International trade

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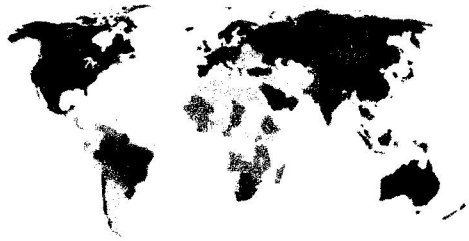
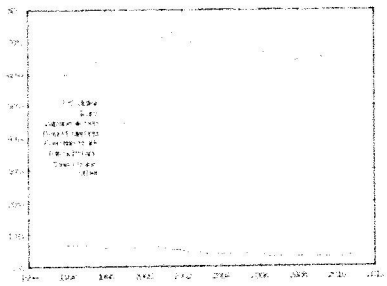
International trade is the exchange of capital, goods, and services across international borders or territories.[1] In most countries, such trade represents a significant share of gross domestic product (GDP). While international trade has been present throughout much of history (see Silk Road, Amber Road), its economic, social, and political importance has been on the rise in recent centuries.



Global Competitiveness Index (2008-2009): competitiveness is an important determinant for the well-being of states in an international trade environment.

Industrialization, advanced transportation, globalization, multinational corporations, and outsourcing are all having a major impact on the international trade system. Increasing international trade is crucial to the continuance of globalization. Without international trade, nations would be limited to the goods and services produced within their own borders.



International trade uses a variety of currencies, the most important of which are held as foreign reserves by governments and central banks. Here the percentage of global cummulative reserves held for each currency between 1995 and 2005 are shown: the US dollar is the most sought-after currency, with the Euro in strong demand as well.

International trade is, in principle, not different from domestic trade as the motivation and the behavior of parties involved in a trade do not change fundamentally regardless of whether trade is across a border or not. The main difference is that international trade is typically more costly than domestic trade. The reason is that a border typically imposes additional costs such as tariffs, time costs due to border delays and costs associated with country differences such as language, the legal system or culture.

Another difference between domestic and international trade is that factors of production such as capital and labor are typically more mobile within a country than across countries. Thus international trade is mostly restricted to trade in goods and services, and only to a lesser extent to trade in capital, labor or other factors of production. Trade in goods and services can serve as a substitute for trade in factors of production.

Instead of importing a factor of production, a country can import goods that make intensive use of that factor of production and thus embody it. An example is the import of labor-intensive goods by the United States from China. Instead of importing Chinese labor, the United States imports goods that were produced with Chinese labor. One report in 2010 suggested that international trade was increased when a country hosted a network of immigrants, but the trade effect was weakened when the immigrants became assimilated into their new country.[2]

International trade is also a branch of economics, which, together with international finance, forms the larger branch of international economics.

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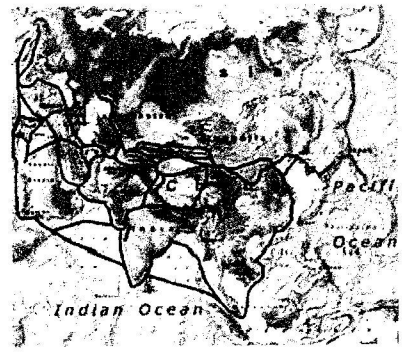


Ancient silk road trade routes across Eurasia.

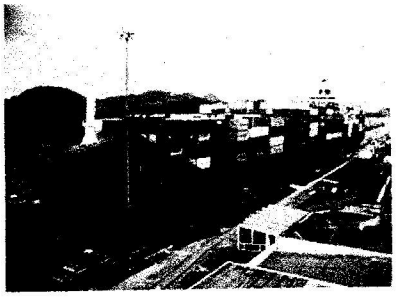
Models

Several models have been proposed to predict patterns of trade and to analyze the effects of trade policies such as tariffs.

Ricardian model

Further information: Ricardian economics

The Ricardian model focuses on comparative advantage, perhaps the most important concept in international trade theory. In a Ricardian model, countries specialize in producing what they produce best, and trade occurs due to technological differences between countries. Unlike other models, the Ricardian framework predicts that countries will fully specialize instead of producing a broad array of goods.



The Panama Canal is important for international sea trade between the Atlantic Ocean and the Pacific Ocean.

Also, the Ricardian model does not directly consider factor endowments, such as the relative amounts of labor and capital within a country. The main merit of Ricardian model is that it assumes technological differences between countries. [*citation needed*] Technological gap is easily included in the Ricardian and Ricardo-Sraffa model (See the Ricardian theory (modern development)).

The Ricardian model makes the following assumptions:

1. Labor is the only primary input to production (labor is considered to be the ultimate source of value).
2. Constant Marginal Product of Labor (MPL) (Labor productivity is constant, constant returns to scale, and simple technology.)
3. Limited amount of labor in the economy
4. Labor is perfectly mobile among sectors but not internationally.
5. Perfect competition (price-takers).

The Ricardian model applies in the short run, so that technology may vary internationally. This supports the fact that countries follow their comparative advantage and allows for specialization.

For the **modern development** of Ricardian model, see the subsection below: Ricardian theory of international trade.

Heckscher-Ohlin model

Main article: Heckscher-Ohlin model

In the early 1900s an international trade theory called factor proportions theory was developed by two Swedish economists, Eli Heckscher and Bertil Ohlin. This theory is therefore called the Heckscher-Ohlin theory (H-O theory). The H-O theory stresses that countries should produce and export goods that require resources (factors) that are abundant and import goods that require resources in short supply. It differs from the theories of comparative advantage and absolute advantage since those theories focus on the productivity of the production process for a particular good. On the contrary, the Heckscher-Ohlin theory states that a country should specialize in producing and exporting products that use the factors that are most abundant, and thus are the cheapest to produce.

The Heckscher-Ohlin model was produced as an alternative to the Ricardian model of basic comparative advantage. Despite its greater complexity it did not prove much more accurate in its predictions. However from a theoretical point of view it did provide an elegant method of incorporating the neoclassical price mechanism into international trade theory.

The theory argues that the pattern of international trade is determined by differences in factor endowments. It predicts that countries will export those goods that make intensive use of locally abundant factors and will import goods that make intensive use of factors that are locally scarce. Empirical problems with the H-O model, such as the Leontief paradox, were exposed in empirical tests by Wassily Leontief who found that the United States tended to export labor-intensive goods despite having an abundance of capital.

The H-O model makes the following core assumptions:

1. Labor and capital flow freely between sectors
2. The amount of labor and capital in two countries differ (difference in endowments)
3. Free trade
4. Technology is the same among countries (a long-term assumption)
5. Tastes are the same.

The problem with the H-O theory is that it excludes the trade of capital goods (including materials and fuels). In the H-O theory, labor and capital are fixed entities endowed to each country. In a modern economy, capital goods are traded internationally. Gains from trade of intermediate goods are considerable, as emphasized by Samuelson (2001).

Reality and Applicability of the Heckscher-Ohlin Model

Many economists prefer the Heckscher-Ohlin theory to the Ricardian theory, because H-O makes fewer simplifying assumptions.[*citation needed*] In 1953, Wassily Leontief published a

study in which he tested the validity of the Heckscher-Ohlin theory.[3] The study showed that the U.S was more abundant in capital compared to other countries, therefore the U.S would export capital-intensive goods and import labor-intensive goods. Leontief found out that the U.S's exports were less capital intensive than its imports.

After the appearance of Leontief's paradox, many researchers tried to save the Heckscher-Ohlin theory, either by new methods of measurement, or either by new interpretations. Leamer[4] emphasized that Leontief did not interpret H-O theory properly and claimed that with a right interpretation, the paradox did not occur. Brecher and Choudri[5] found that, if Leamer was right, the American workers' consumption per head should be lower than the workers' world average consumption.

Many other trials followed but most of them failed.[6][7] Many textbook writers, including Krugman and Obstfeld and Bowen, Hollander and Viane, are negative about the validity of H-O model.[8][9] After examining the long history of empirical research, Bowen, Hollander and Viane concluded: "Recent tests of the factor abundance theory [H-O theory and its developed form into many-commodity and many-factor case] that directly examine the H-O-V equations also indicate the rejection of the theory."[9]:321

Heckscher-Ohlin theory is not well adapted to the analyze South-North trade problems. The assumptions of H-O are less realistic with respect to N-S than N-N (or S-S) trade. Income differences between North and South is the assumption that third world cares about most. There is not much evidence of factor price equalization [a consequence of H-O theory. The H-O model assumes identical production functions among countries, although this is highly unrealistic. Technological gaps between developed and developing countries are the main reason why the latter are poor.[10]

Specific factors model

In the specific factors model, labor mobility among industries is possible while capital is assumed to be immobile in the short run. Thus, this model can be interpreted as a short-run version of the Heckscher-Ohlin model. The "specific factors" name refers to the assumption that in the short run, specific factors of production such as physical capital are not easily transferable between industries. The theory suggests that if there is an increase in the price of a good, the owners of the factor of production specific to that good will profit in real terms.

Additionally, owners of opposing specific factors of production (i.e., labor and capital) are likely to have opposing agendas when lobbying for controls over immigration of labor. Conversely, both owners of capital and labor profit in real terms from an increase in the

capital endowment. This model is ideal for understanding income distribution but awkward for discussing the pattern of trade.

New Trade Theory

Main article: New Trade Theory

New Trade Theory tries to explain empirical elements of trade that comparative advantage-based models above have difficulty with. These include the fact that most trade is between countries with similar factor endowment and productivity levels, and the large amount of multinational production (i.e. foreign direct investment) that exists. New Trade theories are often based on assumptions such as monopolistic competition and increasing returns to scale. One result of these theories is the home-market effect, which asserts that, if an industry tends to cluster in one location because of returns to scale and if that industry faces high transportation costs, the industry will be located in the country with most of its demand, in order to minimize cost.

Gravity model

Main article: Gravity model of trade

The Gravity model of trade presents a more empirical analysis of trading patterns. The gravity model, in its basic form, predicts trade based on the distance between countries and the interaction of the countries' economic sizes. The model mimics the Newtonian law of gravity which also considers distance and physical size between two objects. The model has been proven to be empirically strong through econometric analysis.

Ricardian theory of international trade (modern development)

The Ricardian theory of comparative advantage became a basic constituent of neoclassical trade theory. Any undergraduate course in trade theory includes a presentation of Ricardo's example of a two-commodity, two-country model.

This model has been expanded to many-country and many-commodity cases. Major general results were obtained by McKenzie[11] and Jones,[12] including his famous formula. It is a theorem about the possible trade pattern for N-country N-commodity cases.

Contemporary theories

Ricardo's idea was even expanded to the case of continuum of goods by Dornbusch, Fischer,

and Samuelson[13] This formulation is employed for example by Matsuyama[14] and others. These theories uses a special property that is applicable only for the two-country case.

Neo-Ricardian trade theory

Inspired by Piero Sraffa, a new strand of trade theory emerged and was named neo-Ricardian trade theory. The main contributors include Ian Steedman (1941-) and Stanley Metcalfe (1946-). They have criticized neoclassical international trade theory, namely the Heckscher-Ohlin model on the basis that the notion of capital as primary factor has no method of measuring it before the determination of profit rate (thus trapped in a logical vicious circle).[15] This was a second round of the Cambridge capital controversy, this time in the field of international trade.[16]

The merit of neo-Ricardian trade theory is that input goods are explicitly included. This is in accordance with Sraffa's idea that any commodity is a product made by means of commodities. The limitation of their theory is that the analysis is restricted to small-country cases.

Traded intermediate goods

Ricardian trade theory ordinarily assumes that the labor is the unique input. This is a great deficiency as trade theory, for intermediate goods occupy the major part of the world international trade. Yeats[17] found that 30% of world trade in manufacturing involves intermediate inputs. Bardhan and Jafee[18] found that intermediate inputs occupy 37 to 38% of U.S. imports for the years 1992 and 1997, whereas the percentage of intrafirm trade grew from 43% in 1992 to 52% in 1997.

McKenzie[19] and Jones[20] emphasized the necessity to expand the Ricardian theory to the cases of traded inputs. In a famous comment McKenzie (1954, p. 179) pointed that "A moment's consideration will convince one that Lancashire would be unlikely to produce cotton cloth if the cotton had to be grown in England."[21] Paul Samuelson[22] coined a term *Sraffa bonus* to name the gains from trade of inputs.

Ricardo-Sraffa trade theory

John Chipman observed in his survey that McKenzie stumbled upon the questions of intermediate products and discovered that "introduction of trade in intermediate product necessitates a fundamental alteration in classical analysis."[23] It took many years until Y.

Shiozawa[24] succeeded in removing this deficiency. The Ricardian trade theory was now constructed in a form to include intermediate input trade for the most general case of many countries and many goods. This new theory is called Ricardo-Sraffa trade theory.

The Ricardian trade theory now provides a general theory that includes trade of intermediates such as fuel, machine tools, machinery parts and processed materials. The traded intermediate goods are then used as inputs to production in the importing country. Capital goods are nothing other than inputs to the production. Thus, in the Ricardo-Sraffa trade theory, capital goods move freely from country to country. Labor is the unique factor of production that remains immobile in its country of origin.

In a blog post of April 28, 2007, Gregory Mankiw compared Ricardian theory and Heckscher-Ohlin theory and stood by the Ricardian side.[25] Mankiw argued that Ricardian theory is more realistic than the Heckscher-Ohlin theory as the latter assumes that capital does not move from country to country. Mankiw's argument contains a logical slip, for the traditional Ricardian trade theory does not admit any inputs. Shiozawa's result saves Mankiw from his slip.[26]

The neoclassical Heckscher-Ohlin-Samuelson theory only assumes productive factors and finished goods. It has no concept of intermediate goods. Therefore, it is the Ricardo-Sraffa trade theory that provides theoretical bases for ideas such as outsourcing, fragmentation and intra-firm trade.

Largest countries by total international trade

Main articles: List of countries by exports and List of countries by imports

Rank	Country	Total International Trade (Billions of USD)	Date of information
-	World	27,567.0	2010 est.
-	European Union (Extra-EU27)	3,764.0	2010 est.[27]
1	United States	3,225.0	2010 est.
2	China	2,908.0	2010 est.
3	Germany	2,402.0	2010 est.
4	Japan	1,404.3	2010 est.
5	France	1,107.8	2010 est.

Rank	Country	Total International Trade (Billions of USD)	Date of information
6	United Kingdom	971.9	2010 est.
7	Italy	921.5	2010 est.
8	Netherlands	914.9	2010 est.
9	South Korea	886.7	2010 est.
-	Hong Kong	825.6	2010 est.
10	Canada	793.7	2010 est.
11	Singapore	668.8	2010 est.
12	Russia	648.8	2010 est.
13	India	606.7	2010 est.[28]
14	Mexico	604.5	2010 est.
15	Belgium	569.3	2010 est.
16	Spain	568.3	2010 est.
17	Taiwan	525.8	2010 est.
18	Switzerland	458.9	2010 est.
19	Australia	406.1	2010 est.
20	Brazil	383.6	2010 est.

Source : Exports (https://www.cia.gov/library/publications/the-world-factbook/rankorder/2078rank.html) . Imports (https://www.cia.gov/library/publications/the-world-factbook/rankorder/2087rank.html) . The World Factbook.

Top traded commodities (exports)

Rank	Commodity	Value in US$('000)	Date of information
1	Mineral fuels, oils, distillation products, etc.	$2,183,079,941	2010
2	Electrical, electronic equipment	$1,833,534,414	2010
3	Machinery, nuclear reactors, boilers, etc.	$1,763,371,813	2010

Rank	Commodity	Value in US$('000)	Date of information
4	Vehicles other than railway, tramway	$1,076,830,856	2010
5	Plastics and articles thereof	$470,226,676	2010
6	Optical, photo, technical, medical, etc. apparatus	$465,101,524	2010
7	Pharmaceutical products	$443,596,577	2010
8	Iron and steel	$379,113,147	2010
9	Organic chemicals	$377,462,088	2010
10	Pearls, precious stones, metals, coins, etc.	$348,155,369	2010

Source: International Trade Centre[29]

Regulation of international trade

Current members of the World Trade Organisation.

Traditionally trade was regulated through bilateral treaties between two nations. For centuries under the belief in mercantilism most nations had high tariffs and many restrictions on international trade. In the 19th century, especially in the United Kingdom, a belief in free trade became paramount. [*citation needed*] This belief became the dominant thinking among western nations since then. In the years since the Second World War, controversial multilateral treaties like the General Agreement on Tariffs and Trade (GATT) and World Trade Organization have attempted to promote free trade while creating a globally regulated trade structure. These trade agreements have often resulted in discontent and protest with claims of unfair trade that is not beneficial to developing countries.

Free trade is usually most strongly supported by the most economically powerful nations, though they often engage in selective protectionism for those industries which are strategically important such as the protective tariffs applied to agriculture by the United States and Europe.[*citation needed*] The Netherlands and the United Kingdom were both strong advocates of free trade when they were economically dominant, today the United States, the United Kingdom, Australia and Japan are its greatest proponents. However, many

other countries (such as India, China and Russia) are increasingly becoming advocates of free trade as they become more economically powerful themselves. As tariff levels fall there is also an increasing willingness to negotiate non tariff measures, including foreign direct investment, procurement and trade facilitation.[*citation needed*] The latter looks at the transaction cost associated with meeting trade and customs procedures.

Traditionally agricultural interests are usually in favour of free trade while manufacturing sectors often support protectionism.[*citation needed*]This has changed somewhat in recent years, however. In fact, agricultural lobbies, particularly in the United States, Europe and Japan, are chiefly responsible for particular rules in the major international trade treaties which allow for more protectionist measures in agriculture than for most other goods and services.

During recessions there is often strong domestic pressure to increase tariffs to protect domestic industries. This occurred around the world during the Great Depression. Many economists have attempted to portray tariffs as the underlining reason behind the collapse in world trade that many believe seriously deepened the depression.

The regulation of international trade is done through the World Trade Organization at the global level, and through several other regional arrangements such as MERCOSUR in South America, the North American Free Trade Agreement (NAFTA) between the United States, Canada and Mexico, and the European Union between 27 independent states. The 2005 Buenos Aires talks on the planned establishment of the Free Trade Area of the Americas (FTAA) failed largely because of opposition from the populations of Latin American nations. Similar agreements such as the Multilateral Agreement on Investment (MAI) have also failed in recent years.

Risk in international trade

Companies doing business across international borders face many of the same risks as would normally be evident in strictly domestic transactions. For example,

- Buyer insolvency (purchaser cannot pay);
- Non-acceptance (buyer rejects goods as different from the agreed upon specifications);
- Credit risk (allowing the buyer to take possession of goods prior to payment);
- Regulatory risk (e.g., a change in rules that prevents the transaction);
- Intervention (governmental action to prevent a transaction being completed);
- Political risk (change in leadership interfering with transactions or prices); and
- War, piracy and civil unrest or turmoil;
- Natural catastrophes, freak weather and other uncontrollable and unpredictable

events,

In addition, international trade also faces the risk of unfavorable exchange rate movements (and, the potential benefit of favorable movements).[30]

Gallery

Dual-currency cash machines in Jersey: as international trade increases, the need to handle multiple currencies is becoming more powerful.

A 1672 painting by Gérard de Lairesse: allegory of the freedom of trade (see also: free market). International trade is commonly associated with freedom of trade.

Globalisation: Peugeot in Jakarta, Indonesia. International trade coincides with the expansion of multinational corporations.

A camel caravan, still used today for international trade, especially in Sahara.

A modern camel caravan carrying goods across villages and international borders.