International Trade, Finance and Development

1 International Trade: Theory, Evidence and Policy

1.1 Key Facts

• Since World War II there has been a very rapid expansion in world trade flows. Following the initiation of the General Agreement on Tariffs and Trade world exports grew at 7.3% a year between 1960–68, accelerating to 9.7% a year between 1968 and 1973. Due to the world recession in the 1970s and early 1980s world export growth slowed to 3.3% a year between 1973 and 1980 and 2.3% a year between 1980 and 1985. Between 1985 and 1990 export grew at 4.5% a year and accelerated further during the 1990s.

• During this time, LDC export growth has been mixed. Broadly speaking, it was really rapid in Asia, highly variable in Latin America and very slow in Africa.

• Developed countries have increased their share of the value of world trade from 66% in 1960 to 73% in 1990. This is partly due to the secular decline in primary product prices and the fact that a large fraction of LDC exports are primary products.

• The composition of LDC exports has generally shifted towards manufacturing, although it is still mostly primary goods. The share of LDCs in overall manufacturing exports increased from 7% in 1970 to 17% in 1990. Most of this shift in composition reflects those in East Asian countries (especially China) and has largely been the result of deliberate policies to promote manufactured exports.

• As we will discuss below, a typical prediction of neoclassical trade theory is that LDCs will tend to export mostly primary products and import manufactured goods, while developed countries will do the reverse. While this prediction is largely correct on the export side, it is not so true on the import side. In fact, the typical developed country does not import proportionately more primary products than a typical LDC. The reason is that developed countries undertake a lot of trade amongst themselves, and this trade is predominantly in manufactured goods. In fact the trade amongst developed countries by far exceeds the value of trade between developed and less developed countries. As a result, developed countries import (proportionately) just as great a value of manufactured goods as do LDCs. As we shall see, this fact implies that demand
patterns and production technologies matter for trade just as much as factor endowments, and has important implications.

A Schematic of World Trade Flows

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1.2 Sources of Comparative Advantage

Standard trade theory posits that countries will tend to export those goods in which it has a comparative advantage relative to other countries and import those in which it has a comparative disadvantage. Thus, to understand world trade flows we must first understand what the sources of comparative are. Notice that even a country that has an absolute disadvantage in the production of all goods will still have a comparative advantage in some.

1.2.1 Productivity Differences

The notion of comparative advantage was first developed by David Ricardo in a simple model emphasizing the labour–productivity differences faced by different countries. It should be remembered that the Ricardian trade model is a simple one designed to illustrate a basic idea. In debates over free trade, it is often incorrectly taken to represent trade theory as a whole which, is we shall see, is very misleading. As an example, suppose there are just two countries (North and South), each capable of producing two goods (computers and rice) using only labour. Suppose further that each country is endowed with 600 workers, who are perfectly mobile across production sectors, but not across countries. The amount of labour required to produce one computer and one sack of rice, respectively, in each country is given by the following table:

This table shows that North has an absolute advantage in the production both goods, but a comparative advantage in the production of computers. At the same time, South has a comparative advantage in the production of rice. Given the 600 workers in each economy, we can represent the production possibilities frontier of each economy with a straight line showing how the production of each good varies as we re–allocate labour from one sector to the other (see Ray Figure 16.3, p. 628).
Suppose the two countries are in autarky (i.e. no trade). If both goods are to be consumed in North, it must be the case that the relative prices of computers, \( p_c^N \) and rise \( p_r^N \) satisfy

\[
\frac{p_c^N}{p_r^N} = \frac{10}{15} = \frac{2}{3}.
\]

Why is this? If firms are competitive, then \( p_c^N = 10w_c \) and \( p_r = 15w_r \). If \( \frac{p_c^N}{10} > \frac{p_r^N}{15} \), it follows that \( w_c > w_r \) and all workers would flow into the production of computers. Similarly if \( \frac{p_c^N}{10} < \frac{p_r^N}{15} \) all workers would flow into the production of rice. If both goods are produced, it must therefore be the case that \( w_c = w_r \). By a similar argument, if both goods are produced in the South, the relative prices there must satisfy

\[
\frac{p_c^S}{p_r^S} = \frac{40}{20} = 2.
\]

Now suppose the two countries open up to free trade. Then, by definition, there is only one world price for computers and one for rice. What happens now? Well, if both goods are going to be produced, the price ratio must satisfy

\[
\frac{2}{3} < \frac{p_c}{p_r} < 2.
\]

To see why, note that if \( \frac{p_c}{p_r} < \frac{2}{3} < 2 \), workers in both North and South would flow into rice production. Conversely, if \( \frac{p_c}{p_r} > 2 > \frac{2}{3} \), workers in both countries would all flow into computer production. At the intermediate price ratio above, North completely specializes in the production of computers and South completely specializes in the production of rice. That is, each country specializes in the production of the good in which it has a comparative advantage and exports it in returns for the other good.

This prediction of the Ricardian trade theory is often misunderstood. If it is cheaper to produce rice in North, why don’t people buy rice there? The answer is that the market works so that rice is not cheaper in the North. This is because with free trade the price of computers rises in the North, so that as a result labour must be paid a higher wage (since \( p_c = 10w \)) to induce it to shift out of computer production. This effectively nullifies that country’s advantage in rice production.

Another stark prediction of the Ricardian trade model is that all households in both countries are unambiguously better off with free trade than in autarky. Specifically, the wage in both countries rises and the country’s consumption possibilities lie outside the production possibilities frontier (which was not possible in autarky). This is illustrated in Ray Figure 16.4 (p. 629). While this simple model is very useful in illustrating the potential gains from free trade, it should be recognized that it rests on some strong assumptions. In particular, there is only one factor of
production (i.e. labour) and that factor is perfectly mobile across sectors. As we shall see, when there are multiple factors of production, or when some factors are less mobile than others, there may losers as well as winners from the expansion of free trade.

1.2.2 Factor Endowments

Even if 2 countries are equally productive, they may find it profitable to trade because of differences in factor endowments. To demonstrate this idea, let us consider the neoclassical trade theory developed by Eli Heckscher and Bertil Ohlin. Suppose again there are two countries (North and South) that have the capacity to produce cars and textiles using capital, $K$, and labour, $L$. Assume that North is relatively well endowed with $K$ and that South is relatively well-endowed with $L$. We will also assume that car production is capital intensive and the production of textiles is labour intensive. To understand the implication of this last assumption, consider the cost-minimizing combination of capital and labour in the two industries, for a given wage–rental ratio, $w/r$. This can be illustrated by the point of tangency between the isoquant for each industry and the isocost line with slope $w/r$ (see Ray Figure 16.5, p. 632). The capital–labour ratio for each industry is represented by the slope of a ray from the origin through the point of tangency. As illustrated, for the same factor prices, the car industry uses more capital relative to labour than the textile industry.

The efficient production configurations of cars and textiles in North may be represented using an Edgeworth box diagram like that on the left of Figure 16.6 (Ray, p. 632). The height of the box represents the total capital endowment and the width is the labour endowment. The figure shows the isoquants for each industry but is now measuring the car industry relative to the bottom left origin, and the textile industry relative to the top right origin. The efficient production points are the points of tangency between the isoquants for each industry. This is because, in equilibrium, both industries are assumed to face the same factor price ratio. As we move from the bottom left to the top right, more cars and less textiles are being produced, and the capital–labour ratios in each industry adjust accordingly. The efficient production points lie above the diagonal because car production is relatively more capital-intensive.

Each efficient production point in the Edgeworth box corresponds to combination of car and textile production that can be represented by a production possibilities frontier (PPF) like the one on the right in Figure 16.6. Notice that this frontier is “bowed out” rather than linear, as in the Ricardian model. To understand the intuition behind this, suppose that we start from the middle of the PPF and reduce car production. At the initial factor prices, the ratio of
capital and labour released from car production would be higher than is optimal for the textile industry. The resulting excess supply of capital causes the rental rate, $r$, to fall thereby inducing both industries to become more capital intensive. Forcing the textile industry to become more capital intensive as it expands, however, implies that the percentage increase in textile output is less than the percentage decrease in cars production. A similar argument applies if we decrease textile production, starting from the centre.

We can construct a similar PPF for South (see Ray Figure 16.7, p. 634). The difference is that the Edgeworth box would be wider and shorter than that for North and, correspondingly, the PPF would stretched in the direction of textiles. The latter reflects the fact that because South is relatively well endowed with labour, it can produce proportionately more textiles (the labour intensive good) for a given level of car production than can North.

To represent society’s relative preferences for cars and textiles in each country, we now introduce set of indifference curves like those illustrated in Ray Figure 16.8 (p. 634). If the two countries are initially in autarky, the relative price of cars and textiles will be determined by the slope at the point of tangency between one of these indifference curves and the production possibilities frontier. Here, the relative price of cars and textiles in each country is such that the amount of each that households desire to consume is equal to the amount of each that firms are willing to produce. Assuming (for the moment) that the preferences of the two countries are the same, this would imply that the relative price of cars to textiles is lower in North than in South:

$$\frac{p_N^C}{p_N^T} < \frac{p_S^C}{p_S^T}$$

Now suppose that we open both economies up to free trade. Then, as in the Ricardian model, the common world price ratio faced by the two countries will settle at a value that is between the equilibrium price ratios that prevailed in autarky. The outcome is illustrated in Figure 16.9 (Ray, p. 635). At the common price ratio, North now faces a higher price of cars relative to textiles than under autarky, as a result it tends to consume fewer cars and more textiles, but produce more cars and fewer textiles. The excess supply for cars is then available for export to South, in return for imports of textiles. At the same time, South now consumes more cars and fewer textiles, and produces fewer cars and more textiles than under autarky. It therefore exports textiles and imports cars.

Notice, that as in the Ricardian model, both countries are potentially better off with free trade because they can both consumer beyond their production possibilities and reach a higher level of utility. However, unlike the Ricardian model, the two countries do not necessarily completely
specialize in the production of a single good. The general prediction of the Heckscher–Ohlin model is that, even if productions technologies are identical, \textit{a country will tend to export the commodities that are intensive in factors that are possessed by that country in relative abundance.} This prediction is consistent with the idea that LDCs will tend to export primary goods and import manufactured goods. However, given the big differences in capital–labour endowments between developed countries and LDCs, the model predicts that there should be a lot more trade between developed and less developed countries, than amongst developed countries. In fact, as we saw above, the opposite is generally true, so the prediction of this model are lacking in this respect.

1.2.3 Preferences

In the Heckscher–Ohlin model, we assumed that preferences were identical across countries. However, differences in preferences may also make trade profitable, even if technologies \textit{and} endowments are identical. This can be easily illustrated in a diagram like that in Figure 16.9 where the PPFs are the same but the indifference curves are different. One potentially important issue with respect to the effect of preferences on trade between developed and less developed countries, has to do with how preferences for manufactured relative to primary goods changes with development. One reasonable hypothesis is that as countries get richer they tend to want to spend proportionately more of their income on manufactured goods (luxuries) rather than primary goods (necessities). This would have the effect driving down the relative world price of primary goods as developed countries get richer. As we’ll see, this idea has significantly influenced trade policy in LDCs.

1.2.4 Economies of Scale

A final source of comparative advantage is crucial to understanding trade in manufactured goods amongst similar developed countries. Even if all OECD countries have the same technology, endowments and preferences, there may be large gains from trade and specialization in the presence of increasing returns to scale. To see why, consider the example in Ray Figure 16.10 (p. 639). Suppose there are two identical developed countries — East and West — and each has the capacity to produce ships and aircraft. The average cost curves for each industry are depicted in the figure and exhibit economies of scale. In autarky, the two countries must produce their own ships and aircraft. Since their factor resources are limited, they produce each at a low scale
and consequently face relatively high average costs. If they were allowed to open up to trade, each could specialize in the production of one of the commodities and thereby expand the scale of production, lowering the average costs experienced in both industries. Thus, trade may be viewed as a way of concentrating production of industries in some countries to maximize the effect of increasing returns (e.g. a large car industry in Germany, but not in the UK or France).

1.3 The Gains and Losses from Trade

1.3.1 The Distribution of the Gains from Trade

A crucial distinction between the Ricardian trade theory and the Heckscher–Ohlin theory is that although both predict potential gains from trade, the H–O theory does not necessarily imply actual gains to all members of society. In the example above, when trade opened up, North started to produce more (capital–intensive) cars and fewer (labour–intensive) textiles. As a result, rental rates for capital rose (in response to the increased demand for capital) and wage rates fell. In other words, in the North, although owners of capital gain directly, suppliers of labour lose as a result of free trade.

In a perfectly competitive economy, all households would be able to own a share of the capital stock as well as supplying labour and therefore all could gain. However, in the real world, where credit markets are imperfect, ownership of capital is highly skewed and, even in developed countries, most people own very little. Since the overall availability of goods and services rises, it is theoretically possible to redistribute some of the gains of capital owners to labour. However, in practice it may be very difficult (or politically impossible) to implement such a redistribution policy, so that free trade will not generally be Pareto efficient in practice. Ultimately, the effects depend on the distribution of factor ownership in the economy.

1.3.2 Static vs. Dynamic Gains/Losses from Trade

Comparative advantage is a static concept, but technologies and factor endowments change over time. LDCs could allow their trade patterns to change endogenously as they invest and accumulate physical and/or human capital. In this case, we may expect their production to shift “naturally” from primary to manufacturing (this assumes they are accumulating capital faster than rich countries). One problem with this argument, however, is that an LDC may become stuck as a primary producer and never be able to invest enough to get out of this stage of development. The basis for this pessimistic view stems from the so–called Prebisch–Singer
Hypothesis which became a prevalent view in the 1950s and 1960s (and is another example of the development planning view). According to this hypothesis, as the world economy as a whole gets richer, the fraction of incomes spent on primary products (especially food) tends to decline, as households spend more on “luxury” items. Such an evolution of preferences would cause a persistent long–term deterioration in the terms of trade faced by many LDCs:

\[
\text{Terms of Trade} = \frac{\text{Export Price Index}}{\text{Import Price Index}}
\]

For most LDCs, exports are largely primary goods and imports tend to be manufactured goods. Consequently, as the price of primary goods falls, their terms of trade deteriorates and their real incomes grow less rapidly. As a result, these countries are less able to invest in either the physical or human capital, or the infrastructure, that is needed for development. In many ways its was this kind of simple argument that motivated the desire to protect and/or promote domestic manufacturing during the 1950s and 1960s, on the part of LDC governments. While such protection may lower current income by distorting the gains from trade, this can be considered as an “investment” which will raise future incomes.

Two comments should be made about this hypothesis. First, although it seems reasonable at first glance, it is not obviously true that world demand will go against primary products over the long term. One counter–example is coffee beans, which are a primary product, but are an input to what could be considered a luxury item, the demand for which has increased substantially during the 1990s in North America. However, it is true that there was a devastating (60%) collapse in the average terms of trade of non–oil primary products during the late 1970s and early 1980s, and that this index has never really recovered. Second, and more fundamentally, the Prebisch–Singer hypothesis inherently assumes that markets are imperfect in some way. Otherwise, via a perfect capital market, rational individuals (i.e. investors) would trade off the static vs. dynamic costs and benefits in an optimal way. In particular, if there were indeed a relatively high future return to expanding investment in the manufacturing sector, capital would flow into it at the expense of primary production.

As we have seen, however, there are good reasons to believe that capital markets are generally far from perfect due to moral hazard, adverse selection and enforcement problems. This generally creates a bias against future benefits relative to current costs. In addition, many of the dynamic gains from current investments may involve positive externalities. For example, private agents may not take into account the spillovers from producing manufactured
goods today. These spillovers may include the benefits of “learning–by–doing” and investing in a skilled workforce. These kinds of market failures provide one kind of motivation for government intervention in the form of trade policy.

1.4 Trade Policy

1.4.1 Import Substitution

The basic idea of an import substitution policy is to erect barriers to imports of foreign (especially manufactured) goods and then:

- satisfy the demand with domestically, but less efficiently produced substitutes
- allow domestic producers to become more efficient in their production, perhaps through a process of learning by doing in a wide variety of manufactured goods
- eventually remove the trade barriers and perhaps even export some of these goods to the rest of the world.

The three main policy tools involved in import substitution are:

- Tariffs — % tax applied to the value of imports, with the resulting revenue going to the government
- Quotas — a maximum quantity on imports allowed. Quotas are often combined with a tariff on imports beyond the level of the quota.
- Non–tariff barriers — these include any other policy designed to disrupt trade. For example, some kind of artificial delay due to “quality control”.

The Impact of Import Barriers  The neoclassical theory of the impacts of trade barriers on a particular industry can be illustrated with a simple supply and demand diagram like that on page 1 of the handout. The first diagram shows the free trade equilibrium for an imported good. The autarky price, determined where domestic supply equals domestic demand, lies above the world price $P^*$ and so when trade is allowed, households start to import the good. This drives down the price to $P^*$ and hence domestic supply contracts to point A and domestic demand expands to B. Although domestic producers lose out from this, as measured by the reduction on producer surplus, domestic consumers gain more, as measured by the increase in consumer surplus. A tariff $t$ which drives up the domestic price to $P^t = (1+t)P^*$, moves the industry back
towards autarky, as illustrated in the second figure. Domestic supply expands to $C$, domestic demand contracts to $D$, and both of these effects “squeeze out” imports.

**Static Welfare Consequences** The tariff results in a gain in producer surplus represented by the area $P^*ACP^t$ and a gain in tariff revenue represented by $CDEF$. However, these gains are outweighed by the loss to consumer surplus measured by $P^*BDP^t$. The net deadweight loss due to trade barriers is then given by the sum of the areas $ACE$ and $BDF$. Note that the analysis of the welfare consequences of a quota that has equivalent effects on the level of imports is much the same. The imposition of the quota creates excess demand which drives the domestic price up to $P^t$. Thus the effects on domestic producer and consumer surplus would be the same as with the equivalent tariff. The only difference is that the revenue represented by $CDEF$ need not go to the government, but instead to whoever is intermediating between the world market and the domestic one (could be a a domestic or foreign corporation).

Note that this kind of analysis makes some important assumptions that may not be satisfied. First, all the parties here get equal weight in the welfare analysis. If this were the case, then the government should not impose trade barriers (from a static perspective). However, in reality some parties may in effect receive more weight in the eyes of policy makers than other. For example, producers are often more organized and capable of lobbying the government for what they want than are consumers. The fact that trade barriers benefit producers may then explain why they tend to arise despite the overall loss noted above. A second presumption of this analysis is that the free trade price is independent of domestic policy. However, if the country is a large importer relative to the rest of the world, the reduction in imports may drive $P^*$ down and the country as a whole could gain.

**Dynamic Benefits** The standard neoclassical analysis above is rather static in nature, and in fact many economists argue that there can be significant dynamic benefits from protecting domestic “infant” industry and allowing it to develop without foreign competition. There are at least three reasons for this:

- **Learning–by–doing effects** — there may be significant cost reductions due to learning of technology assimilation that can only be achieved through on–going production. Numerous examples of these effects are given in Ray (p. 670–672).
- **Spillovers to other industries** — The static analysis above, is a partial equilibrium one and does not consider the effects on other industries over time. For example protecting an engineering
industry may generate greater demand for engineering skills than would otherwise be the case. Over time this may encourage a higher skilled population through greater and more specialized education, the effects of which may benefit other sectors of the economy.

- Increasing returns to scale — In sectors with high fixed costs, producers in developed may have a significant **first-mover advantage**. They can produce at a relative low average cost and can therefore sustain lower prices. In contrast, new producers in LDCs must first achieve an **efficient scale** of production before they can compete with foreign producers.

**Problems with the Import Substitution Strategy**  
Despite the potential dynamic benefits, IS strategies followed by LDCs (especially in Latin America) in the 1960s and 1970s are often viewed a having been dismal failures. While part of the reason for this may have been due to factors outside the control of LDC governments (see later), the implementation of these policies have, in reality, faced two major problems:

- **Protection induces inefficiency** — Becoming competitive through the effects discussed above, is not typically a spontaneous process. It requires active effort and investment on the part of producers. If these producers expect (as in the original plan) that the trade barriers will be removed at some time, they have an incentive to undertake these costly investments. However, once a sector is protected and is employing many people and generating income, it becomes very difficult (socially, politically and economically) for the government to remove those trade barriers, especially if the sector won’t be able to compete with foreign producers. Understanding this, domestic producers may not, in fact, have much incentive to make those efficiency-enhancing investments. Thus, the dynamic benefits of protection ultimately depend on the **credibility** of the government’s plan to take the socially costly (and politically unpopular) policy action of eventually removing trade barriers.

- **Detrimental impact on primary exports due to exchange rate distortions** — Import substitution causes a reduction in the demand for foreign currency. If the policy is wide-spread throughout the economy, this may cause a significant **appreciation** of the domestic exchange rate. That is, the domestic currency becomes expensive, or **overvalued**, in terms of the foreign currency. As a result, the foreign price of domestic exports will tend to rise and the demand for them will contract. Since, as we have seen, these exports mainly come from primary goods producing sectors (e.g. agriculture), import substitution policies in the manufacturing (mainly urban) sector will have the side-effect of hurting primary goods (mostly rural) producers.
Import Substitution in Brazil  (see Ray, pp. 674–6)

The Move away from Import Substitution  As we’ll discuss shortly, many LDCs that pursued import substitution policies in the 1960s and 1970s ran into severe Balance of Payments crises in the 1980s. These crises were not initially directly caused by the IS, but the policy made it very difficult for these LDCs to react to the resulting debt crisis. This was partly because their overvalued currencies implied that their exports were particularly discriminated against in world markets and also because of the misallocation resources resulting from distorted internal prices. These perceived problems strongly influenced the stabilization policies and structural adjustment programs imposed by creditors (especially the IMF), which typically required the removal of trade barriers as a condition for new lending.

1.4.2 Export Promotion

The potential benefits of import substitution policies are likely to be largest in countries, such as Brazil, with large internal markets (why?). However, for countries with smaller internal markets, such as South Korea, an alternative approach of export promotion has been viewed preferable. The basic idea here is to provide preferential treatment to exporters of manufactured goods and then, once they are established, to remove this aid. Export promotion is often viewed more positively than import substitution by policy analysts (they often refer to it as outward orientation). However, in terms of neoclassical theory, it is no less distortionary. One reason for the positive view of such policies may be that it implies cheaper products for developed country consumers.

The main policy tools used in export promotion are:

- export subsidies
- reduced import duties on material inputs
- preferential credit access and terms of that credit.

The Impact of Export Subsidies  As before the neoclassical analysis of the static effects of an export subsidy can be illustrated with a supply and diagram. For an export, the world price of the good lies above the domestic autarky price, so that domestic supply exceeds domestic demand, as in the first figure. Suppose the government makes a payment to producers equal to a fraction \( s \) of the export price for every unit that is exported. This shifts the effective international price
for producers up to \( P^s = (1 + s)P^* \). Since domestic producers can now receive this higher price on exports, domestic households will have to pay that price in order to obtain the good. Thus, domestic supply expands from \( B \) to \( D \), domestic demand contracts from \( A \) to \( C \) and consequently exports expand. Note that this kind of policy could be used to switch the industry from one in which the country is a net importer to one in which it is a net exporter.

**Static Welfare Consequences**  
- Domestic producers’ gain is represented by the area \( P^*BDP^s \).
- Domestic consumers’ loss is represented by \( P^*ACP^s \).
- The government subsidy is \( CDFE \).

It follows that the net deadweight loss to society is represented by the areas \( ACE + BDF \).

**Dynamic Benefits**  
- Allows producers to overcome credit market failures
- Learning–by–doing / positive externalities
- Allows producers to overcome first mover advantage.

**Exchange Rate Effects** The exchange rate effects of export promotion are similar to those of import substitution. The policy causes an increase in demand for domestic currency (from foreign consumers). This causes the domestic currency to appreciate (becoming overvalued) so that real export prices rises. Such an increase in prices will cause foreign demand to contract, hurting both primary and manufacturing exports.

**Export Promotion in South Korea** (see Ray, p. 683–684).