $\downarrow P_E \rightarrow \downarrow Q_E$



2.1.2 Can it make sense to argue that more liberal trade can redistribute real income in such a manner that it acts like a tax on the poor in this country? Explain and be specific.(5 pts)

Yes, it can be argued that the price changes can act as a tax on the poor of this country. If the poor spend a larger share of their income on food, then the higher food prices can essentially reduce their real income, i.e., $[Y / \uparrow P_F]$. The fewer electronic goods they buy (larger share on food) the more the change in prices reflects an increase in general prices, i.e., inflation.

2.2. Consider trade between a country called Home relative to the rest of the world. Think about what the meaning is of a country's terms of trade (TOT) when answering the following:

2.2.1 List different causal factors that would result in a case where a country's TOT improves, i.e., give examples of what **causes** the TOT to improve. (5 pts)

- ◆ Factors that $\uparrow$ ED for Home's exports
- ◆ Factors that $\uparrow$ ES of foreigners exports
- ◆ Trade policy by Home that restricts imports (tariff or quota)
- ◆ Trade policy by foreigners that subsidizes exports to Home (export subsidy)
- ◆ Technological change that decreases world price of Home's importable

2.2.2 Would the improvement in the TOT also imply an improvement in net social welfare in Home for each of the cases you listed in 2.2.1? Explain. (10 pts)

- ♦ If foreigners experience an $\uparrow$ ED for Home's exports, then the $\uparrow$ TOT $\rightarrow$ $\uparrow$ NSW_{Home}. The benefits to producers/exporter will be greater than losses to import-competing sectors.
- ♦ If foreigners increase productivity such that its prices decrease, then $\uparrow$ TOT $\rightarrow$ $\uparrow$ NSW_{Home}. The benefits to consumers will be greater than the losses to producers.
- ♦ A large country using an import restriction ($\downarrow$ ED_{Home}) will improve its TOT, but it is not clear whether NSW will improve (depends on whether revenue $\geq$ DWLs).
- ♦ A large country, foreigner, subsidizing its exports ($\uparrow$ TOT) to Home's market will improve Home's TOT. If the subsidy is greater than the DWLs, then the TOT will improve NSW:
- ♦ Tech change in foreign that improves Home's TOT will improve NSW_{Home}.

2.3. The standard assumptions under Heckscher-Ohlin-Samuelson (H-O-S) trade model include the condition that the traded goods are not produced under economies of scale. Think about the other important assumptions underlying trade models and the economic implications of economies of scale when answering the following:

2.3.1 List the assumptions in standard trade model, that is, when economies of scale are not present, and list the main expectations from freer trade. (10 pts)

Assumptions:

- ♦ Competitive markets for goods and factors
- ♦ Homogeneous goods and factors
- ♦ Mobility of factors across sectors not across countries
- ♦ Factor endowments differ
- ♦ Production tech is the same
- ♦ No government intervention
- ♦ No transaction costs
- ♦ No factor intensity reversals
- ♦ Constant returns to scale

Expectations:

- ♦ Specialization and trade $\rightarrow$ $\uparrow$ SW
- ♦ Increased returns to abundant factors; decreased returns to scarce factors
- ♦ Comparative advantage based on factor endowment differences
- ♦ Convergence in price; factor-price equalization

2.3.2 Which assumption of those you listed in 2.3.1 do you think is most affected as a result of the presence of economies of scale, and how does this affect the main trade expectations that you listed? Be very specific. (5 pts)

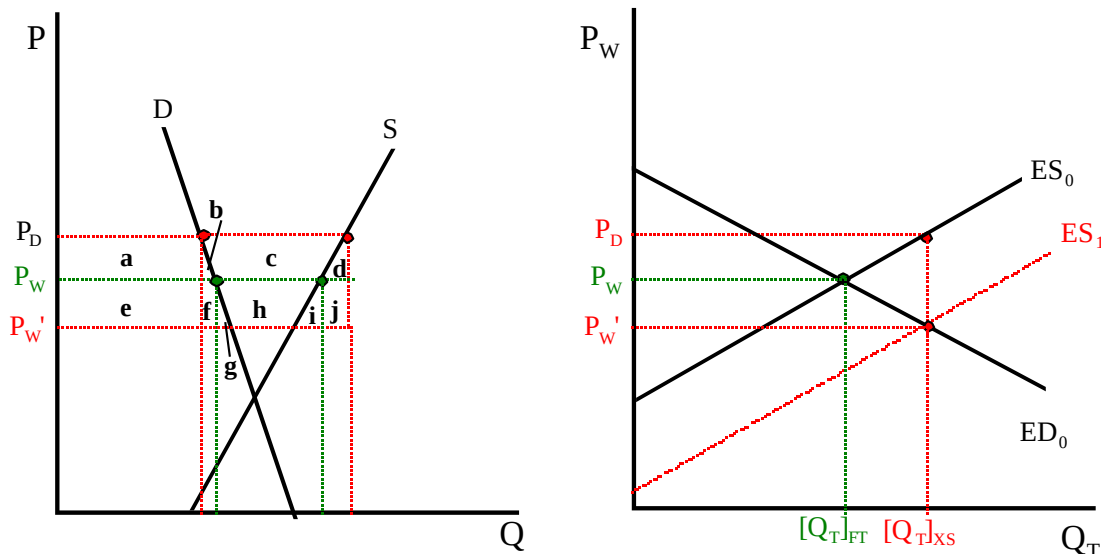
Economies of scale can have the following implications: trade based on differentiated products because economies of scope are not possible, firms increase their size and no longer behave competitively. If the good cannot be differentiated, then economies of scale imply the size of the firm increases and the possibility that the firm does not behave in a competitive manner increases. The market structure changes to either monopolistically competitive or oligopolistically. If the product is differentiable, then goods are no longer homogeneous and intra-industry trade is possible. Comparative advantage is no longer based on factor endowment differences and trade patterns are more sensitive to product differentiation and differences in demand. Price convergence will depend on how close substitutes the goods are.

Part 3. Answer the questions related to the trade policy scenario described in the paragraph below. Be specific and explain your answers to the best of your ability. Label graph(s) clearly and explain them. Define concepts you think will support your answer. (30 points)

Suppose that in a developed country the government is interested in giving its export sector some support. Policymakers in that country are considering two different programs: (1) an export subsidy, or (2) government-funded research that improves efficiency in production. Regardless of which program is chosen, the government intends for the cost to the taxpayer to be equal.

- 3.1 Show the partial equilibrium effects of the export subsidy on the world market and from the exporting country's perspective (**do not** model the effects on the importing country). (10 points)

An export subsidy will shift the ES curve but have no effect on the supply curve (only movement along supply as domestic price increases).
The gov't funded research that improves efficiency shifts the S curve and the ES curve.

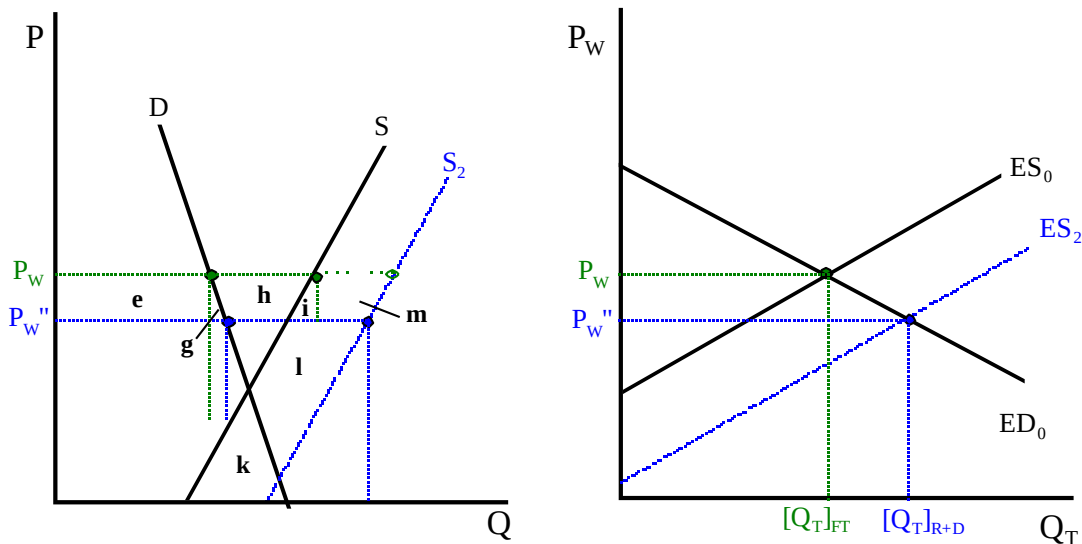


- 3.2 In your graph, label the areas that represent the changes in welfare resulting from the export subsidy (using free trade as the initial policy situation) and show your answer in a table as presented below. (5 points)

Welfare analysis under 3.2 and 3.4		
	Area representing the welfare change under export subsidy	Indicate whether the welfare changes under the efficiency production research is $>$, $<$, $=$ or "do not know" relative to export subsidy
Δ Consumer surplus		
Δ Producer surplus		
Δ Government		
Δ Net social welfare		

Welfare analysis under 3.2 and 3.4 – The large country case is presented, but the small country case could have been presented. The difference would be that P_W would remain unchanged and areas (e+f+g+h+i+j) are irrelevant to the welfare analysis, and the ED curve would be horizontal.		
	Area representing the welfare change under export subsidy	Indicate whether the welfare changes under the efficiency production research is $>$, $<$, $=$ or "do not know" relative to export subsidy
ΔCS	- (a+b)	+ (e+g); CS increases
ΔPS	+ (a+b+c)	+ (k+l) – (e+g+h); not clear
ΔG	- (b+c+d+e+f+g+h+i+j)	Equal cost by program design
ΔNSW	- (b + d) – (f+g+h+i+j)	+ (k+l) + (g) – cost of program
	DWLs and income transfer to importers	No DWLs; ΔNSW depends on whether value of (k+l+g) is $> < =$ cost to taxpayers

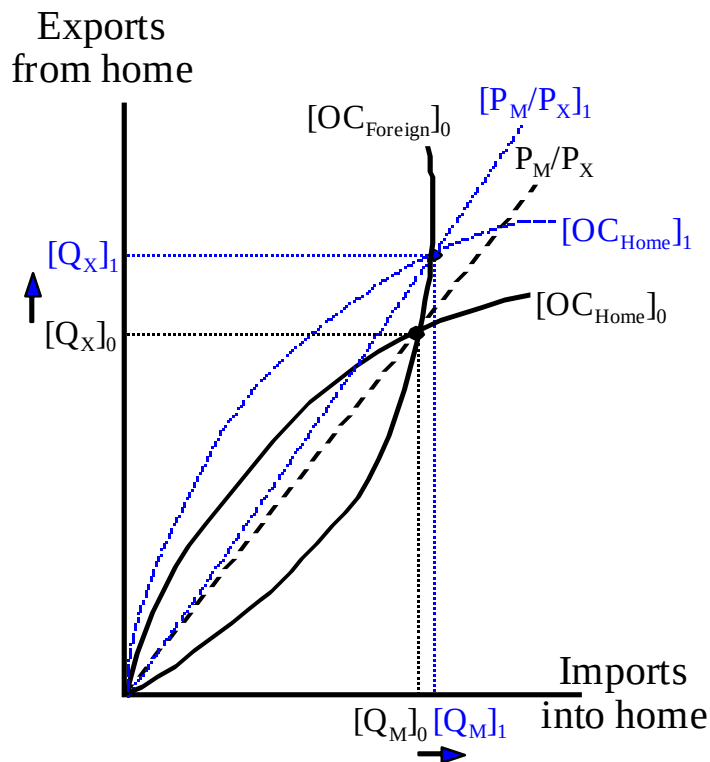
3.3 In a new graph, model the effects of a government-funded research program that increases efficiency in production (**do not** model the effect on the importing country). (5 points)



3.4 How would the values of the welfare changes (compared with a free trade) differ from those in 3.2 (just state whether it is greater than, less than, equal to or whether one cannot know)? Provide your answer in the same table that you created for 3.2. Explain the differences. (5 points)

Note: For a small country, the P_W would not change and the area (i+m) would also be part of the welfare improvement for producers in addition to (k+l). The areas (e+g+h) are still irrelevant in the small country case because P_W does not decrease.

- 3.5 Show the general equilibrium trade effects of the policies through offer curves. You only have partial equilibrium effects, but you can think about how relative trade prices are affected. (5 points)



The offer curve (OC) of the home country shifts up, as $[OC_{Home}]_1$, showing the country's greater willingness to trade (more exports to get more imports). In so doing, because the country is large the TOT change. The export subsidy or gov't-funded research $\rightarrow \downarrow P_X \rightarrow \downarrow$ TOT from Home's perspective. This implies that the price ratio, $[P_M / P_X] = \text{TOT} \uparrow$ s such that there is an $\uparrow P_M$ relative to P_X (because of the $\downarrow P_X$). This is shown as the steeper TOT line in blue, $[P_M / P_X]_1$. The $\downarrow$ TOT from Home's perspective is also apparent thru traded volumes: there is an $\uparrow$ exports, from $[Q_X]_0$ to $[Q_X]_1$ and that volume is greater than the $\uparrow$ imports, from $[Q_M]_0$ to $[Q_M]_1$. This suggests that the per unit value of Home's exports is less than the per unit value of Home's imports.

If the country was small, then P_W would not change and $OC_{Foreign}$ would be the same as the $TOT = [P_M / P_X]_1$. The OC_{Home} and quantity exported would increase as in the above case but at the same relative cost, price as before. That is, the import volume would increase along the original price ratio.

Summary Solutions to Dec 2006

Part 1. Explain whether the following statements are true, false, or whether it depends. If depends is your answer, be sure to explain upon what it depends. (25 points)

- 1.1 An export subsidy is a payment by government to increase the exports of a product. Therefore, there is no subsidy equivalent to the producers of this product when it is the exports that are being subsidized.

F. An export subsidy raises the price of the product on the domestic mkt relative to the world price. The higher domestic P is, in effect, a P -support for producers, resulting in a $+PS$ for producers, i.e., $+PSE$. Show the economic effects of an export subsidy on domestic mkt.

- 1.2 Suppose two countries agree to liberalize trade between their markets. If social welfare improves in both countries as a result of the increased trade, then trade liberalization is an example of Pareto optimal policy reform within each country.

F. The theory does expect free trade to result in an improvement in SW in both countries, but the theory does not predict that all members of society are affected the same. There are losers from trade liberalization even if net SW improves; this is not Pareto optimal policy reform.

- 1.3 Trade liberalization is expected to result in changes in production and consumption. However, even if production patterns did not change with liberalization, it is possible for consumption to change and therefore welfare could be improved through trade.

T. Even under the unlikely situation that prodn patterns do not change, the change in relative output prices means that consumers can exchange the exportable for more of the importable than before. If demand is such that more of the importable(s) is preferred, then SW can increase based on changing consumption patterns. Show autarky in prodn and consumption at new relative P .

- 1.4 Suppose production of a good is intensive in the use of a specific factor, say capital. Factor intensity in production implies that even if changes in relative factor prices occur, the capital-labor ratio in production of this good will remain unchanged.

F. Factor intensity in K suggests that the K/L ratio is relatively high in production and the good can be produced cheaply if and when K is abundant. Changes in relative factor prices will simply affect the amount of K r.t. L used given prices, but not that the K/L ratio will remain unchanged. Show an isoquant mapped on K/L space.

- 1.5 The factor-price equalization theorem, which predicts that factor prices converge across countries, would apply only when factors are fully mobile between countries.

F. It is true that if factors are fully mobile between countries then factor prices should converge across countries more quickly and completely. However, the theory predicts factor P equalization can occur even if factors are immobile across borders, but then trade in goods would have to be unrestricted (among other conditions, e.g., domestic regulations, perfect competition, etc.).

Part 2. Briefly answer the following questions or respond to the specific statements. Relate your answers to concepts discussed in class and avoid unnecessary information (45 points)

2.1 Using the lessons learnt from the theory, think about the general equilibrium changes that occur in the economy when considering the following: (15 pts)

2.1.1 List the sources of the gains from trade? Be specific. (5 pts)

1. Gains in specialization in prodn of good in which country has CA
2. Efficiency in use of resources, $\uparrow$ returns for abundant factors
3. Gains in exchange: $\uparrow P_{\text{Export}}$ r.t. P_{Import} ; more choice, competition

2.1.2 Consider the effects of trade liberalization on consumption, i.e., the demand-side. Why might the demand-side effects from trade liberalization be more difficult to predict than the supply-side effects? Be specific. (10 pts)

On the D-side, relative P of goods change. Nothing in the theory predicts that if P_A/P_M increases, that more M and less A is consumed. Consumers can prefer to have more A and less M even if the P of A increases relative to M . We need to know more about the type of goods b/c ΔP has two effects on the D-side: income and substitution effects. On the S-side, prodn is more easy to predict because an $\uparrow$ in P_A is expected to result in production of more A . As factors leave M to produce more A , less M can be produced in a gen'al eqblm context.

2.2 The standard Heckscher-Olin-Samuelson (H-O-S) model assumes competitive markets and predicts trade based on factor endowment differences. Consider the implications of imperfectly competitive international product markets when answering the following: (15 pts)

2.2.1 List relevant market factors that could make *product* markets imperfectly competitive.

1. Large size of an exporting country or producing firm relative to world mkt
2. Large size of an importing country or user of a product relative to world mkt
3. Economies of scale
4. Product differentiation and differences in demand; number of buyers
5. Gov't policy by large country that restricts competition/ mkt access
6. Barriers to entry; strategic variables, e.g., intellectual property, access to K

2.2.2 Provide an example and explain how one of the factors you list in 2.2.1 results in economic behavior and a trade situation that is different from the standard H-O-S trade model. Be specific. (10 pts)

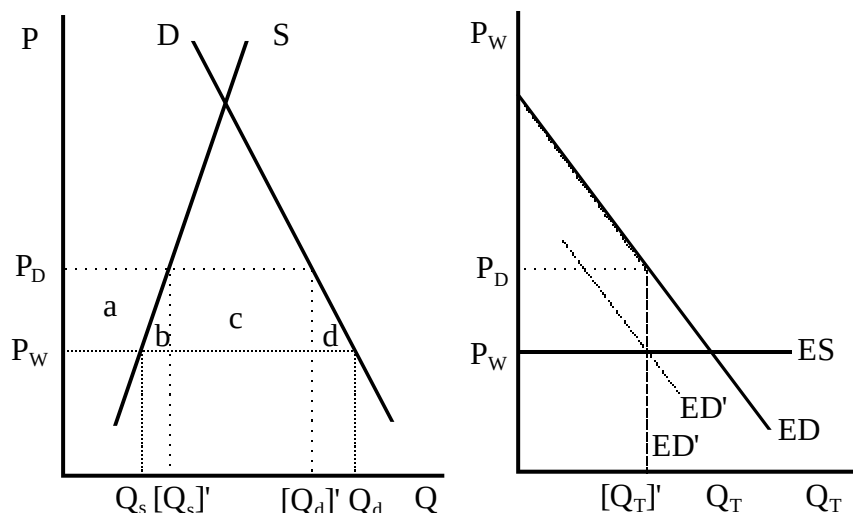
Large country size can mea gov't can behave strategically (i.e, use trade policy to restrict trade and improve SW, at the expense of trading partners, through manipulation of the TOT). EOS, without economies of scope, implies that trade does not have to be based on factor endowment differences. National K/L endowments can be identical and trade can occur, i.e., intra-industry trade. EOS can imply a firm is big but not big enough to supply the entire int'l mkt demand. This could result in important strategic considerations (advertising, marketing, brand names, patents for business organization or product, product differentiation) resulting in oligopolistic mkts or monopolistically competitive mkts.

2.3 An import quota is an alternative policy instrument to an import tariff. Consider the economic, political and welfare implications of these two trade policy instruments when answering the following: (15 pts)

2.3.1 From the importing country's perspective, explain (or show with a graph) whether an import quota and an import tariff can result in economic effects [prices and quantities] and changes in societal welfare [welfare and transfers] that are identical. (10 pts)

A quota can be set such that the $[Q_T]'$ results in a difference in the domestic price (P_D) r.t. the world price (P_W) that is equal to the price differential caused by the tax on imports ($P_D - P_W$). In such a case, quantities supplied, demanded and traded are the same. The higher P_D results in an equal ΔPS to producers, an equal ΔCS to consumers. The DWLs from the policy are the same. The one condition must hold is that the gov't must be able to collect the quota rents which should be equal to the tariff revenue, area c.

ΔCS	$-(a+b+c+d)$
ΔPS	$+(a)$
ΔG	$+(c)$
ΔNSW	$-(b+d)$



2.3.2 List reasons why economists prefer the use of an import tariff to a quota. (5 pts)

1. An applied tariffs and its quota equivalent today cannot be equivalent in long-run if $S+D$ change (dynamic non-equivalence); the quota is more distortive over time if the importer has a larger comparative disadvantage over time
2. Quota is more political and will likely have to be negotiated among partners
3. Quota requires more administration
4. Quota can encourage collusive behavior among firms because P_d set by firms not the tariff
5. Quota is discriminating which also implies it has to be negotiated

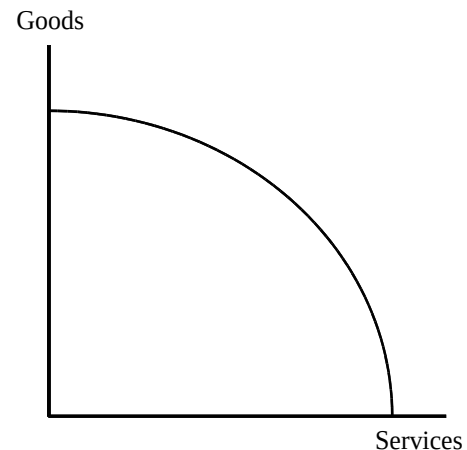
Part 3. Answer the questions related to the trade scenario described in the paragraph below. Be specific and explain your answers to the best of your ability. Label graph(s) clearly and explain them. Define concepts you think will support your answer. (30 points)

In the past 10-20 years, it has been argued that a process of "de-industrialization" has occurred in richer, more developed countries (e.g., North), e.g.,:

"The relative decline in manufacturing jobs in rich countries has coincided with a rapid increase in manufactured exports from countries such as China and Brazil." *Economist*, April 1997

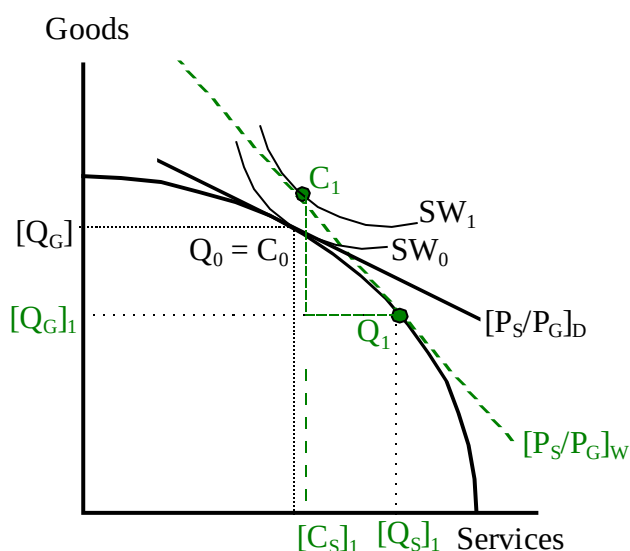
In the rich countries, the share of manufacturing (and agribusiness) activity of the economy's gross domestic product (GDP) has decreased as a percentage of total GDP. This occurred as the service sector's contribution to GDP has increased. In addition, the number of jobs and the share of jobs in the economy are increasing in the services sector.

Suppose the economy consists of two sectors, the goods sectors (which includes manufacturing and agribusiness activities) and services sector. Let the graph to the right reflect the production possibilities curve of a rich country (North). Use a modelling framework that builds on this graph when answering the following questions. You are to model the trade situations **only from the North's perspective**.



3.1 Consider the general equilibrium implications of international trade of goods for services when answering the following: (15 points)

3.1.1 Develop a trade model, from North's perspective, that describes trade patterns between North and South. Let the North be a net exporter of services and a net importer of goods under free trade. (7 pts)



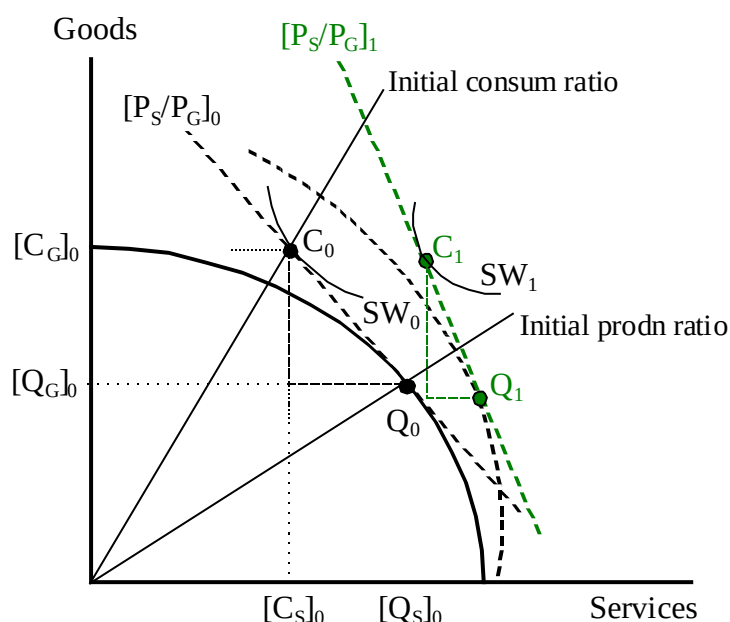
In the graph, the autarky situation is denoted by the subscript 0 and free trade denoted by the subscript 1. Under autarky, North has more manufacturing activity, and one could argue that free trade with South resulted in changes in relative prices such that less manufacturing takes place in North.

With free trade, the price of goods decreases r.t. services in North, resulting in more services activities and less manufacturing. Services are exported and goods imported.

3.1.2 Suppose after lobbying by manufacturers in the North, the government agrees that North-South trade is the cause of "de-industrialization". Show the effects of trade policy and explain how policy reverses the process of "de-industrialization". (8 pts)

In the graph above, the de-industrialization can be shown as a ↓ manufacturing, from $[Q_G]$ to $[Q_G]_1$. This was the result of a change in relative prices, from $[P_S/P_G]_D$ to $[P_S/P_G]_W$, implying ↑ prices for services. A trade restriction on imports of goods would ↑ price of goods and the production mix would move back toward autarky, Q_0 , where more manufacturing takes place.

3.2 Suppose economic growth in the North over time affects the relative supply and demand for goods and services. From the North's perspective, consider how growth factors in the North can explain the "de-industrialization" when answering the following: (15 pts)



The graph shows the initial prodn and consumption mix (before growth) at Q_0 and C_0 , respectively.

With growth, the technology allows prodn of goods to increase more relative to services activities, however, the demand side of the market moves towards services. The net effect of the supply and demand side factors of growth is that $[P_S/P_G]_1$ increases such that more services are produced and consumed proportionally (i.e., as a % of GDP). Hence, Q_1 and C_1 , are both to the right of the initial prodn and consum ratios.

Other tools: could have used offer curves to show the effect of TOT from the growth; could also use partial eqbm effects to help see how specific sectors could have been affected.

- 3.2.1 In a new graph, model the effects of growth under free trade (i.e., no trade policy). Let your model show that growth over time is reflects by both: (a) changes in technology that results in increased productivity of goods relative to services and (b) a preference for more services relative to goods as income increases over time. (10 pts)
- 3.2.2 Using the new information in 3.2.1, explain whether trade policy can reverse the process of "de-industrialization". Be specific. (5 pts)

Restricting trade to prevent "de-industrialization" is probably counter-productive because over time consumers prefer relatively more services. If demand-side factors are strong enough to determine relative prices, then trade restrictions to $\uparrow P_G$ might not be useful to $\uparrow$ jobs in the manu sector, $\uparrow$ manu share of GDP in prodn or consumption relative to the initial production and consumption ratios.

Basically, if gov't has little control over the Δ tech affecting Q of manufactured goods, then slowing $\uparrow Y$ or $\downarrow Y$ by protecting M-sector is a strange way of making country better off. In addition, $\uparrow Y \rightarrow$ relative $\uparrow D_S$. Gov't probably has little control over demand-side factors. So, a slower $\uparrow Y$ or $\downarrow Y$ to $\uparrow D_M$ is not likely to work (and a very strange policy).

Summary Solutions to Dec 2005

Part 1. Explain whether the statements are true, false, or whether it depends. (25 points)

1.1. More openness to trade by an economy where wages are relatively high relative to other countries will result in increased income inequality in the country with the higher wages.

T/D. Wages are highest in sectors where MP_L is highest. If these are the sectors in which the country has a comparative advantage, then trade liberalization will increase the VMP_L in the export sector. If wages are lower in import competing sectors, then more openness will hurt these workers and greater income inequality will result.

1.2. Countries with similar capital and labor endowment, or similar capital-labor ratios in production because of similar technology, will imply that trade will not likely occur.

D/F. The more similar the S-side of the economy (similar K, L endowment, K/L ratio and technology), the more similar will be the cost structure of the industries. However, if EOS or D-side differences exist, then trade will still be possible.

1.3. A voluntary export restraint, whereby an exporting country agrees to limit its exports to a particular importing country, is more economically efficient than an import tariff, resulting in a welfare improvement in the importing country because of smaller dead weight losses.

F. First, under the VER the importing country does not earn the quota rents; second, the DWLs would not be smaller if the quota was set at a rate equivalent to the tariff.

1.4. The more price elastic is the excess demand of an importing country, the higher will be the optimal export tax rate by an exporting country's government.

F. If ED is elastic, then it is more difficult to raise prices to foreigners (i.e., tax exports). High price inelastic implies a higher WTP for imports. Recall that $MR = P [1 + 1/\xi_{ED}]$ which implies the MR will be higher when the ED is more price inelastic.

1.5. For the factor price equalization theorem to hold, the law of one price must also hold.

T. If output P do not converge, then there is no reason to expect factor prices to converge.

Part 2. Answer each of the following questions or respond to the specific statements.(45 pts)

2.1. The World Trade Organization (WTO) is the international body where governments define the rules for international trade. WTO negotiations are intended to have countries liberalize their trade policy regime over time because this is argued to improve global welfare. In that light, the WTO negotiation process requires that a country liberalizes its trade regime in exchange for trade liberalization by all other member countries. Consider this information in a general equilibrium context when answering the following: (15 points)

2.1.1 List the sources of the welfare gains that economists argue is the result of trade liberalization, i.e., welfare gains from a movement toward free trade. (5 points)

**(*) resource efficiency thru factor reallocation
(*) production efficiency thru gains from specialization in production
(*) consumption efficiency thru gains from exchange ($\uparrow$ choice and $\uparrow$ Y)**

- 2.1.2 Keeping in mind your answer in 2.1.1, explain whether you agree or disagree with the following statement: The WTO negotiation process requires all members to liberalize because if only one country liberalized, i.e. unilateral liberalization, then that country's social welfare would be reduced. (10 pts)

F. Even unilateral liberalization should improve a country's SW. The only thing that matters is that P_W or the TOT are more efficient signals than P_D . Here you can show a 2x2x2 model to show how SW increases with trade liberalization.

2.2. Consider the following statement as it relates to the economics of international trade: Developing countries will not be able to benefit from agricultural exports in the long-run. Formulate an answer by: (15 points)

- 2.2.1 Listing relevant economic concepts that are key to evaluating the statement. (5 points)

(*) specialization in agriculture	(*) commodity vs value-added activity
(*) comparative advantage	(*) gains from trade
(*) declining TOT in agriculture	(*) Engle's law
(*) role productivity and investment	(*) trade policy and trade barriers
(*) imperfect competition and effect on P_A	
(*) P instability in agriculture, risk in A	(*) P inelasticity of D_A, S_A

- 2.2.2 Providing the neoclassical economist's response to such an argument based on the concepts you listed in 2.2.1. (10 points)

Quality of the answer will depend upon which concepts were discussed.

2.3. Think about some economic problem(s) that might exist in a country that would prevent free trade from maximizing that country's social welfare. Explain how trade policy could improve social welfare by: (15 points)

- 2.3.1 Providing an example of some economic problem(s). (5 pts)

There is too little production and/or export in some sector in which the country has a comparative advantage. Maybe the country is new to developing foreign markets; want to expand mkts; need more volume for transport/distribution efficiency; too little information about foreign buyers; need assistance in mkting products on int'l mkts. Similar to the "learning-by-doing" argument or to the "infant export industry" case.

- 2.3.2 Applying an export subsidy as a means to correct for the problem(s) you define in 2.3.1. Be sure you explain how welfare is improved. [Hint: Think about the motivation of the policy.] (10 pts)

Welfare is improved because the export subsidy takes risk away from mkting to foreign mkts and allows foreign buyers to get info about local products. The idea is that the export subsidy helps overcome a S-R problem and results in more L-R commercial exports.

Part 3. Answer the questions related to trade policy. Be specific and explain your answers to the best of your ability. Label your graph(s) clearly and explain your graph(s). Define concepts you think will support your answer. (30 points)

Consider the general features of trade policy for agriculture for each of the following countries: a small, relatively poor developing country that has a comparative advantage in a small number of agricultural products; and a small, developed country that is poorly endowed with land, but has a highly educated workforce.

Consider, also, the developmental pattern of the economy of each country, and the general openness to trade, i.e., whether the country would tend to favor trade reliance (pro-trade) or restrict trade (anti-trade).

Structuring your answers according to the chart provided below would be useful and appreciated.

3.1. Describe the general features of the trade policy for agriculture of each country. Provide graphs showing the partial equilibrium effects of the trade policy on the domestic economy of each country in isolation. Assume that the policy change is from free trade to a situation with the trade policy. [Hint: do not show this as a three-panel diagram.] (10 points)

3.2. What do the producer subsidy equivalents (PSE) and consumer subsidy equivalents (CSE) in both countries suggest is happening in each country as a result of the policy? (5 pts)

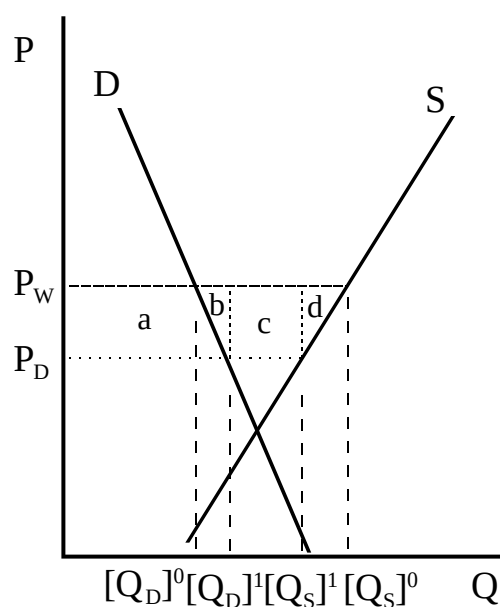
3.3. Using a 2x2x2 trade model as developed in class, provide a graph to show the general equilibrium implications of the trade policy in the developed country. Was trade policy the most appropriate policy to achieve objective? Explain and be specific. (10 pts)

3.4. Graph the trade effects from 3.3. using offer curve analysis. Does the offer curve analysis reflect anything about the country's openness to trade? Explain. (5 pts)

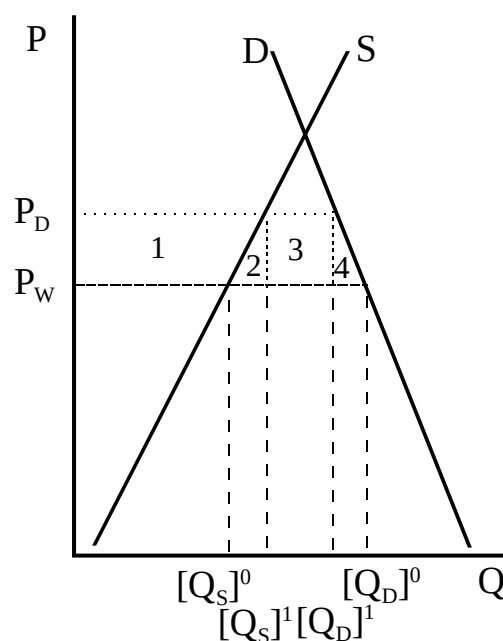
Table of answers for Part 3 (suggested)		
	Small developing country	Small developed country
3.1. List features of the policy, motivation and economic effects		
Partial equilibrium analysis:	A graph is required	A graph is required
3.2. Meaning of the PSE, CSE		
3.3. Appropriateness of the policy		
General equilibrium analysis:	Graph not required	A graph is required
3.4. Relevance to trade openness		
Offer curve analysis:	Graph not required	A graph is required

Answers to Question 3.		
	Developing country	Developed country
3.1. Policy features, motivation and effects	(*) comparative advantage in A (*) trade policy: export tax on A (*) motivation: industrialize tax the ag sector, subsidize M-sector or urban area w/ cheaper food policy (*) effects: $\downarrow P_A$, $\uparrow C_A$, $\downarrow Q_A$; transfer from A-producers; revenue to gov't	(*) disadvantage in A (*) trade policy: tariff on A (*) motivation: protect or support A-sector and tax manufacturing or urban sector; increase farm income (*) effects: $\uparrow P_A$, $\downarrow C_A$, $\uparrow Q_A$; transfer to A-producers; revenue to gov't
Analysis	graph supports the above	graph supports the above
3.2. PSE, CSE	Tax equivalent on A-producers (a+b+c); subsidy equivalent to A-consumers (a+b)	Subsidy equivalent on A-prodn (1+2); tax equivalent on A-consumption (a+2+3)
3.3. Appropriateness of the policy	no answer was requested	More efficient to subsidize Q_A without taxing consumption; was the intention to also collect a tax - if so, tax the taxpayer and transfer Y
Analysis	no answer was requested	$\uparrow P_A$ r.t. P_M ; $\uparrow Q_A$; less trade
3.4. Openness to trade	no answer was requested	OC shows the country's willingness to trade; the tariff is the gov't's way of distorting trade to discourage the reliance on trade; less trade

Supporting graphs: developing country

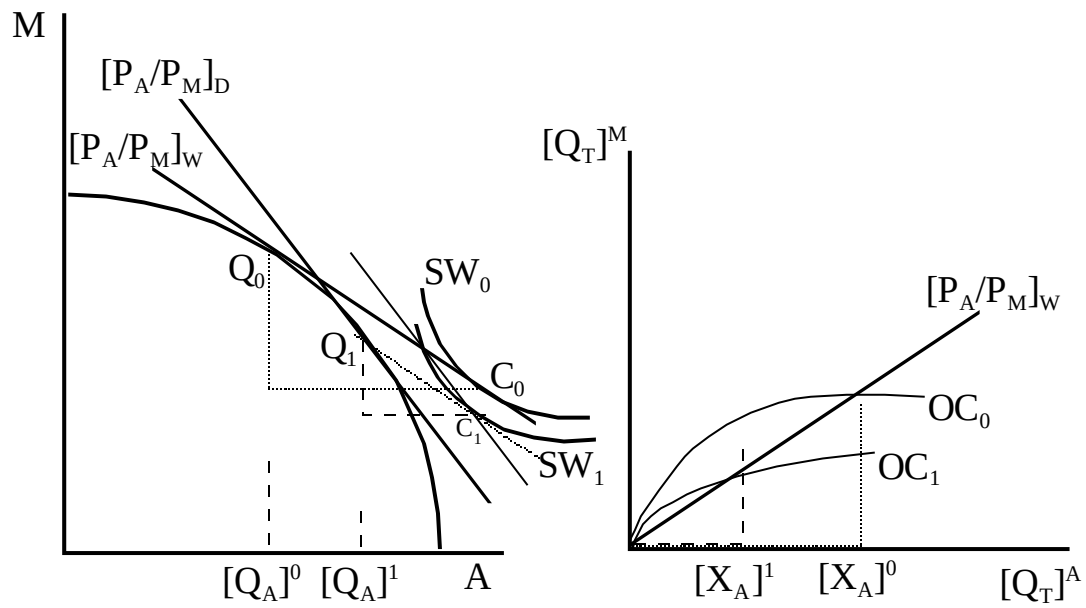


developed country



Gen'al eqlbm:

Offer curves



END of DEC 2005 Exam