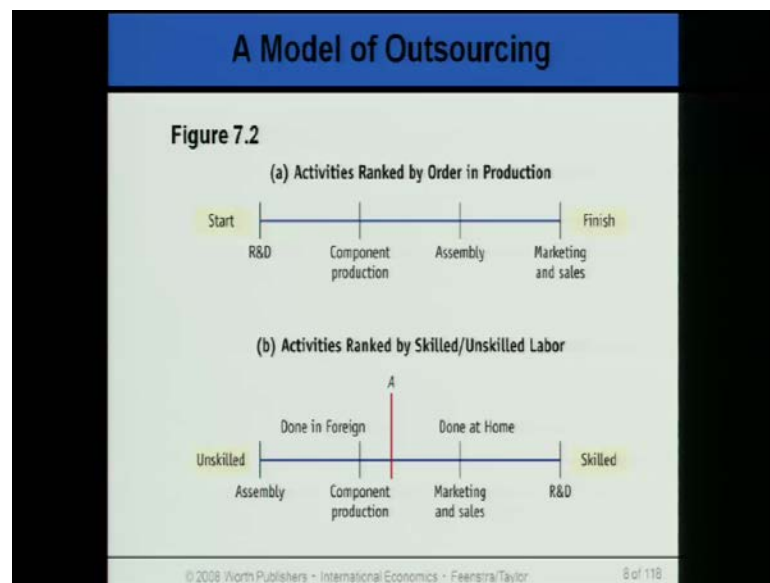


International Economics
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Lecture No. # 39

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Good afternoon, today we will continue discussing the model of outsourcing. Then subsequently we will discuss the gains of outsourcing and also distinguish between manufacturing outsourcing and service outsourcing. Outsourcing is, trade in intermediate products and now, many firms in the developed nations, they tend to outsource a part of their production process to the developing nations, firms existing in developing nations. And they do it because they think that by transferring a part of the production process they can reduce their costs. The assumption here is of course, that the wages that prevail in the developing nations are lower than, the wages which prevail in the developed nation.

So, when a firm in the developed nation outsources a part of the production process, it will lead to the eventually, to lower production of the entire good. Now, you can see this model of outsourcing these are activities which are ranked by order in production. So, any production process will start with the R and D research and development then, there

will be component production as in case of say T V or production of cellular phone. Then assembly and then finally, marketing and sales. Now, this R and D and marketing sales are generally, skill intensive activities while it is considered that component production assembly are more unskilled, intensive jobs and the firms in the developed nation they tend to outsource a part of the production process. They slice the value chain and the component production and assembly is done in the foreign country, while marketing and sales and r and d which is little skilled or more skilled job is undertaken at home.

Here the assumption is home is a country, which is skilled intensive while foreign is unskilled intensive country. Now, yesterday we saw that, if outsourcing is done basically manufacturing outsourcing and I will distinguish later on, the service outsourcing because countries like India are gaining from service outsourcing, whether it is the call centers or medical transcriptions or back office operations, Indians are providing service to the developed nation and these jobs are sometimes, more skilled intensive. So, there is a distinction between service outsourcing and manufacturing outsourcing. I am talking of manufacturing outsourcing. So, it is like a car which is to be produced in U S, but a part of the car production whether it is assembly or component production is done in another country say for example, Mexico.

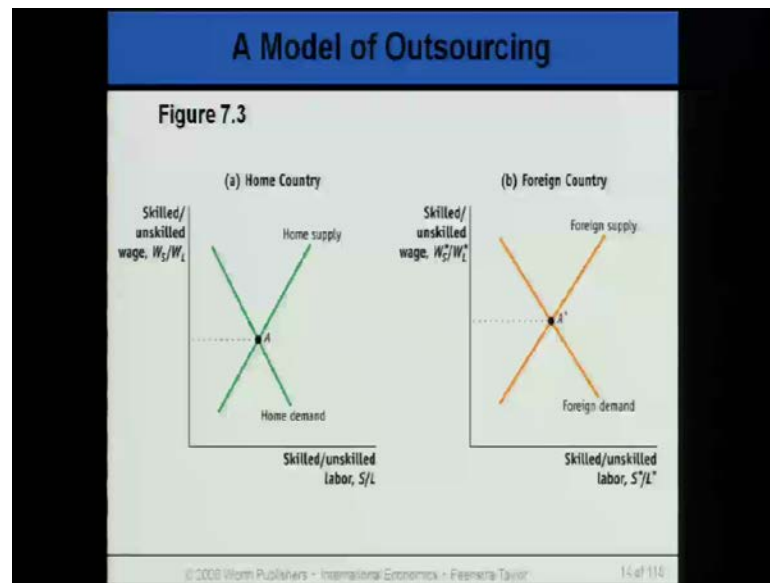
Now, the impact that it will have on the wages is something that needs to be understood and explained. yesterday we saw a me giving an example where the student who had join a science stream was not doing well. So, he pull down the average marks of that particular class. Now, if that student decides to move from the science stream to say humanities and social science a economic stream, he comes to the economic stream and starts doing well because he had the background of science that is math's and stats and in economics lot of math's and stats is been used. So, he starts doing well in the economics discipline. Now, the resulting effect is the place from where he left. That is the science stream because he was not doing well, his marks were below the average marks of the of his class. When he moves out the average marks goes up in the science stream and in the economic stream. Because he was doing well his marks were above average it pulled up the average. So, you see that the average marks in both streams increased whether it is science stream or in the economic stream.

So, similarly when a firm in a developed nation outsources a part of the production process because it thinks that component production and assembly can be done in foreign country at a lower cost. What it does is that in its own country in the as in the home country. Now, the type of jobs are the left over jobs are more skilled intensive. So, it will require more of skilled labour. So, when you require when you will demand more of skilled labour. The wages in the in the developed nation goes up and something similar, happens in the foreign country. Where the unskilled intensive job from the point of view of the developed nation is taken up by the foreigners.

Foreigners here are the developing nation, but because these are considered to be unskilled intensive from the western point of view, it may turn out that assembly or component production is skilled intensive in context of the developing nations. So, here also there will be a demand for skilled labour. As a result the wages in this in the developing nation wages of the skilled labour in the developing nation also goes up. So, here it is different from the Heckscher-Ohlin. In this context that in the Heckscher-Ohlin you will see that the eventually, you will see a factor price equalization, but here the wages of the skilled labour goes up. So, from outsourcing it seems that the skilled labour gains, the unskilled labour loses. Now, whether this is true empirically, this is something that we need to understand and study. So, a Feenstra and Taylor take up the example of U S and Mexico. And they find that in the U S specially from the mid eighty's they have seen an increase in the wages of the skilled labour, but at the same time, what is interesting to find is that the demands gone up.

Now, generally if you hear that the wages of skilled labour is going up and you **you** would you would then think that. If the wages of skilled labour goes up the demand for skilled labour is going down, but it is not the case. In U S the wages of skilled labour from the mid 80 have gone up and so, is the demand for labour this would mean this would mean. If you would draw a diagram this would mean a shift of the right ward shift of the demand curve.

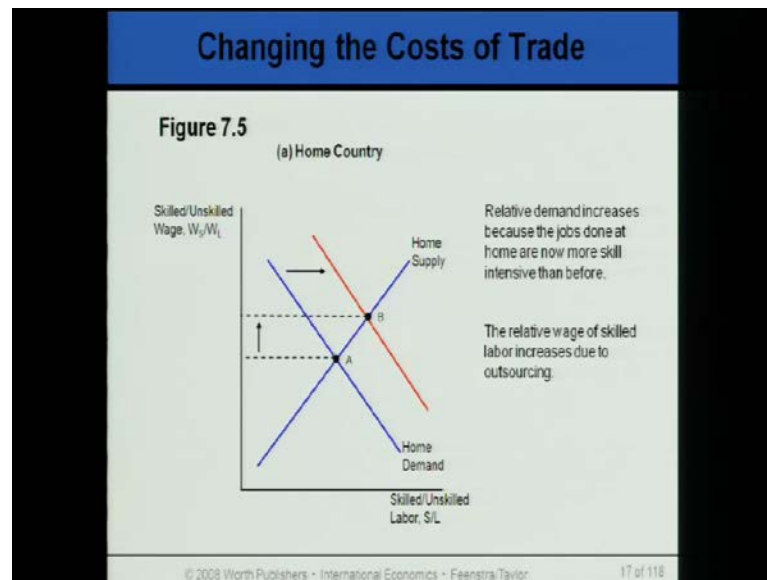
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So, I will show you some slides which will tell you. How the relative wage rates are determined. Now, if you see on the left side is home country's example on the right side is the foreign country. Home country is skilled intensive foreign country is unskilled intensive, foreign country has a lower wages as far as unskilled labour is concerned and home country because it is skilled, it is skilled in labour. we will see how the wages are determined. So, on the y-axis you have skilled to unskilled wage. That is W_s by W_u on the x-axis you have skilled to unskilled labour. Now, see what happens that in the home country with outsourcing there, **there** is a shift of the demand curve.

So, there is an increase in demand for labour and there is an increase, in the skilled to unskilled wage.

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So, you can see that as the relative demand increases because the jobs done at home are now more skill intensive than before. The relative wage of skilled labour increases due to outsourcing. So, this is what happens in the home country. In the foreign country the activities which are outsourced to foreign are more skill intensive. So, on average economic activity in foreign is more skilled intensive. So, the relative demand for skilled labour increases. So, as a result the relative wage of skilled labour, increases in foreign country as well. So, this is one of the results of outsourcing that the demand for skilled labour increases.

So, the relative wage rate of the skilled labour goes up. So, one reason that, you see a the gap between the wages of the skilled and unskilled labour increasing is because of trade in intermediate products or outsourcing. There are other reasons I am not claiming that this may be the only reason that outsourcing leads to an increase in gap between skilled and unskilled labour. There may be advent of say skilled intensive technological progress, which would lead to higher demand for skilled labour, that may be another reason or may be because the price of the non traded goods goes up, that may also lead to rise in the inequality between the wages of the skilled and the unskilled labour.

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Change in Relative Wages in the United States

APPLICATION

- Since the early 1980s, the wages of skilled workers have risen relative to those of unskilled workers in the U.S. as well as other countries.
- Use data from the manufacturing sector on "production" (unskilled) and "non-production" (skilled) workers.
- Figure 7.6 shows the average annual earnings of non-production workers relative to production workers in U.S. manufacturing from 1958 to 2001.
- Figure 7.7 shows a steady increase in the ratio of non-production to production workers employed in U.S. manufacturing until the early 1990s.

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But for U S it seems that from the early 80's, the wages of skilled workers have risen relative to those of unskilled workers in the U S as well as other countries. Now, this is a phenomena, which you can see in the developing countries also. From the 80's the inequality of income has gone up, but it is **it is** also true that in the U S, this inequality has gone up. Now, using data for the manufacturing sector on production that is unskilled and non production, that is skilled workers you can see the figures which, shows the average annual earnings of non production workers, which is skilled relative to production workers in U S manufacturing from 58 to 2001and the figure will show a steady increase in the ratio of non production to production workers, employed in U S manufacturing until the early in 1980.

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So, you can see that is the relative wage of the skilled to unskilled. It is here from here you can see that, the wage of the skilled to unskilled labour has gone up in the U S. What is also interesting is that the relative employment level from the 80's have also gone up, it had come down from 90, but again if you fit a regression line it will show an upward trend. So, two things wages have gone up and as well as the demand for labour has gone up. This would mean that there will be a rightward shift of the demand curve for labour, which will which can explain, an increase in wage of the skilled labour in the U S.

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Change in Relative Wages in the United States

APPLICATION

- Explanations
 - The evidence from the manufacturing sector in the U.S. is strongly consistent with our model of outsourcing
 - Another possible explanation is called skill-biased technological change.
 - Increased use of computers.
 - Which factor has had a bigger impact on wage inequality?
 - Studies attempting to answer this question mostly focus on the measurements in terms of some underlying variables.
 - The number of computers and other high-technology equipment used in manufacturing industries.
 - Imports of intermediate inputs into manufacturing industries.

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Now, if you go for the explanations. The evidence from the manufacturing sector in the U S is strongly consistent with the model of outsourcing. Another possible explanation as I said is called the skill biased technological change, which means that increase use of computers which leads to higher demand for the skilled labour. Question is another interesting, question is which factor has had a bigger impact on wage inequalities.

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Change in Relative Wages in the United States

APPLICATION

Table 7.1

	PERCENT OF TOTAL INCREASE EXPLAINED BY EACH FACTOR	
	Outsourcing	High-Technology Equipment
Part A: Share of Wage Payments Going to Nonproduction Workers		
<i>Measurement of high-tech equipment:</i>		
As a share of the capital stock	20%-23%	8%-12%
As a share of capital flow (i.e., new investment)	13%	37%
Part B: Relative Wage of Nonproduction/Production Workers		
<i>Measurement of high-tech equipment:</i>		
As a share of the capital stock	21%-27%	29%-32%
As a share of capital flow (i.e., new investment)	12%	99%

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Now, we will come back to those questions on this. Now, if you look at the percentage of total increase explained by each factor, that is outsourcing and high technology equipment. If you work out the share of wage payments going to non production workers, as a share of capital stock outsourcing has contributed 20 to 23 percent high technology equipment explains 8 to 12 percent, but as a share of capital flow outsourcing contributes 13 percent and high technology equipment 37 percent.

Part B, if relative wage of non production to production workers the share of outsourcing is 21 to 27 percent, high technology equipments is 29 to 30 percent for outsourcing is 12 percent and high technology equipments is 99 percent.

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Change in Relative Wages in the United States

APPLICATION

- Both outsourcing and high-tech equipment are important explanations for the increase in the relative wage of non-production/production labor in U.S. manufacturing.
- However, it is difficult to judge which is more important because the results depend on how we measure the high-tech equipment.

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So, you cannot say with certainty, that which factor has contributed more to the rise in inequality. So, it is difficult to judge, which is more important because results depend on how we measure the high tech equipment so, but what is very clear is that. The inequality in the U S has increased and there are reasons for it and the two reasons here are the outsourcing and the other is the adoption of computers, in the manufacturing sector.

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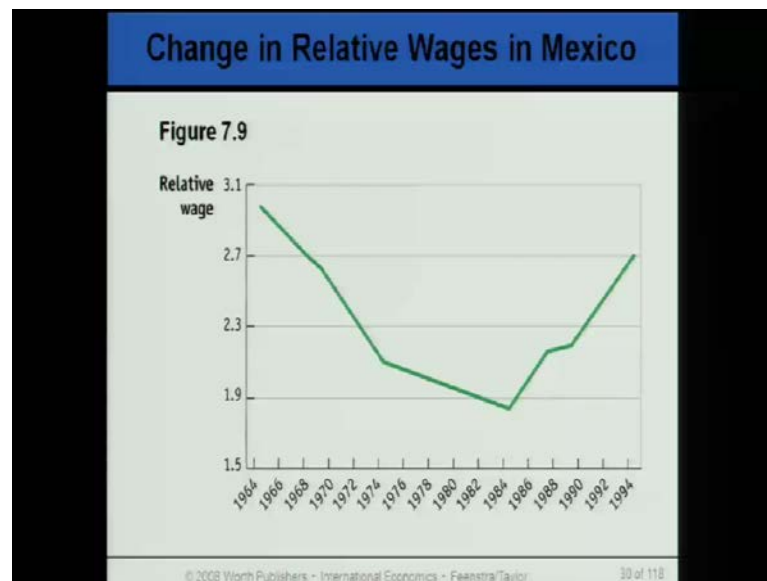
Change in Relative Wages in Mexico

- Our model of outsourcing predicts that the relative wage of skilled labor will rise in both countries.
- We have seen this for the U.S., but what about for Mexico?
- Figure 7.9 shows the relative wage of non-production labor in Mexico from 1964–1994.
 - Data comes from the census of industries in Mexico which occurs infrequently.
 - We can see the data seem to follow the same trends that we saw in the U.S.

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So, what this was about U.S. Now, when you talk of manufacturing outsourcing it will be interesting to look at the case in Mexico. What happens to the relative wage of non-production labour in Mexico from 1964 to 1994. So, the data comes from the census of industries in Mexico which occurs frequently, we can see that the data seem to follow the same trends that we saw in the United States.

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If you look at the relative wage rates in Mexico, you can see that from 64 it went down in 84 till 84 and then subsequently it rose. So, as I said one reason is because this is the time, when manufacturing outsourcing started taking place leading to an increase in demand for skilled labour. In Mexico because the type of jobs which were been outsourced to Mexico was considered to be skilled intensive. In Mexico it was considered to be unskilled intensive in us and **and** therefore, it was transferred to Mexico because Mexicans had lower wages.

So, from the mid 90's you can see that there is a manufacturing outsourcing taking place

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Change in Relative Wages in Mexico

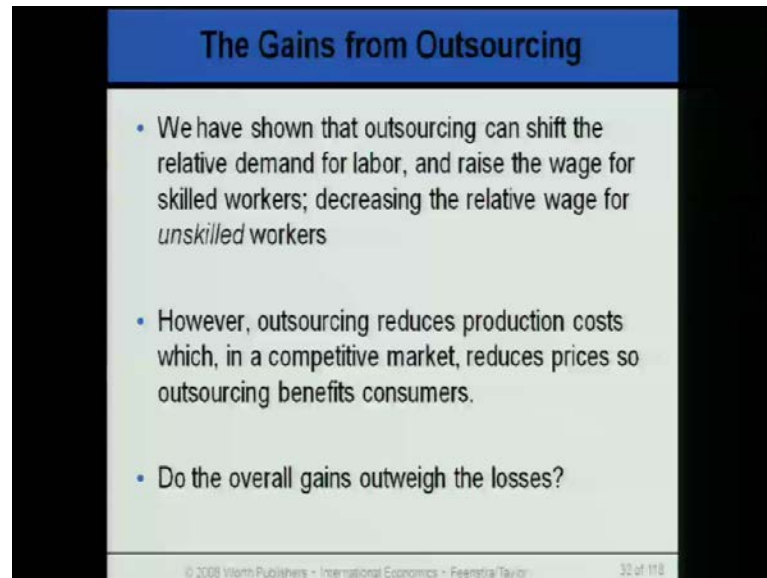
- After 1994, the change in the relative wage of non-production workers in Mexico depends on whether we look at the maquiladora sector or the non-maquiladora plants.
 - The *maquiladora* sector represents plants near Mexico's border with the U.S. engaged in outsourcing.
- For the maquiladora sector, we see real monthly income rising faster than wages for production workers, meaning a continuing rise in the relative wage of non-production (skilled) workers.
- For the non-maquiladora plants in the rest of Mexico, the evidence is that the relative wage of non-production workers fell after 1994.

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So, after 1994 the change in the relative wage of non production workers in Mexico depends on whether, we look at the maquiladora sector or the non maquiladora sectors. Now, this maquiladora sector represents plants near Mexico's border with the U S engaged in outsourcing. So, these this sector are a set of industries, which are at the border of the united states. Now, at least for this sector we see that the wages for the non production workers have risen. Non production workers are skilled workers, for the non maquiladora plants, which are far away from the border. The evidence is that the relative wages of non production workers have fallen after 1994.

So, for Mexico we see a rise in the wage of the skilled workers, but only for a particular group of industries which are closer to the border of the United States.

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The Gains from Outsourcing

- We have shown that outsourcing can shift the relative demand for labor, and raise the wage for skilled workers; decreasing the relative wage for *unskilled* workers
- However, outsourcing reduces production costs which, in a competitive market, reduces prices so outsourcing benefits consumers.
- Do the overall gains outweigh the losses?

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So, then we have shown that, outsourcing can shift the relative demand for labour and raise the wage for unskilled workers. Decreasing the relative wage for unskilled workers however, outsourcing because it reduces the production cost because you can transfer, the unskilled labour intensive job to the foreign country because it has lower wages it reduces prices. So, outsourcing benefits consumers. So, it is not only the firm in the developed nation which is gaining, it is it is also the consumers which are gaining because you can finally, get a product at a lower price, for the nation who is providing the services say India or many of the developing nations.

It is also a gain because now, they can do a job efficiently they can employ their own workers, they can employ their own factors of production produce goods and increase their productivity. So, question is. What is the overall gain does the overall gain outweigh the losses? So, now we have moved to the next section. The next question is the gains from the outsourcing. Now, here you will see that when I describe the gains, I will take the Heckscher-Ohlin model. I will bring the Heckscher-Ohlin model in the picture because here you would assume that, there are two countries, there are two products and there are two factors of production. The two goods are components one is component production and the second is R and D intensive product, which can be a T.V, which can be a computer and so on. So, forth.

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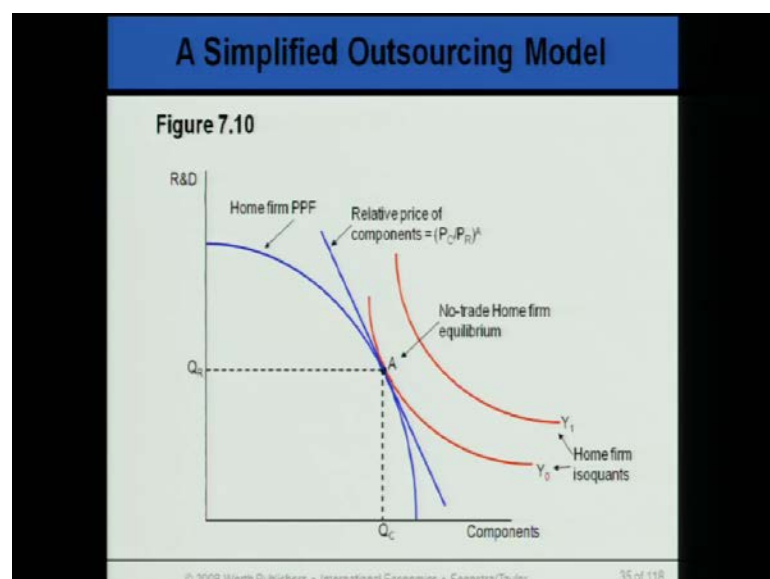
A Simplified Outsourcing Model

- Suppose there are only two activities: components production and research and development (R&D).
- Assume components is unskilled labor intensive.
- The costs of capital are equal in both activities.
- Compare the no-trade situation to an equilibrium with trade through outsourcing.
- The two kinds of labor are free to move between the two activities.
- Graph a production possibilities frontier (PPF) for the firm between components and R&D activities—figure 7.10.

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So, you have two goods. You have two factors of production which are skilled worker and you have unskilled worker and you have two countries say U S and Mexico. Now, if you want to show the gains of trade under the Heckscher-Ohlin banner, you have to bring in the production possibility frontier. Now, the production possibility frontier will show a tradeoff between the two goods, which are R and D intensive. The other is the component production and you can see for the general case, the PPF is concave to origin the slope of the PPF, which is the relative prices. When you move from left to right it increases.

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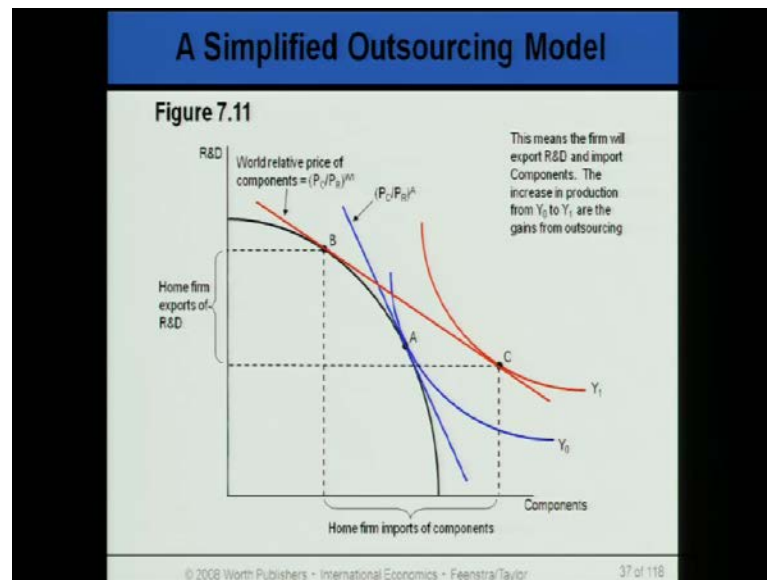


So, this is a no trade situation the no trade situation is this. Now, the difference is between the earlier diagrams that we have discussed. And this diagram is that there is a PPF which is concave to the origin depicting that, if you move from left to right the relative price of component goes up, relative price of component is Q_c by Q_r . The difference here generally, you have an indifference curve, but here you depict the home market isoquants. Please recall the isoquant shows different combinations of capital and labour. Or the factors of production which will give you the same level of output. So, this is an isoquant depicting.

A certain level of output of components and R and D. So, this is a no trade situation. Now, see what happens when outsourcing place outsourcing will only take place. If in the U S the producers of R and D intensive good know, that with trade they will get higher price for R and D or the gain can be that now, with trade they can import components at a lower cost. So, they have outsourced component production to the foreigners. Foreigners and they have done it because they can produce the goods at a lower cost. If they can import the components at a lower cost and if they can get a higher price for their or for an R and D intensive product, then it is a gain for the home or the firm in the developed nation. Now, what will, it what would it mean.

If you get a higher price for R and D that means, if you work out the relative price of component it will go down. So, you will see that, this relative price of component this tangent curve will shift it will become more flatter.

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And the new equilibrium point with trade would be the new equilibrium point, with trade would be rather than A it would be B. Because now, the exporters get a higher price for their R and D. So, they can produce more of R and D and they can export this much of R and D and import this much of component at a lower cost. Now, you can see the isoquant here at C is to the right of the old isoquant, meaning that if the isoquant moves to the right it means that, you can produce more of both the goods. So, at the end the gain is that the countries can efficiently produce the goods import goods at a lower cost and at the end produce more of the goods at a new relative price. So, these are the gains which means that. The firm will export R and D and import component, the increase in production from y_0 to y_1 are the gains from outsourcing.

So, the gains that you because when you efficiently start producing you, you will start producing more of the good in which, you have a comparative advantage similar for foreigners, they have their unskilled labour intensive. So, they can produce components efficiently they produce it they sell it at a lower price. So, both countries gain and finally, you will see that the increase in production from y_0 to y_1 are the gains from outsourcing. So, this you can see this is similar, diagram as we saw. When we were discussing the Heckscher-Ohlin model. Remember the Heckscher-Ohlin model it said that, a country exports the good, which uses intensively it is abundant factor and imports the good which uses intensively it is scarce factor. So, here is U S which was skilled, skilled in labour. It exports the good which uses intensively, it is abundant factor that is

skilled labour. So, it exports R and D intensive good and imports the goods which uses intensively, it is scarce factor which is unskilled labour intensive good.

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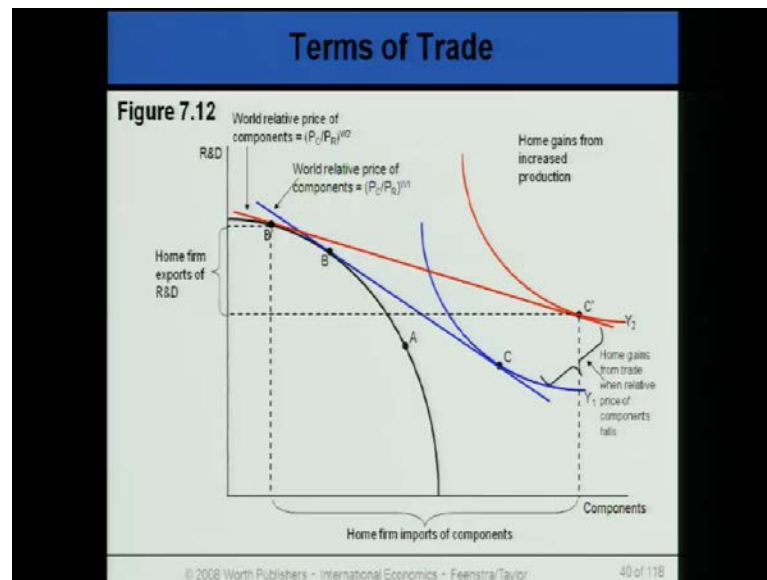
Terms of Trade

- We now need to consider the impact on a country's *terms of trade*. (P_{EX}/P_{IM})
 - Home terms of trade are $(P_R/P_C)^{W1}$ since Home is exporting R&D and importing components.
- A rise in the terms of trade indicates that a country is getting a higher price for its exports, or paying a lower price for its imports.
- Fall in the Price of Components
 - Suppose there is a fall in the relative price of component production.
 - Maybe Foreign improves its productivity in components.

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Which is the component? Further we need to consider the impact of this outsourcing. That is trade in intermediate product on the terms of trade. Now, recall. What is the term of trade terms of trade of a country? Is the price of exports by price of imports. Now, there are two sets of arguments, one if the technological progress in the foreign country takes place, in the component sector. So, it would lead to a reduction in the price of component to price of the R and D product in their country and remember whatever, is the term of trade of the foreigners. The inverse of it is the terms of trade of the home. So, if the technological progress takes place in the component sector there are further gains of outsourcing for the home country.

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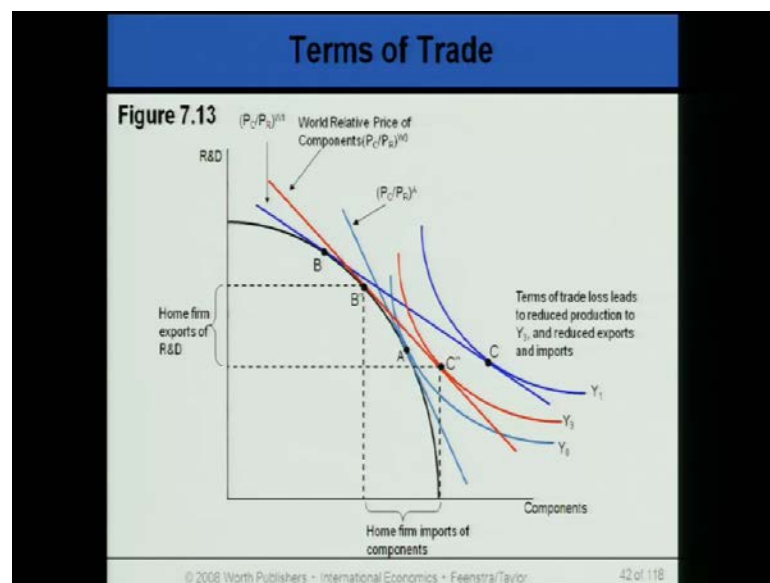
Now, that you would see if there are further gains, you would see that the world relative price of component has become more flatter home is. Now, producing more of R and D importing more of components. And the home gains from trade when relative price of component falls? So, this is a case where technological progress takes place in the component sector, in the foreign country. So, it is like Mexicans, who does technological progress, but it is it leads to a fall in terms of trade in their country and a rise in terms of trade in the home country, but there is a second possibility that, second possibility is that the technological progress in the foreign country in the developing country takes place in the R and D sector.

Now, this is what Pauls Samuelson the famous **nobellaureate** was saying that Indians who have done quite well in terms of the I T services and because it has a vibrant educational, education sector it has been able to have an abundance in skilled labour overtime. There is a possibility that technological progress takes place in the R and D sector of the foreign country, which would mean that the terms of trade in the foreign country improves. If the terms of trade in the foreign country improves the terms of trade in the home country would go down because the terms of trade, in home is the reciprocal of the terms of trade in the foreign country.

Now, see what happens now you see an opposite result, where the terms of trade in the U S has fallen because the technological progress has taken place in the sector, in which

foreigners did not have a comparative advantage earlier. So, it is like Indians who were rich, in say unskilled labour, but overtime because of its vibrant educational sector it has become more skilled intensive. So, technological progress takes place in the sector in which it did not have a comparative advantage, as a result foreigner's terms of trade or the developing countries or the Indians terms of trade goes up, the U S terms of trade falls.

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As a result they lose and they come to a point like B double dash. Where they export less of R and D capital intensive good and import less of components from the developing nation. So, the terms of trade loss leads to reduce production to y_3 and reduce exports and imports of the R and D. So, Paul Samuelson was concerned about the falling terms of trade because of the technological progress, that takes place in the foreign country. In the sector in which it did not have a comparative advantage.

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Terms of Trade

- Fall in the Price of R&D
 - Remember Home is exporting R&D and importing components in the initial outsourcing equilibrium: terms of trade are P_R/P_C .
 - When the price of R&D falls, Home terms of trade have worsened and Home is worse off compared to initial outsourcing equilibrium.
 - *There are still Home gains from outsourcing at C" as compared to the no-trade equilibrium at A.*

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So, this was the concern of Paul Samuelson, but at the end there are still home gains from outsourcing at c double dash, as compared to the no trade equilibrium. So, this is a standard result that if you trade it will you will be you will be gaining as compared to the no trade equilibrium.

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US Terms of Trade and Service Exports

APPLICATION

- We now want to examine the evidence for the U.S. to test Samuelson's theoretical argument
- Merchandise Prices
 - Figure 7.14 shows the terms of trade for the U.S. for merchandise goods (excluding petroleum).
- Service Prices
 - For trade in services such as R&D, it is very difficult to measure their prices in trade.
 - However, we can collect good data on air travel
 - Terms of trade in air travel equals the price that foreigners pay for travel on U.S. airlines divided by the price that Americans pay on foreign airlines (shown in figure 7.14).

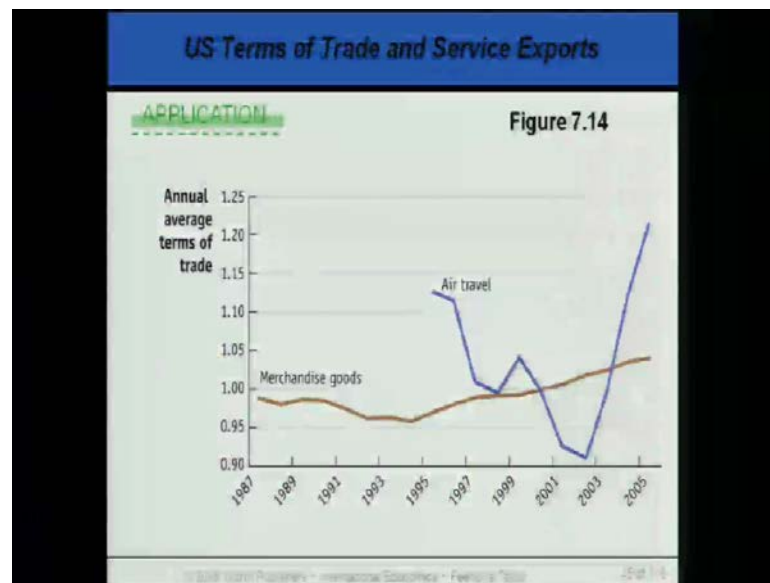
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Now, what is to be seen is empirically an application is whether, do you see an evidence for the U S to test the Samuelson's theoretical argument that, Samuelsson's theoretical argument was that do you see fall, in the terms of trade of the U S. Now, the empirical

results will show that this is not true. Figure shows that the terms of trade for the U S for merchandise goods and for service prices for trade and services such as R and D it is very difficult to measure their prices in trade, we can collect good data on air travel.

So, the terms of trade in air travel equals the price that foreigners pay for travel on U S airlines divided by the price that American's pay on foreign air lines.

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So, this is just a proxy for the terms of trade for service. In the service sector for merchandise prices there is terms of trade price of exports of merchandise, price of imports of merchandise, but for services because no readily available details one can get. So, the terms of trade in air travel is taken as a proxy for the terms of trade, in the service sector and it equals the price that foreigners pay for travel on U S airlines divided by the price that American's pay on foreign airlines and here is the data.

Now, Samuelson was concerned that with an increase in outsourcing, there is a possibility that the technological progress in the developing nation, would lead to a reduction in terms of trade in the U S, but for merchandise goods you can see from the mid 90's the terms of trade instead of falling it has gone up, even for air travel after 2003 the terms of trade has improved. So, one cannot say with certainty, that the terms of trade have fallen in the U S.

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US Terms of Trade and Service Exports

APPLICATION

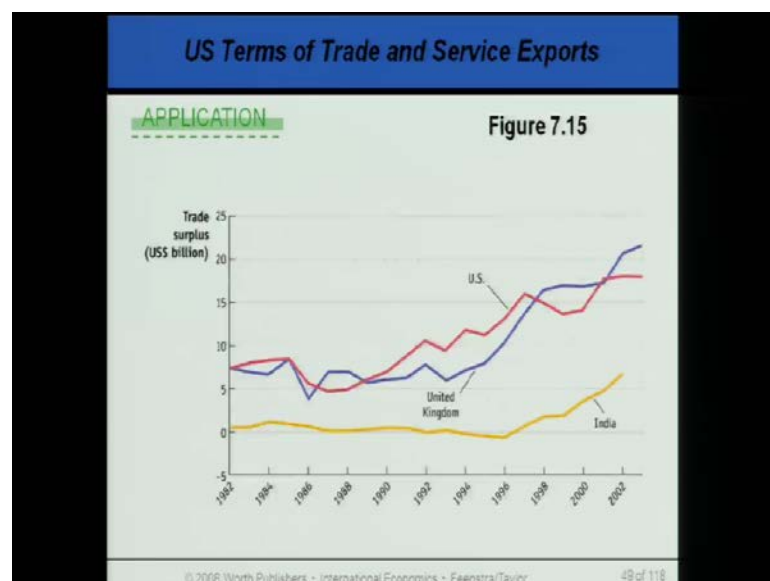
Table 7.2

	Exports	Imports
Computer and information services	\$8,239	\$8,969
Management and consulting services	6,419	5,894
R&D and testing services	10,095	6,717
Operational leasing	9,393	1,278
Other business, professional, and technical services	46,813	26,837
Total business, professional, and technical services	\$80,761	\$47,696
Education	14,123	4,029
Financial services	34,081	12,349
Insurance services	6,831	28,482
Telecommunications	4,724	4,658
Other services	17,203	3,302
Total other private services	\$158,223	\$98,714
Travel	81,880	69,175
Passenger fares	20,931	26,066
Other transportation	42,249	62,107
Royalties and license fees	52,450	26,501
Total Private Services	\$360,489	\$280,563

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Now, even if you see the total exports and imports of services, you can if you work out the total exports under different services computer information, starting from computer and information services to management and consulting, educational services, financial services, telecommunications, travels, travel passenger fares, transportation, royalty you will see that. If you sum up the total exports of U S are greater than the total imports of services. So, one cannot say that when you have a surplus in the trade and services at least in that time period, that you would see a fall in the U S terms of trade.

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Now, you can see the trade surplus. In the service sector you can also see for India from 1996 there is a surplus, for United Kingdom and U S again you see an upward trend. Now, what is to be seen is that subsequently after the year 2010 or 2011 or 2012, will the rise in the trade surplus leads to a trade deficit in the U S or U K. Now, that is something that one cannot say because what will happen in future is what one cannot predict convincingly, but there is always a possibility that. If India does well in service sector there is a possibility that, it has a detrimental impact on the U S and the United Kingdom straight away.

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Impact of Outsourcing on US Productivity

APPLICATION

- Table 7.3 shows the impact of service outsourcing, materials outsourcing, and high-technology equipment on manufacturing productivity measured by estimating value-added per worker.

Table 7.3
Percent of Total Increase in Productivity Explained by Each Factor

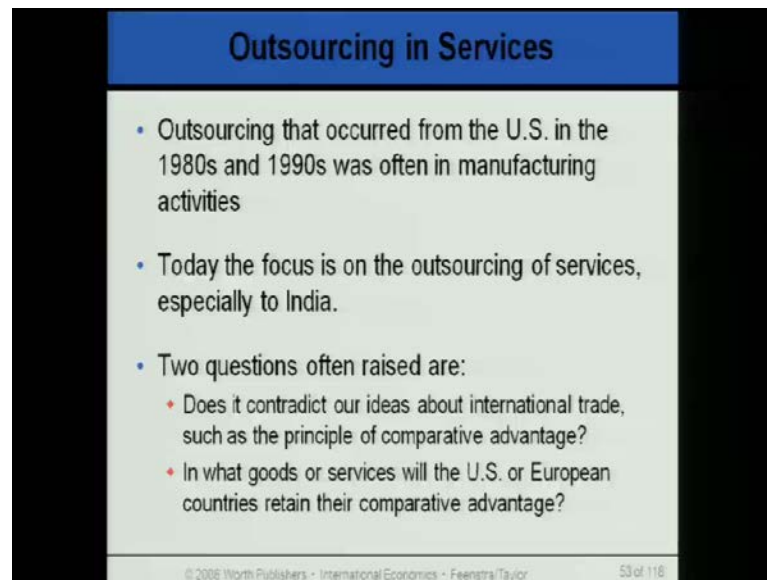
Service Outsourcing	Materials Outsourcing	High-Technology Equipment
11%-13%	3%-6%	4%-7%

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The other is the impact of outsourcing on the U S productivity. And if you bifurcate between service outsourcing, that is Call Centers, B P O'S the jobs the back office operations, taken up by the Indians and the firm firms in the developing nation. The percentage of total increase in productivity explained, by each factor service outsourcing contributes, the most 11 percent to 13 percent material outsourcing contributes.

3 to 6 percent high technology equipment, that is computer contributes 4 to 7 percents. So, one can see from here that if the developed nation indulges in service outsourcing, they have a maximum gain the total increase in productivity is greater than, when you have material outsourcing and high technology equipment.

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Outsourcing in Services

- Outsourcing that occurred from the U.S. in the 1980s and 1990s was often in manufacturing activities
- Today the focus is on the outsourcing of services, especially to India.
- Two questions often raised are:
 - ♦ Does it contradict our ideas about international trade, such as the principle of comparative advantage?
 - ♦ In what goods or services will the U.S. or European countries retain their comparative advantage?

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My last discussion point is the outsourcing in services. And why is this focus of attention because Indians are doing quite well as far as providing, the services to the developed nation they can be call centers, back office operations, financial analytics, business processing outsourcing. So, Indians have really gained in terms of providing services to the developed nations. So, again there is a slicing taking place. The production process gets sliced, but now there is service outsourcing rather than manufacturing outsourcing. Now, how is it different it is different because earlier the thinking was that in the developed nation, there will be outsourcing of the jobs which will be unskilled labour intense.

Now, what is happening with outsourcing of services. That there are skilled intensive jobs which are been to India and why is it is because in case of India manufacturing outsourcing does not probably, does not takes place because there are substantial trade cost because of the infrastructure problem or there are sometimes higher tariffs for certain products, but when it comes to service outsourcing, with the revolution that has taken place in information and communication technology.

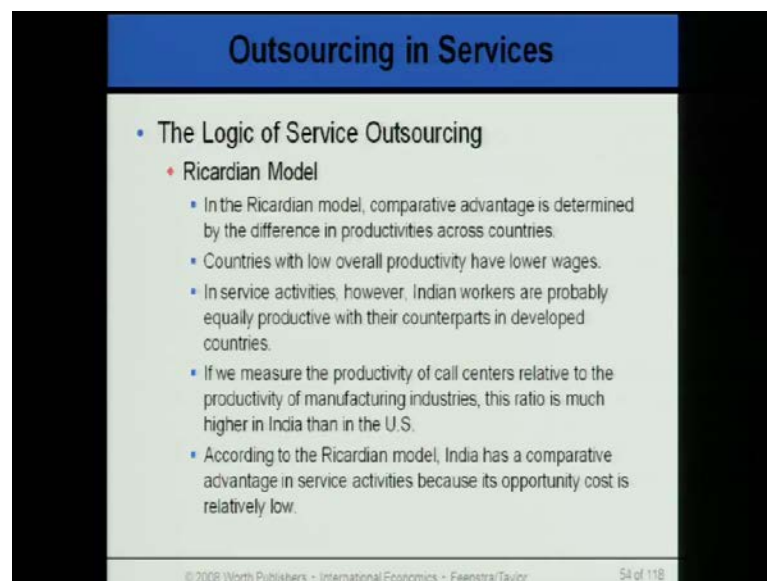
It is very easy to outsource services rather than manufacturing, manufacturing outsourcing requires an efficient infrastructure lower tariffs, lower trade costs if India does not provide that then, what follows from there is that it can do or provide services at

a lower cost to the developed nations because the information and communication revolution has impacted India as well.

Now, all this raises two questions does it contradict our ideas about international trade such as, the principle of comparative advantage. In what goods or service will the U S or European countries retain their comparative advantage. Now, you can bring in the Ricardian theory of international trade remember, the Ricardian theory. The Ricardian theory said that trade will take place because of the differences in because of the differences in productivity. So, Ricardian model was also talking about comparative advantage, but now the comparative advantage is due to differences in technology.

So, this particular service outsourcing can be explained by the Ricardian model of international trade and so, you **you** see a differences in technology even, india has an advantage in production of services.

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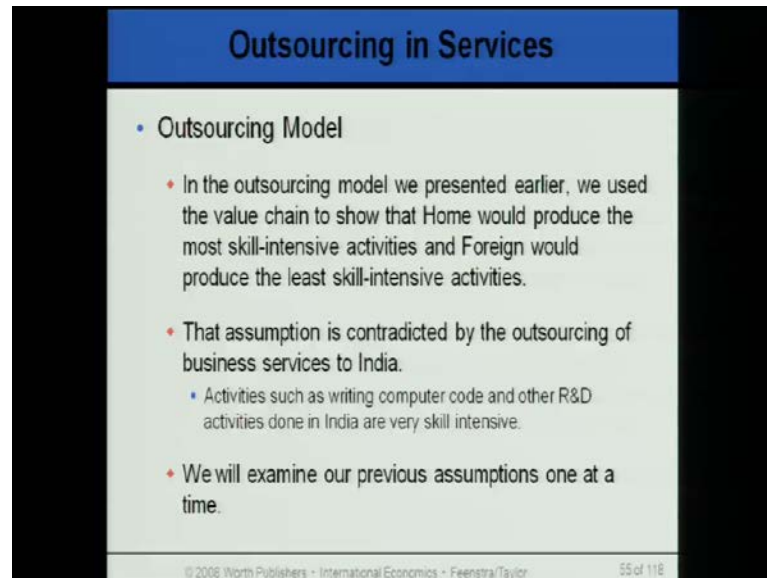
Outsourcing in Services

- The Logic of Service Outsourcing
 - Ricardian Model
 - In the Ricardian model, comparative advantage is determined by the difference in productivities across countries.
 - Countries with low overall productivity have lower wages.
 - In service activities, however, Indian workers are probably equally productive with their counterparts in developed countries.
 - If we measure the productivity of call centers relative to the productivity of manufacturing industries, this ratio is much higher in India than in the U.S.
 - According to the Ricardian model, India has a comparative advantage in service activities because its opportunity cost is relatively low.

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Because it has higher productivity in the service. In service activities Indian workers are probably equally productive with their counter parts in developed countries. If we measure the productivity of call centers relative to the productivity of manufacturing industries, this ratio is much higher in india than in the U S. So, according to the india has a comparative advantage in service activities because its opportunity cost is relatively low.

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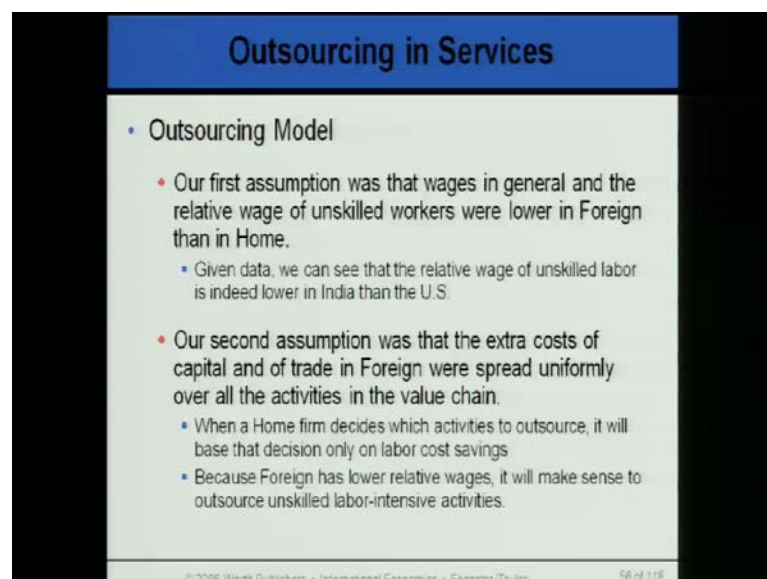
Outsourcing in Services

- Outsourcing Model
 - ♦ In the outsourcing model we presented earlier, we used the value chain to show that Home would produce the most skill-intensive activities and Foreign would produce the least skill-intensive activities.
 - ♦ That assumption is contradicted by the outsourcing of business services to India.
 - Activities such as writing computer code and other R&D activities done in India are very skill intensive.
 - ♦ We will examine our previous assumptions one at a time.

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So, in the outsourcing model which we presented earlier, we use the value chain to show that home would produce the more skilled intensive and foreign would produce the skill intensive. Now, this assumption is contradicted by the outsourcing of business services to India. Activities such as writing, computer code and R and D activities are done in India which are skilled intensive and it is it is easy to transfer, these activities to India because of the revolution in information and communication.

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Outsourcing in Services

- Outsourcing Model
 - ♦ Our first assumption was that wages in general and the relative wage of unskilled workers were lower in Foreign than in Home.
 - Given data, we can see that the relative wage of unskilled labor is indeed lower in India than the U.S.
 - ♦ Our second assumption was that the extra costs of capital and of trade in Foreign were spread uniformly over all the activities in the value chain.
 - When a Home firm decides which activities to outsource, it will base that decision only on labor cost savings
 - Because Foreign has lower relative wages, it will make sense to outsource unskilled labor-intensive activities.

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We will examine our previous assumptions. The assumption was that the wages in general and the relative wage of unskilled workers, were lower in foreign than in home.

Now, if you work that out that will hold true. Now, also even in the service sector, if you will see that the, wages of the unskilled workers would be lower than, the wages of the skilled workers, but that is not the issue. The second assumption is that their extra cost of capital and trade in foreign were spread uniformly over all activities in the value chain. Now, this assumption needs to be relax not the first assumption, the first assumption remains the same that we are a country of lower wages.

So, we will have lower wages, but the second assumption that there are extra cost of capital and trade. In foreign was spread uniformly over all activities that is not true because in India there, the there will be an infrastructure cost trade costs are higher. So, it means that, manufacturing outsourcing may not be a profitable in profitable activity, but service outsourcing may be more profitable.

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Outsourcing in Services

- Outsourcing Model
 - The second assumption does not hold in India.
 - The actual costs of outsourcing relatively unskilled manufacturing activities to India are much greater than the costs of outsourcing skilled service activities.
 - Manufacturing requires transporting component parts to India which has a poor transportation infrastructure.
 - Outsourcing skilled service activities requires no transportation of parts
 - Service activities do not rely as much on transportation but instead require reliable and cheap communication.
 - The communication infrastructure is very good in India and they have a large number of well-educated individuals who speak English.
 - This makes sense for the U.S. and Europe to engage in service outsourcing with India, where India has a comparative advantage.

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So, the second assumption does not hold in india. The actual costs of outsourcing relatively unskilled manufacturing activities to india are much greater, than the cost of outsourcing skilled service activities. While the service activities do not rely, as much on transportation, but instead require reliable and cheap communication. So, the communication infrastructure in India is very good and they have a large number of well educated individuals, who can speak English this make sense for the U S and Europe to

engage in service outsourcing with India. Where India has a comparative advantage. So, all in all when we were discussing this chapter. First we discussed the model of outsourcing wherein we said that, the demand for skilled labour will increase with outsourcing and then we went to the gains of outsourcing and finally, we are talking about outsourcing in services.

So, that is all about the outsourcing model tomorrow we will see and discuss, how the issue of foreign direct investment or foreign direct investment have an impact on the, returns to factors of production. Whether, FDI is desirable or not and also we will discuss whether, labour migration tends to reduce wages in the other countries. What will happen in the short and the long run these are little sensitive issues, but we will give a theoretical argument on how does FDI and migration of labour have an impact on the returns to factors of production **thank you**. So, much.