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- development/industrialization strategies:

development strategy has followed a chronology starting with an emphasis on primary good exports, switching to ISI, and then to manufactured export promotion

the emphasis on primary good export (including agricultural goods and minerals) started with colonialism; primary products have been a major source of income, but it was believed that relying on primary products would not help a country develop unless the country implements an industrialization strategy

many developing countries (including Mexico, Brazil, Argentina, Bolivia, Pakistan, India, Philippines, Indonesia, Kenya, etc.) implemented ISI as a strategy to make imported manufactured goods expensive in order to promote domestic industry, under the belief that domestic industries will eventually be able to produce cheaply and compete at world prices

over the last 20 years, ISI has dropped out of favor because of the debt crisis of countries that followed ISI coupled with the success of countries that undertook manufactured export promotion; this has led to significant policy changes over the past 10 years

- primary product exports:

there are advantages and disadvantages of specializing in the export of primary products:

Disadvantages - there are four main problems with reliance on primary product exports: 1) declining terms of trade 2) fluctuating export earnings 3) ineffective linkages to other sectors 4) "Dutch disease":

1. declining terms of trade:

it is believed that the terms of trade for primary products will decline over time; that is, over time it will take increasing amounts of an agricultural or mineral product to pay for a manufactured good

thus, if the world division of labor consists of primary product producers and manufactured product producers, a country will not want to continue to be a primary product producer because the terms of trade will continue to decline for them, and they will never escape poverty

Engel's law might explain why the terms of trade for agricultural products decline over time; according to Engel's law, as income increases, a larger absolute amount of income is spent on food, but a smaller proportion of income is spent on food because the income elasticity of food is low; thus, if the supply of food rises steadily with time, the price of food will decline because demand doesn't rise as quickly as supply as average income increases

additionally, there is a limit to the price that can be charged for minerals because buyers of the minerals will be able to substitute away from using them if the price

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charged is too high (for example, buyers will use iron instead of copper, use plastic instead of metal, learn how to make finer wires using less metal, etc.)

although buyers of minerals could find substitutes, oil is an exception; oil exporting has enabled some countries to achieve middle income status

the prices of primary products are alleged to be variable and unpredictable, but the revenue earned from primary product export depends on both price and quantity sold; both of these can be variable with agricultural products

there are three measures for the terms of trade – a) net barter terms of trade b) income terms of trade c) single factor terms of trade:

- a) net barter terms of trade – this is defined as the ratio of an index of the country's export prices to an index of the country's import prices

net barter terms of trade = (index of primary product prices)/(index of manufactured tradeables prices)

each index is a weighted average of the prices of imported or exported goods; the weight on each price depends on the importance of each product (such as its proportion of trade volume); the ratio is set to 100 in the base year

page 638, figure 16-3 – the net barter terms of trade for primary products: this figure illustrates that the net barter terms of trade for primary products fluctuates, but does not show a clear pattern, although there could be a downward trend toward the end

page 639, figure 15-4 – the net barter terms of trade for developing countries: this figure shows a definite downward trend for non-oil-exporting developing countries

other studies have shown mixed results – a study by Cuddington showed no sustained trend for 24 primary commodities from 1900 to 1988; a study by Sapsford and Balsubramanyam showed the terms of trade declined at an average rate of 0.7% per year; another study in the World Bank Economic Review (1988) showed the ratio of an index of prices of non-fuel primary products to an index of prices of manufactured products fell from 131 (1900) to 100 (1960) to 67 (1986); thus, there could be some support for the fear that the terms of trade are declining for developing countries

- b) income terms of trade – the income terms of trade consider the purchasing power of a country's exports

$$\text{income terms of trade} = \frac{P_e Q_e}{P_m} = (\text{revenue from exports}) / P_m$$

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$P_e$  = price index of exports

$Q_e$  = quantity of exports

$P_m$  = price index of imports

even if the price of exports increases faster than the price of imports, the income terms of trade will not decline if the quantity of exports increases quickly enough

### c) single factoral terms of trade:

developing countries could possibly prevent the terms of trade from declining through concerted action; they could create international agreements to fix prices, just like OPEC; because LDCs lack political power and face large purchasing monopolies, some argue for a new economic order where the UN helps developing countries raise the prices they receive for their goods

### 2. fluctuating export earnings:

some have seen unstable export earnings due to unstable commodity prices or quantities as a barrier to growth, for instance because it prevents governments from having stable tax revenues to carry out development programs, such as to increasing expenditure on education, health, etc. when its tax revenue is variable

however, according to the permanent-income hypothesis, fluctuating export revenues might encourage saving; thus, unstable export earnings might not be harmful

a country could stabilize its earnings by creating buffer stocks (this would only work for nonperishable goods) and monitoring the supply to world markets; when markets are saturated with goods, goods could be added to the buffer stock, and when markets are depleted, goods could be removed from the buffer stock and sent to the markets; however the cost of storage and administration and the difficulty of arranging agreements makes this difficult to implement

### 3. ineffective linkages to other sectors:

there are cases in which export-oriented industries do not spill over into the domestic economy; for example, there may be enclaves in poor developing countries such as agricultural plantations, mines, or oil wells that are capital-intensive and are owned by foreigners - these industries will create little employment and profits will accrue to foreigners; thus, the linkages of some export-oriented industries can be ineffective and the potential benefits of the revenue from them is lost

often in sub-Saharan Africa, enclaves have not become a part of the domestic economy, and most of the modern infrastructure leads out of the country to transport exports; it is more costly to transport between some sub-Saharan African countries than it is to take goods from them to Europe and back

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the government could create a fiscal linkage to these industries by taxing them and using the tax revenue to fund education, infrastructure, etc.

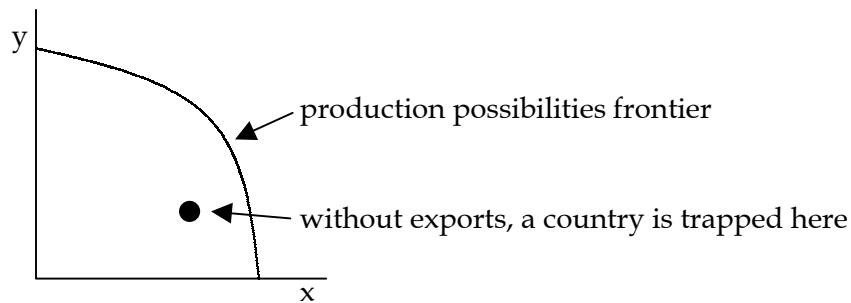
4. "Dutch disease: we'll get back to this later

Advantages - there are three advantages to primary product exports: 1) vent for surplus 2) expanded factor endowments 3) linkages:

1. vent for surplus

a country could have minerals or other resources that could earn income; if the country's domestic demand for those resources is low, then they will not benefit from those resources as much as they could, since there is no one within the country to purchase the products; by engaging in international trade, a country can increase the income it earns

this can be illustrated on a production possibilities frontier:



2. expanded factor endowments

primary product exports can encourage foreign investment and induce domestic investment

3. linkages --- see text on this

• international trade and the theory of comparative advantage:

virtually all economists share the belief that trade is potentially beneficial; a survey of economists 5-10 years ago asking them about economic policies found that most agreed that international trade is beneficial to the participating countries; there was more agreement about the benefits of trade than about any other policy issue

according to the theory of comparative advantage, when two countries produce two or more goods at different relative costs of production, both countries can consume more of both goods by each country specializing in production and trading with the other

suppose Mexico and the United States both produce computers and vegetables; if the ratio of the cost of producing 1 ton of vegetables to the cost of producing 1 computer is different in both countries, then if each country specializes in producing the good for

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which it has the lowest relative cost and the countries trade, both can consume more of both goods; notice that it is the relative costs of producing the goods that must differ, not that one country produces either good more cheaply than the other country does suppose it takes Mexico 5 labor-days to produce 1 ton of vegetables and 30 labor-days to produce 1 computer; also, suppose it take the US 4 labor-days to produce 1 ton of vegetables and 20 labor-days to produce 1 computer:

labor-days to produce each good		
	Mexico	United States
1 ton of vegetables	5	4
1 computer	30	20

even though the United States produced both goods more cheaply than Mexico, both countries will benefit from specializing and trading as long as the ratio of the costs of the products is different for both countries; the cost of producing 1 ton of vegetables to 1 computer in Mexico is  $5/30 = 1/6$  and in the United States is  $4/20 = 1/5$  – thus the relative prices of the goods differ in each country (vegetables are cheap in terms of computers in Mexico, computers are cheap in terms of vegetables in the U.S.)

because 1 ton of vegetables costs  $1/6$  of 1 computer in Mexico but  $1/5$  of 1 computer in the United States, Mexico has a comparative advantage in the production of vegetables (it must give us less computers to produce 1 ton of vegetables than the United States must)

if the United States produced fewer vegetables and more computers, while Mexico produced more vegetables and fewer computers, the amount that Mexico expands vegetable production is greater than the amount the United States contracts vegetable production (the same argument applies for the United States and computer production)

for example, if country A and country B each produce goods X and Y at the following costs:

Labor-days to produce each good		
	country A	country B
X	3	4
Y	2	4

each country is endowed with 120 units of labor, and before trade they produce:

production of goods X and Y before specialization		
	country A	country B
X	20	15
Y	30	15

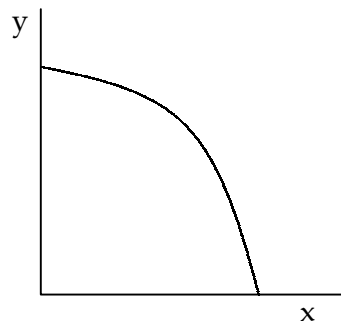
suppose each country specializes, at least partially, in the good for which it has a comparative advantage, country A in good Y and country B in good X; both are still endowed with 120 units of labor:

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production of goods X and Y after specialization		
	country A	country B
X	8	30
Y	48	0

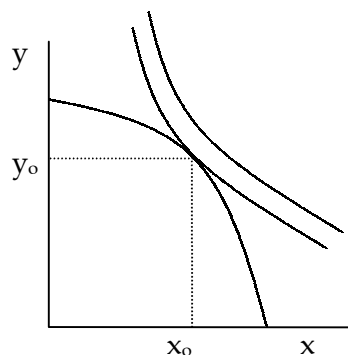
the world output of both goods is higher after specialization than before: the amount of good X produced rises from 35 before specialization to 38 after, and the amount of good Y produced rises from 45 before specialization to 48 after; the additional production could be divided so that each country has at least one more unit of each good than it did before specialization; thus, through specialization and trade, a country can consume more of both goods

- the benefits of world trade – an illustration using the production possibilities frontier:  
the example of comparative advantage discussed in the last class assumed that the production cost per unit of a good is the same no matter how much is produced; the production possibilities frontier could provide a more realistic model of production:



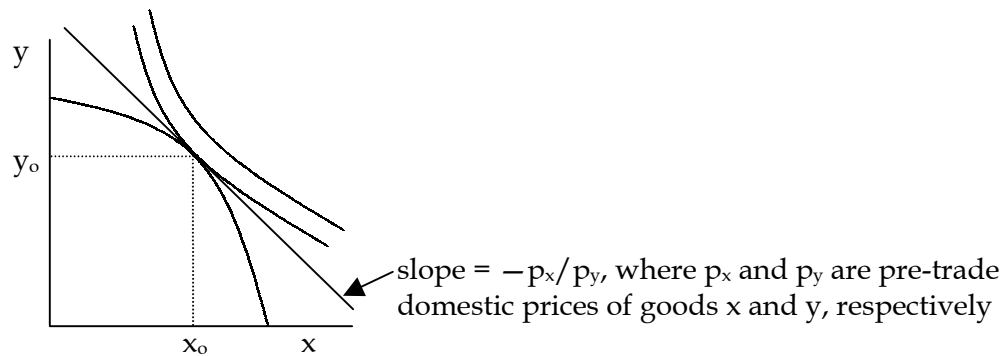
due to the concavity of the production possibilities frontier, the cost of x in terms of units of y foregone increases as more x is produced; similarly, the cost of y in terms of units of x foregone increases as more y is produced

if the world relative prices of two goods, x and y, differ from the free trade prices of x and y in a country, then the country can benefit from trade; without trade, the country starts by producing  $x_0$  and  $y_0$ , where the PPF is tangent to a community indifference curve:

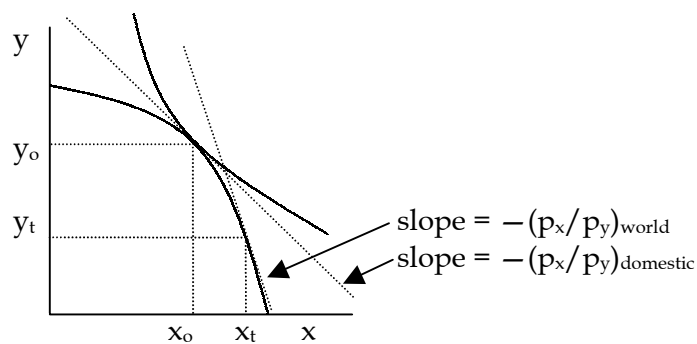


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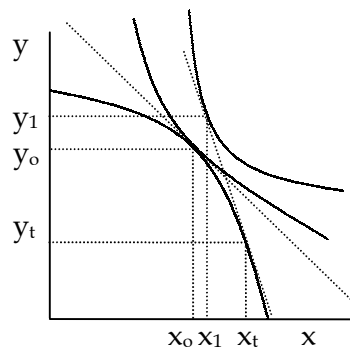
at this point, domestic prices are given by the slope of the tangent line where the PPF and indifference curve meet:



if the relative prices of goods x and y are different in the world market, a country could specialize, producing at  $x_t$  and  $y_t$  with world prices as shown:



the country can trade to any point along the  $-(p_x/p_y)_{world}$  line; the country can trade up to a higher indifference curves and can ultimately consume at  $x_1, y_1$ :



the country has exported  $x_t - x_1$  units of x at world price  $p_x$ , earning  $p_x(x_t - x_1)$ ; these earnings are used to pay for  $y_t - y_1$  imports of y at world price  $p_y$ ; given world prices,  $p_x(x_t - x_1) = p_y(y_t - y_1)$ , so the exports pay for the imports; in this example, the country consumes more of both x and y after trade, although it produces less of y and more of x than in the pre-trade situation

thus, the country as a whole is better off after trade than it was under autarky

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although this model suggests that a country as a whole will be able to consume more through trade than in autarky, not all citizens of the country are necessarily better off; those that have the resources to benefit from world trade (those who produced  $x$ ) will be better off with trade, but those who did not have the resources beneficial to world trade (those who produced  $y$ ) will be worse off than without trade; however, if a scheme were implemented so that those who benefit from trade can compensate those who lose, then all members of the country would benefit or at least none need be worse off; for example, the government could tax those who benefit from trade and compensate those who lost from trade

- reliance on primary product exports:

most developing countries earn their foreign exchange through the export of primary products, and this foreign exchange is used to import machines, manufactured goods, etc.; according to a traditional view, because developing countries have a comparative advantage in primary products, they should specialize in them; however, there are arguments that a country should not rely exclusively on primary product exports for foreign exchange

page 633, figure 16-2 – illustrates that countries that have grown more slowly have relied more on the export of primary products than countries that have grown more quickly

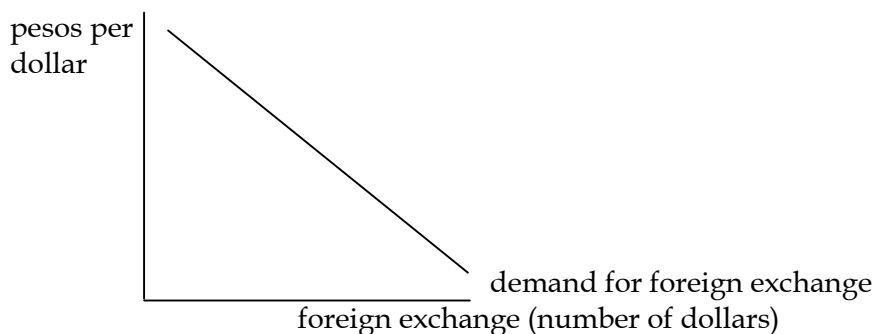
poor countries rely on developed countries for imports and use primary product exports to earn them; in contrast, Japan, Taiwan, and South Korea needed to build their human capital, etc. and import physical capital resources because they did not have many natural resources; thus, it is possible that countries with natural resources were not driven to develop human capital and other skills because of their reliance on primary product exports; however, because poor countries tend to rely on primary product exports does not necessarily mean that it is the reason they are underdeveloped (for instance, primary products are a larger proportion of the poor countries' exports simply because they don't yet have a lot of manufactured goods that they can export, but continuing to export the primary products per se is not keeping them poor)

- the exchange rate:

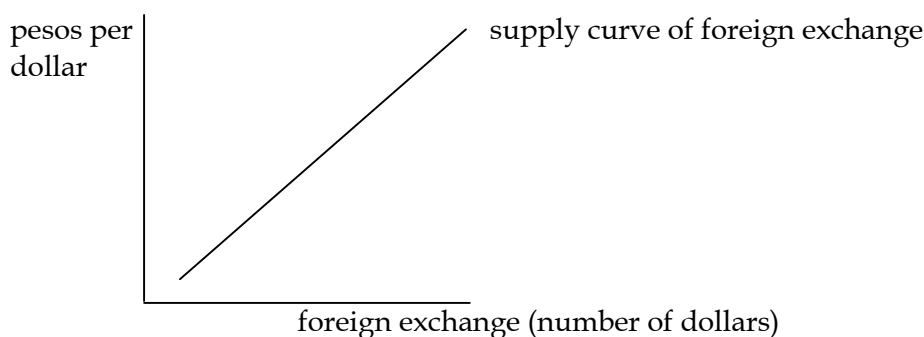
the exchange rate is the price at which one country's currency is traded for another country's currency; the exchange rate is one of the most important prices for a small, open economy; the exchange rate that receives the most attention is that between the currency of the country in question and an internationally traded currency (such as the dollar)

the exchange rate for dollars in Mexico is given as pesos per dollar; importers in Mexico who want to buy foreign goods demand dollars in exchange for pesos; because a lower exchange rate will make foreign goods cheaper (because fewer pesos buy a dollar), the demand for dollars (foreign exchange) increases at lower exchange rates – thus, the demand curve for dollars (foreign exchange) slopes downward:

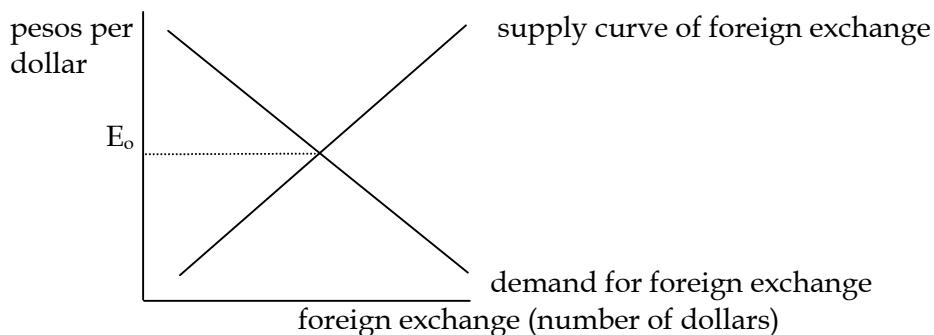
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foreigners demanding pesos (the domestic currency) to purchase local goods supply dollars (foreign exchange); at higher exchange rates, foreigners will demand more pesos because Mexican goods cost fewer dollars:



if the exchange rate is allowed to float, the exchange rate will equilibrate where the supply and demand curves for foreign exchange intersect:



however, governments have often not allowed the market to determine the exchange rate because they wanted to be able to use their supply of foreign exchange to import critical goods - if the exchange rate were allowed to float, it could impair their ability to import these goods; the government could fix the exchange rate to prevent fluctuations in the exchange rate

if the number of pesos (the amount of domestic currency) necessary to purchase a dollar (foreign currency) in the open (or black or parallel) market increases due to market forces, then the peso (the domestic currency) is said to depreciate because it takes more

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pesos to purchase a dollar on the open market; if the official exchange rate in pesos per dollar goes up, then the peso is said to have been devalued

if the number of pesos (the amount of domestic currency) necessary to purchase a dollar (the foreign currency) decreases due to market forces, then the exchange rate decreases – the peso is said to appreciate because it takes fewer pesos to purchase a dollar; if the government sets a lower peso-to-dollar exchange rate, then the peso is said to have been revalued (this seldom happens)

- the real exchange rate:

the real exchange rate (RER) is defined as:

$$RER \equiv E_o \frac{P_T}{P_N}$$

$RER$  = the real exchange rate

$E_o$  = the nominal exchange rate (e.g., pesos per dollar)

$P_T$  = a price index of tradeable goods at world prices in foreign currency

$P_N$  = a price index of nontradeable goods at domestic prices in domestic currency

the numerator,  $E_o P_T$  gives the price of foreign goods in the domestic currency; thus, the ratio of  $E_o P_T$  to  $P_N$  gives the ratio of prices of foreign goods to the prices of domestic goods (in the domestic currency)

if the RER increases, a real depreciation of the peso occurs; the peso could undergo a real depreciation if the exchange rate is devalued ( $E_o$  increases) or  $P_T$  increases relative to  $P_N$  (perhaps because world inflation exceeds domestic inflation)

if the RER decreases, a real appreciation of the peso occurs; this could happen if the exchange rate is revalued ( $E_o$  decreases) or if  $P_N$  increases relative to  $P_T$  (perhaps because domestic inflation exceeds world inflation)

- Dutch disease:

the Netherlands, Indonesia, and Nigeria are examples where a boom in the prices of an export or the quantity of an export made the economy worse off than before; the boom in revenue brought in by the good impaired the country's ability to continue exporting other goods, such as manufactured products in Holland and agricultural products in Nigeria

the influx of foreign currency from the export boom causes the demand for nontradeables within the country to increase; this increased demand creates inflation and the prices of nontradeable goods rise within the country; because the price of nontradeables rises and the exchange rate remains fixed, the RER appreciates (decreases)

because the price of labor and other resources rise within the country due to inflation, the costs of primary products and manufactured exports increase; although costs increase, producers must export at world prices – as a result, they will earn less from exports than before; thus, a boom in an export industry can hurt other export industries

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similarly, an influx of foreign aid could also create inflation and cause the RER to appreciate; this can have the same effect as a boom in an export industry; foreign aid also encourages imports which can affect a country's trade balance

to prevent Dutch disease, the government can:

- 1) devalue the currency; increasing the exchange rate offsets the increase in domestic prices, keeping exports profitable and making imports expensive again
- 2) reduce government spending from the inflow of foreign money from the boom in the export industry - otherwise, by pumping money into the economy, government spending can increase inflation; Nigeria increased government spending after the oil boom but could not sustain the spending after oil prices dropped - however, due to domestic pressure, the government did not cut spending and borrowed from abroad to maintain its expenditure level; increasing spending gradually and choosing projects carefully will allow the earnings from the export windfall to be spent more sustainably and productively
- 3) not borrow heavily under the assumption it can pay back the loans using earnings from the windfall

Indonesia handled the boom in oil prices successfully by devaluing its currency, moderately increasing government expenditure and financing development projects, maintaining a modest debt, and keeping a diversified economy

an over-reliance on primary product exports to earn foreign currency can be harmful because a situation like Dutch disease could occur