

We continue our course with a description of international trade relations. In § 3, we follow Krugman/Obstfeld/Melitz (2022), who look at international trade from an American perspective. § 4 then focuses on European trade, both intra-European trade and trade with the “rest of the world”.

§ 3 World Trade: An Overview from an American Perspective

Bibliography:

Dieckheuer, G. (2001): International Wirtschaftsbeziehungen. 5. Aufl., München.

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http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/International_trade_introduced

Krugman, P. R. / Obstfeld, M. / Melitz, M. J. (2022): International Economics. Theory and Policy. 12th ed., London, pp 27 – 29, 36 - 47 [or: 11^h ed., pp 29 – 31, 38 – 51].

3.1 Who Trades with Whom?

(1) The volume and the weight of trade

In 2015, world production of goods and services amounted to \$74 trillion. World trade in goods and services exceeded \$21 trillion, i. e. about 30 % of total production was traded across borders.

Trade integration is defined as the average value of exports and imports in relation to an indicator of production. Usually, ...

- ... we take trade in goods and/or services,
- ... sum exports and imports and divide them by two,
- ... and set them in relation to GDP (or some other indicator of aggregate production or income).

The percentage mentioned before (30%) is an average of all the countries of this world. The following figure shows US exports and imports (goods and services) as shares of national income. We note that, for the US, ...

- ... on the one hand, the shares are well below 30 %
- ... on the other hand, there is a long-term upward trend in both exports and imports as shares of national income. This means that international trade has been growing much faster than income (and the underlying production): Between 1960 and the second decade of the new century, “international trade has roughly tripled in importance compared with the economy as a whole”; Krugman/Obstfeld/Melitz (2022), p. 27.
- ... imports have grown considerably stronger than exports. They have been exceeding exports continuously since the mid seventies, implying a trade deficit year after year
- ... trade is closely related to the overall economic situation: during the global economic crisis starting in 2008, trade sharply plummeted (just like it did in the recent COVID-19 pandemic); the decline was only temporary, however, trade has not turned back to the upward trend of the preceding decades

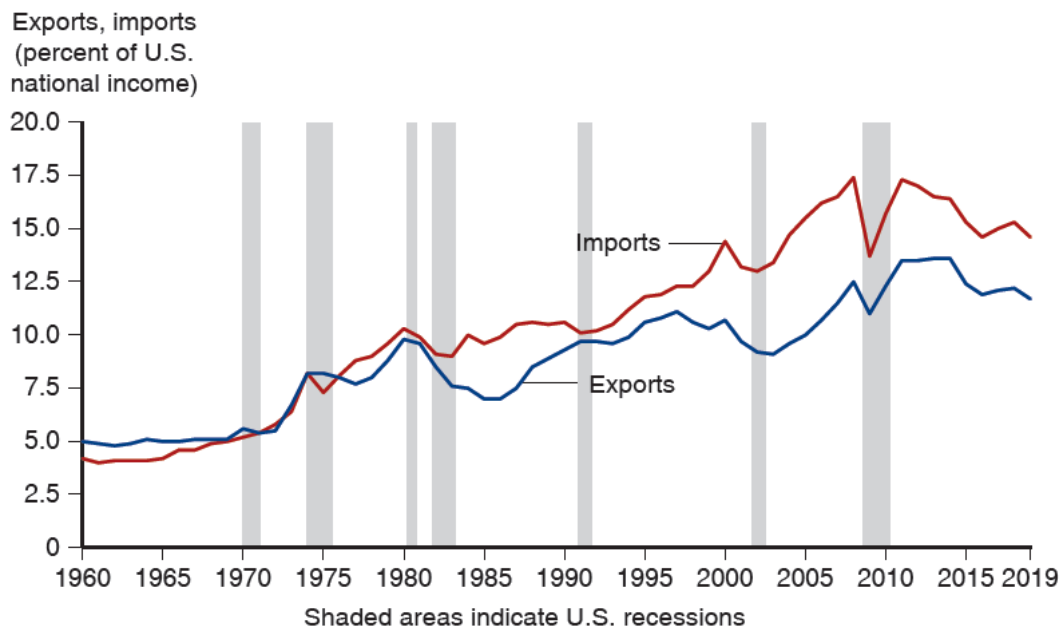


Exhibit 3.1 (1a): Exports and Imports as Percentages of US National Income 1960 - 2019

Source: Krugman/Obstfeld/Melitz (2022), p. 28

The next figure shows that trade is more important for countries smaller than the US:

- they have less resources than the US and thus rely more on imports
- they find less trading partners (clients) within their countries and thus must export more.

In tendency, trade is the more important the smaller the country: Mexico has a higher percentage share of trade than the US; Canada's share exceeds that of Mexico, and the Belgian share is even higher than the Canadian one.

However, the exhibit makes clear that this is not a very clear-cut relationship: Note that the share of Germany exceeds that of Canada though Germany is much bigger than Canada (in terms of GDP and population).

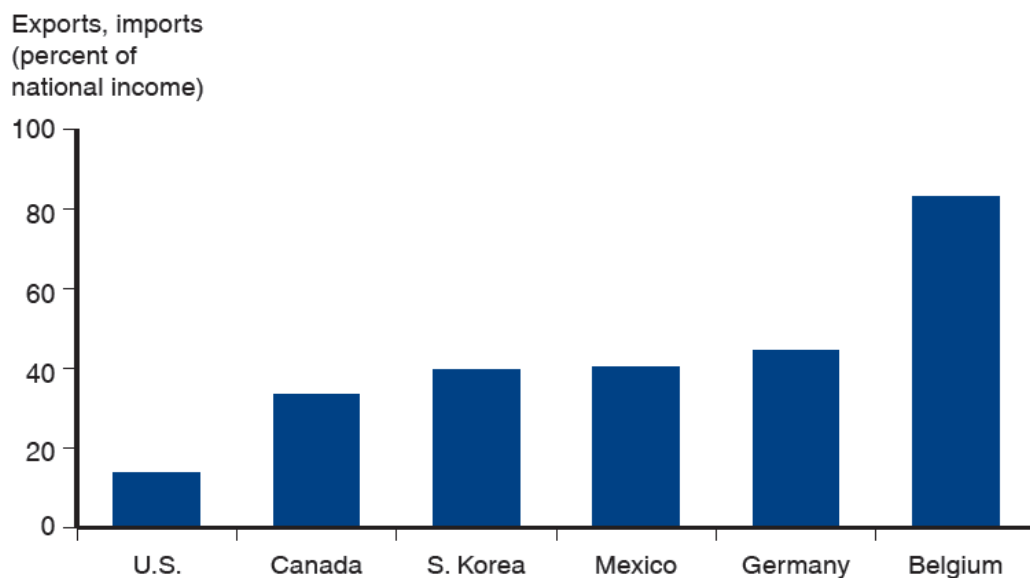


Exhibit 3.1 (1b): Exports & Imports as Percentages of National Income 2018
Source: Krugman/Obstfeld/Melitz (2022), p. 29

We have just had a look at the weight of international trade within a country, i. e. for the country itself. We are now going to address another problem: The weight of a country's trade for other countries.

(2) Major trading partners of the US

For the US, the major 15 trading partners accounted for about 75 % of total trade in goods in 2019; see Krugman/Obstfeld/Melitz (2022), p. 36. The following exhibit shows the values of American trade in goods for these countries. (The trade values are measured here as the sum of exports and imports.)

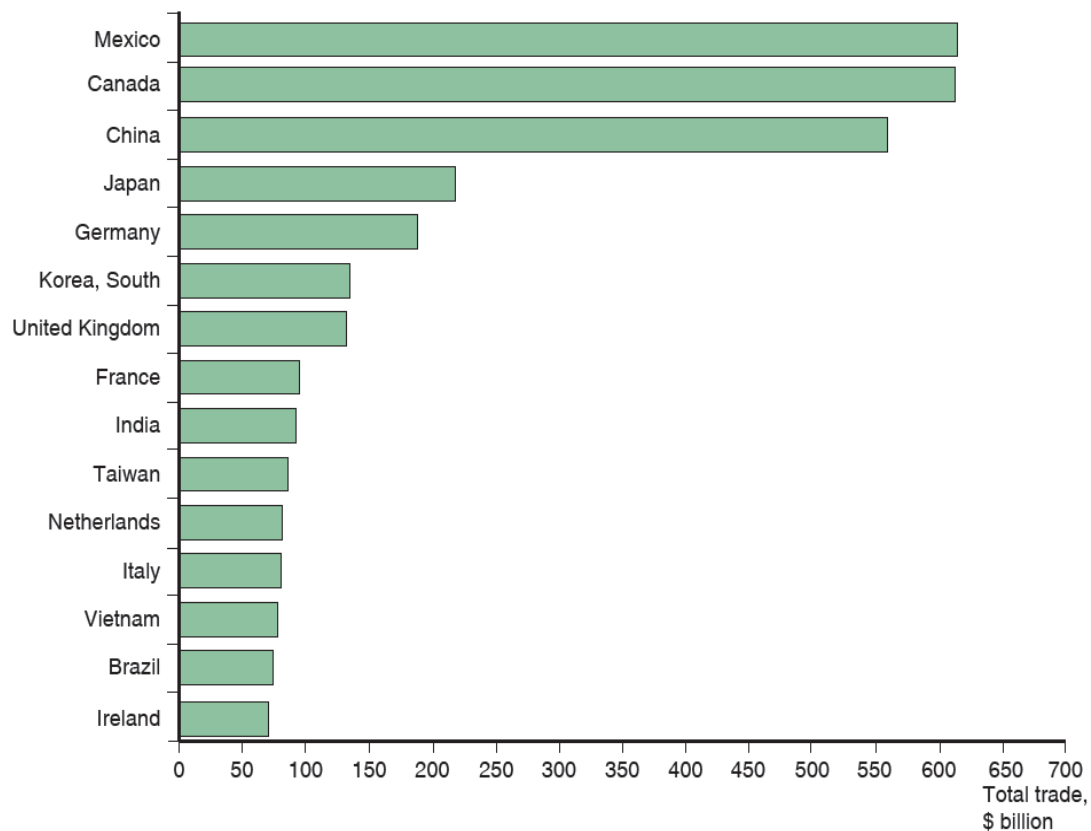


Exhibit 3.1 (2): Total US Trade in Goods with Major Partners, 2019
Source: Krugman/Obstfeld/Melitz (2022), p. 37

Why did the US trade so much with these countries? We are now going to tackle this question.

(3) Explaining the significance of a country as a trading partner

(a) Factor 1: trading partner's economic size

The example of the United States' European trading partners indicates that economic size plays a major role: In the exhibit above, Germany, the United Kingdom, and France display higher trade volumes with the US than small European countries such as the Netherlands and Belgium. However, we note that, again, this story obviously is not complete: Italy has a bigger economic size than Belgium and the Netherlands, but trades less with the US.

The following exhibit generalizes these findings. It looks at US trade with the European Union (EU). On the horizontal axis, we have the shares of EU Member Countries in EU GDP; on the vertical axis, we see these countries' shares in US trade with the EU.

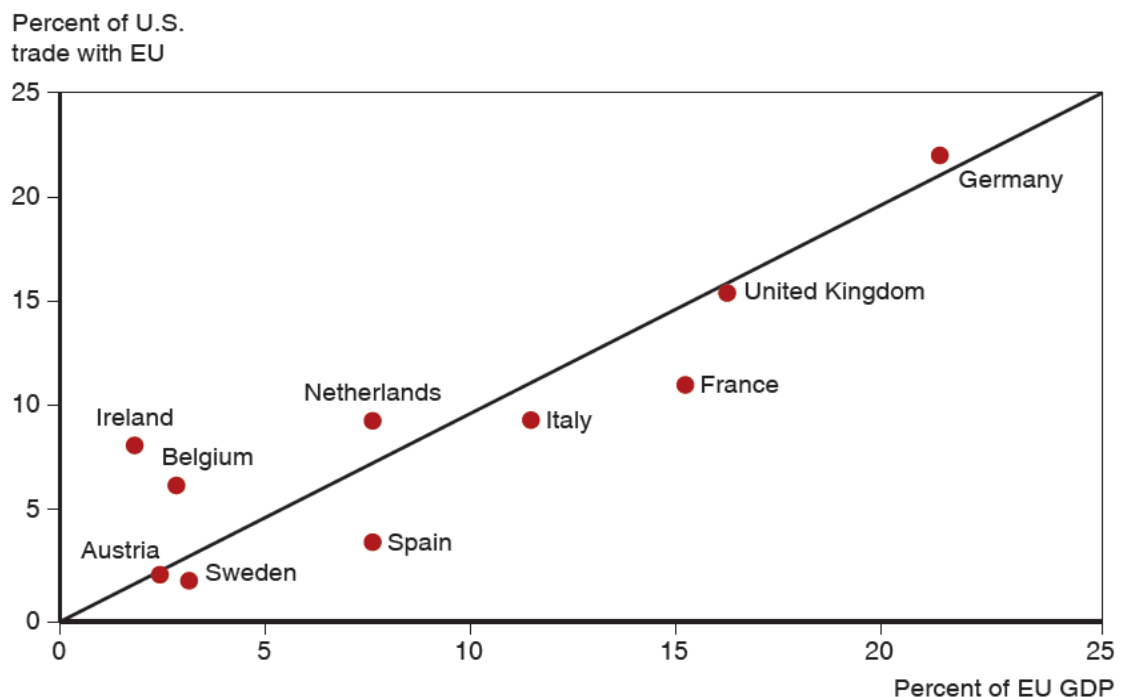


Exhibit 3.1 (3a): The Size of European Economies and the Value of Their Trade in Goods with the US, 2019

Source: Krugman/Obstfeld/Melitz (2022), p. 38

If economic size were the only explaining factor, the positions of the countries would all be on the 45-degree line, i. e. their share in total US trade with the EU should equal their share in EU GDP:

- In tendency, many countries do lie on or close to the 45-degree line
- However, this relation is far from perfect:
 - (i) Important countries below the 45-degree line have a considerably lower weight in US trade than would correspond to their size (Italy, France, Spain)
 - (ii) At the same time, countries like Belgium, Ireland, or the Netherlands lie well above the line, indicating a higher significance for US trade than can be explained by their economic size.

Before we start to look for other factors, let us try to figure out why a country's economic size is important for its volume of trade; see Krugman/Obstfeld/ Melitz (2022), p. 39:

- large economies have large incomes to spend; parts of these incomes are spent on imported goods
- large countries produce a wide range of goods; they thus attract much demand from other countries, allowing them to export a lot.

(b) Factor 2: geographical distance

If countries are geographical neighbors, transport costs between them are low and personal contacts are easy to come by; see Krugman/Obstfeld/Melitz (2022), p. 40. This helps explain why the United States trade more with Canada and Mexico than with Japan, Germany, and the UK; see exhibit 3.1 (2) above. The following exhibit makes this even clearer: It calculates the Canadian and the Mexican GDP as percent of EU GDP in order to make them comparable with European countries. We realize that their shares in US trade are much higher than those of EU countries of comparable size.

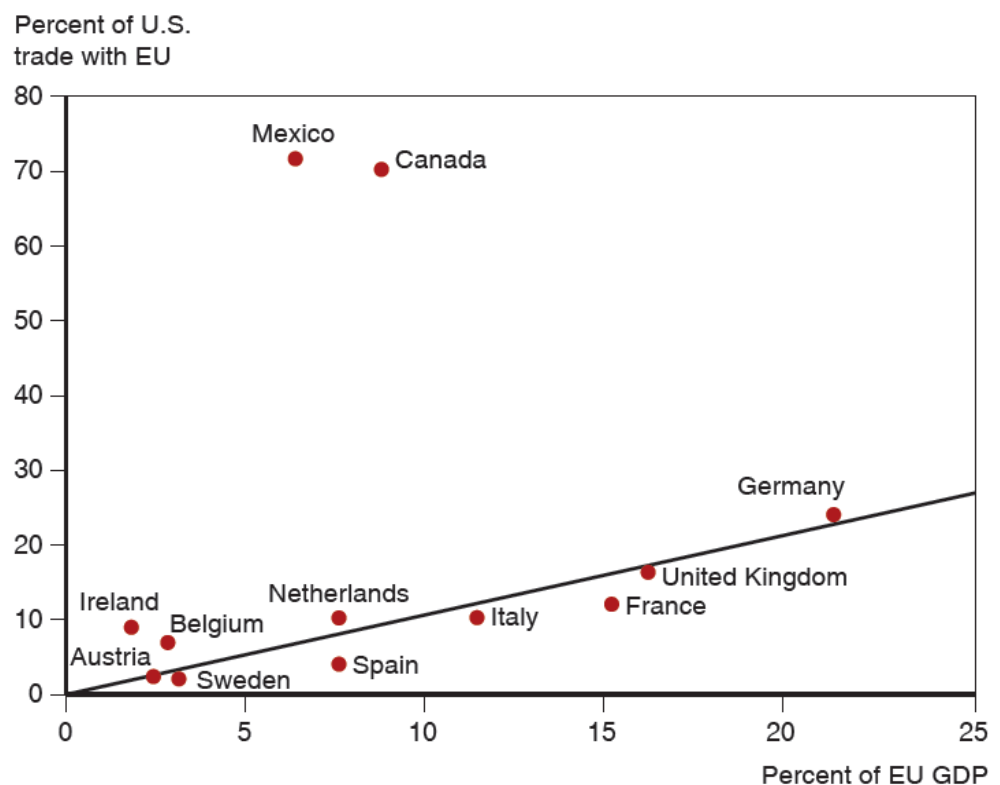


Exhibit 3.1 (3b): The Size of Various Economies and the Value of Their Trade in Goods with the US, 2019

Source: Krugman/Obstfeld/Melitz (2022), p. 40

(4) The gravity model

The so-called gravity model combines economic size and geographical distance. It tries to predict the volume of trade between any two countries i and j (T_{ij}) in the following way:

$$(3.1) \quad T_{ij} = A \cdot \frac{Y_i \cdot Y_j}{D_{ij}} .$$

In this equation, A is a constant. The equation then postulates that trade ...

- ... increases with the two countries' GDPs (Y_i, Y_j), and
- ... decreases with the distance between the countries (D_{ij}).

More precisely, the equation postulates that trade is proportional to the product of the two GDPs and diminishes with distance. This specification is taken from Isaac Newton's "law of gravity", which says that the attraction between any two objects is proportional to the product of their masses and diminishes with distance.

Estimates of the effect of distance from the gravity model predict that a 1% increase in the distance between countries is associated with a decrease in the volume of trade of 0.7% to 1%; see Krugman/Obstfeld/Melitz (2022), p. 40.

(5) Adding more explaining factors

Look once more at exhibit 3.1 (3a). We may assume that the high shares of Ireland, Belgium, and the Netherlands in US trade cannot be explained by distance alone.

(a) Geographical advantages which go beyond distance

In the case of Belgium and the Netherlands, their entry position to as well as their exit position from Continental Western Europe are of significance. Most of all, Rotterdam and Antwerp are the two most important ports in Europe

(b) Cultural affinity

In the case of Ireland, cultural affinity adds to the favorable location in Europe. Not only does Ireland have the same language as the US, but there are also tens of millions US citizens who descend from Irish immigrants.

(c) Trade agreements

The great importance of Canada and Mexico that we could see from exhibit 3.1 (3b) must also be attributed to the trade agreement these countries have with the US. The North American Free Trade Area (NAFTA) ensures that most goods can be shipped between these countries without tariffs or other state-created barriers.

(d) Other factors

We have just emphasized that in addition to “natural” factors such as distance, location, culture, and economic size, there also exist state-created factors that may either foster or impede trade. These go far beyond tariffs and other so-called protectionist elements such as quotas, ... This becomes clear when we look at the case of the Canadian province of British Columbia, located on the border to the US. This region has a comparable distance from other Canadian provinces as it has from certain US states:

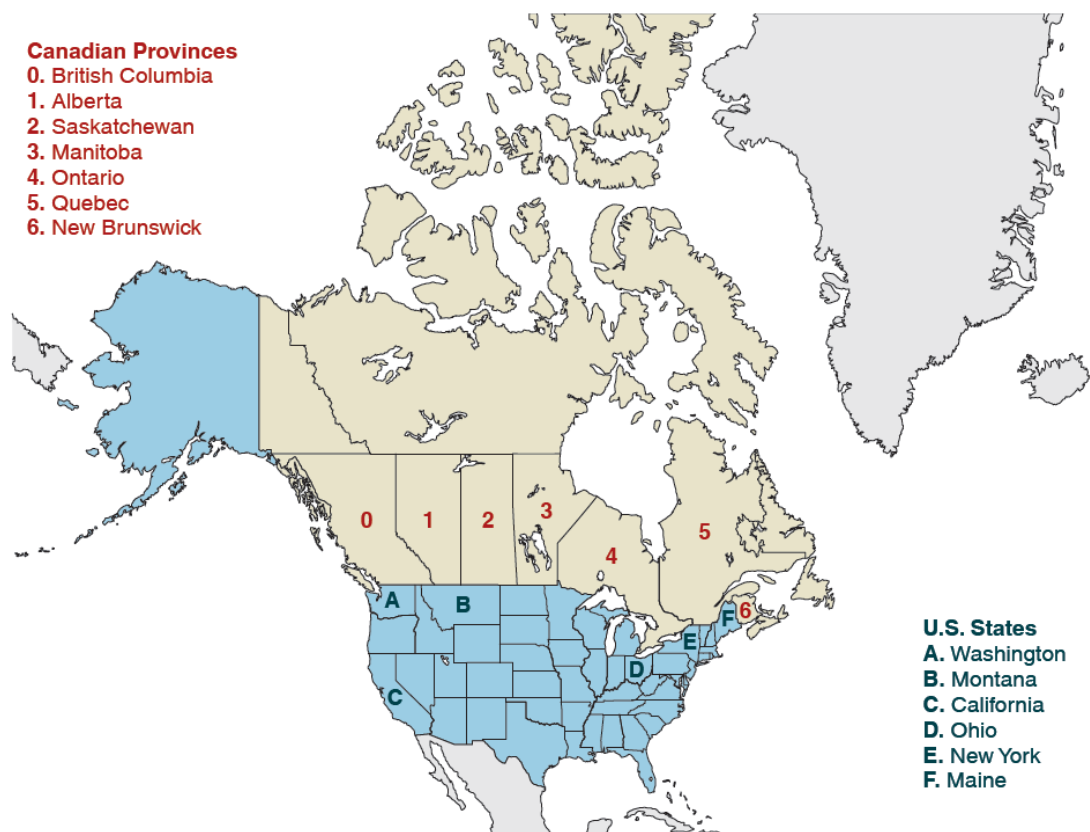


Exhibit 3.1 (5d₁): Canadian provinces and US states that trade with British Columbia

Source: Krugman/Obstfeld/Melitz (2022), p. 42

In the following table, each Canadian province is paired with a US state that is roughly the same distance from British Columbia. We realize that British Columbia trades considerably more with other Canadian provinces than with US states. This is surprising because distance, language, and the free trade agreement NAFTA all are in favor of equality between intra-national trade and cross-border trade. Why does the border between the US and Canada have such a negative effect on trade? We can imagine some obstacles associated with the border:

- different currencies
- different legislations
- patriotism.

Canadian Province	Trade as Percent of GDP	Trade as Percent of GDP	U.S. State at Similar Distance From British Columbia
Alberta	6.9	2.6	Washington
Saskatchewan	2.4	1.0	Montana
Manitoba	2.0	0.3	California
Ontario	1.9	0.2	Ohio
Quebec	1.4	0.1	New York
New Brunswick	2.3	0.2	Maine

Exhibit 3.1 (5d₂): Trade (Exports plus Imports) with British Columbia, as percent of GDP, 2009

Source: Krugman/Obstfeld/Melitz (2022), p. 41

3.2 The Changing Pattern of World Trade

International trade is subject to many factors: technical, political, economic. As these are changing, so does trade: “world trade is a moving target”; see Krugman/Obstfeld/Melitz (2018), p. 44.

(1) The changing framework of trade

(a) What is the framework of trade?

The framework of trade comprises impediments to trade and the possibilities to overcome them. Impediments to trade can be either natural or state-created:

- natural obstacles to trade: e. g. distance, cultural differences
- state-created obstacles to trade: e. g. quotas, tariffs, different currencies, different legislations.

These elements are obstacles to trade because they cause transaction costs in a broad sense: cost of transportation, information, regulation, ...

In the long run, trade impediments have become less important in tendency. As a consequence, “the world has gotten smaller”, though there have been major setbacks.

(b) Natural obstacles have become less important

Technical progress in the fields of transportation and communication have made it easier to overcome distance. Indeed, they have “abolished distance so that the world has become a small place”; see Krugman/Obstfeld/Melitz (2018), p. 44.

In addition, we may state that cultural differences have been reduced. One element in this process is the “Americanization” of cultures and even everyday life, e. g. the growing dissemination of the English language.

(c) State-created obstacles have seen cycles of importance

The regulations of trade as well as the international monetary arrangements have changed in waves. They were subject to openness or non-openness towards other countries:

- in the period from 1870 to 1914, there was for example a very well-functioning international monetary system, the so-called Gold Standard. It greatly simplified international trade relations.
- The period from 1914 to the end of the 1940s was characterized by strong political hostility, which led to the two world wars 1914 - 1918 and 1939 - 1945 and to a wide-spread protectionist attitude of governments during the interwar period.

(2) Consequence: waves of globalization

Globalization can be interpreted as growing economic linkages between (all) nations. Economic historians tell us that there have been two great waves of globalization. These are reflected in the following graph.

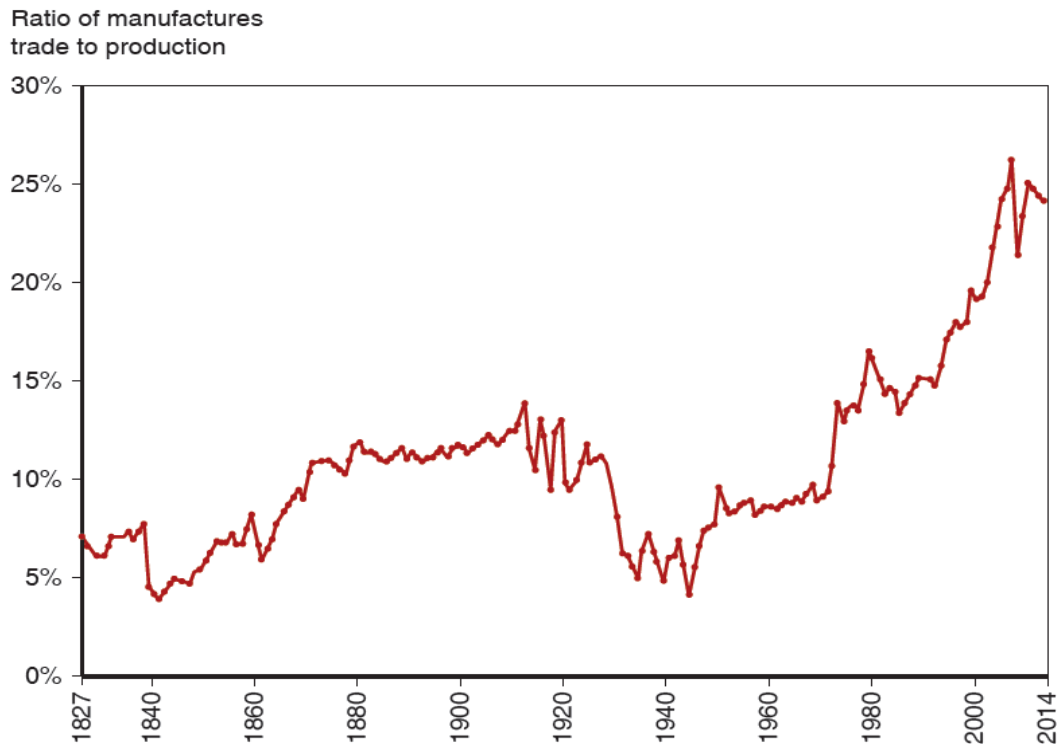


Table 3.2 (2a): World Exports as a Percentage of World GDP
 Source: Krugman/Obstfeld/Melitz (2022), p. 43

(a) First wave of globalization: 1840 – 1914

The first wave of globalization was driven by technical factors: railroads, steamships, and the telegraph. In addition, the relations of some Western European countries with their colonies fostered trade. So did the international monetary arrangements mentioned above.

In the table above, this is mirrored in a considerable increase of world exports relative to world production.

(b) Setback: 1914 - 1950

The political hostilities that lead to the First World War caused a strong decline in international trade. Among other things, they lead to a collapse of the Gold Standard and protectionist measures.

In addition, the Great Depression of the end-twenties / beginning-thirties also resulted in a sharp decrease in trade: in the period 1928 - 33 alone, trade fell to 1/3 of its pre-1928/29 level.

(c) Second wave of globalization: 1950 to the present

The table above shows an increase of world trade to unprecedented heights after the Second World War. What were the reasons?

- liberalization of trade, most of all through multilateral agreements:
 - (i) GATT
 - (ii) Bretton Woods monetary system
 - (iii) European Economic Community (1958)
- reduction of natural trade barriers through technological progress: communication and transportation techniques have improved greatly leading to a massive reduction in transaction costs
- economic growth
- political developments, most of all the collapse of the socialist system in Eastern Europe and the change of the Chinese economic system

In the period 1970 - 2000 alone, the volume of global exports increased by 350 %. World trade thus notably proved its robustness by coping steadfastly with the oil price increases of the seventies (1973, 1979) and the collapse of the Bretton Woods system (1973). This is illustrated in the exhibit above.

(3) Production across borders

An important indicator of economic globalization is the so-called vertical integration of production. It gives rise to much cross-border trade. For instance:

- an iPod is designed in the USA
- its high-tech components are produced in the same country or some developed country
- then, the components are assembled in some low-wage country

Before the product reaches the hand of consumers, it often goes through several production stages in different countries. As a result, a \$ 100 product can give rise to \$ 200 or even more worth of international trade flows.

(4) What do we trade at present?

Today, most of the volume of trade (about 55%) is in manufactured products such as automobiles, computers, clothing, and machinery.

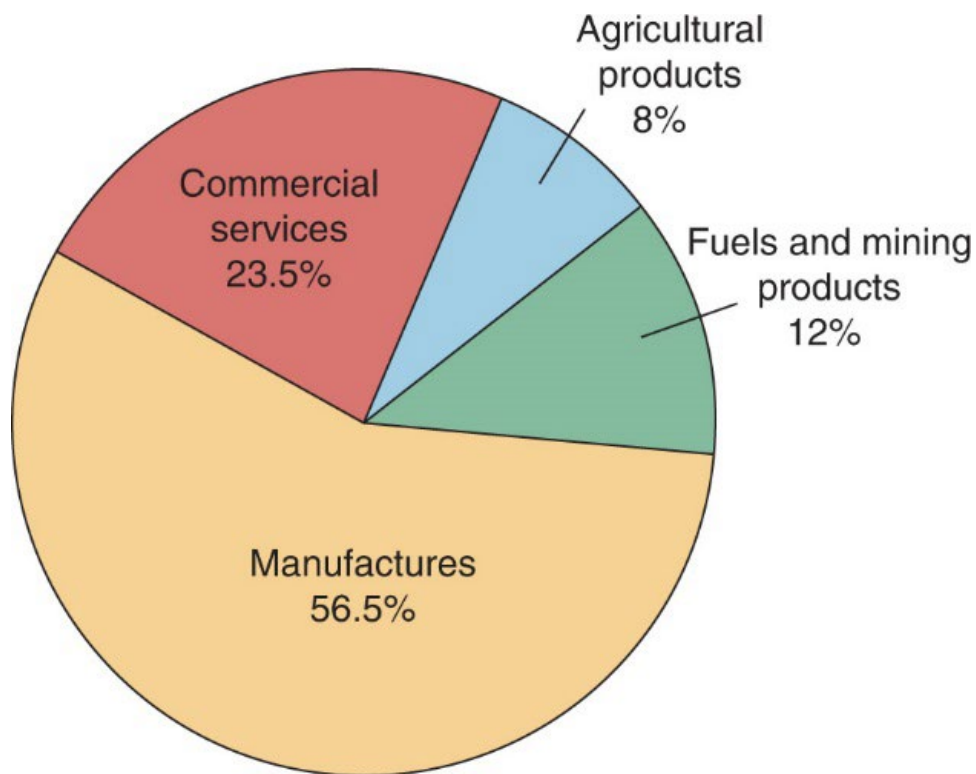


Exhibit 3.2 (4): The Composition of World Trade, 2015

Source: Krugman/Obstfeld/Melitz (2018), p. 46

Services such as shipping, insurance, legal fees, and spending by tourists account for about 25% of the volume of trade. Mineral products (e.g. petroleum, coal, copper) and agricultural products are a relatively small part of trade.

How does the above composition of today's trade compare to trade in the past?

(5) The changing composition of trade

In the past, a large fraction of the volume of trade came from agricultural and mineral products.

(a) Industrialized countries

- In 1910, Britain mainly imported agricultural and mineral products, although manufactured products still represented most of the volume of exports.
- In 1910, the U.S. mainly imported and exported agricultural products and mineral products.
- In 2015, manufactured products made up most of the volume of imports and exports for both countries.

	Exports of United Kingdom	Imports of United Kingdom	Exports of United States	Imports of United States
1910	75.4	24.5	47.5	60.7
2015	72.3	73.6	74.8	78.4

Exhibit 3.2 (5a): Manufactured Goods as Percent of Merchandise Trade
Source: Krugman/Obstfeld/Melitz (2022), p. 45

(b) Developing countries

Low- and middle-income countries have also changed the composition of their trade:

- In 1960, 58% of their exports had been agricultural products and only 12% had been manufactured products.
- In 2001, about 65% of their exports were manufactured products and only 10% were agricultural products. As a striking example, take present-day China: 90 percent of its exports today consist of manufactured goods.

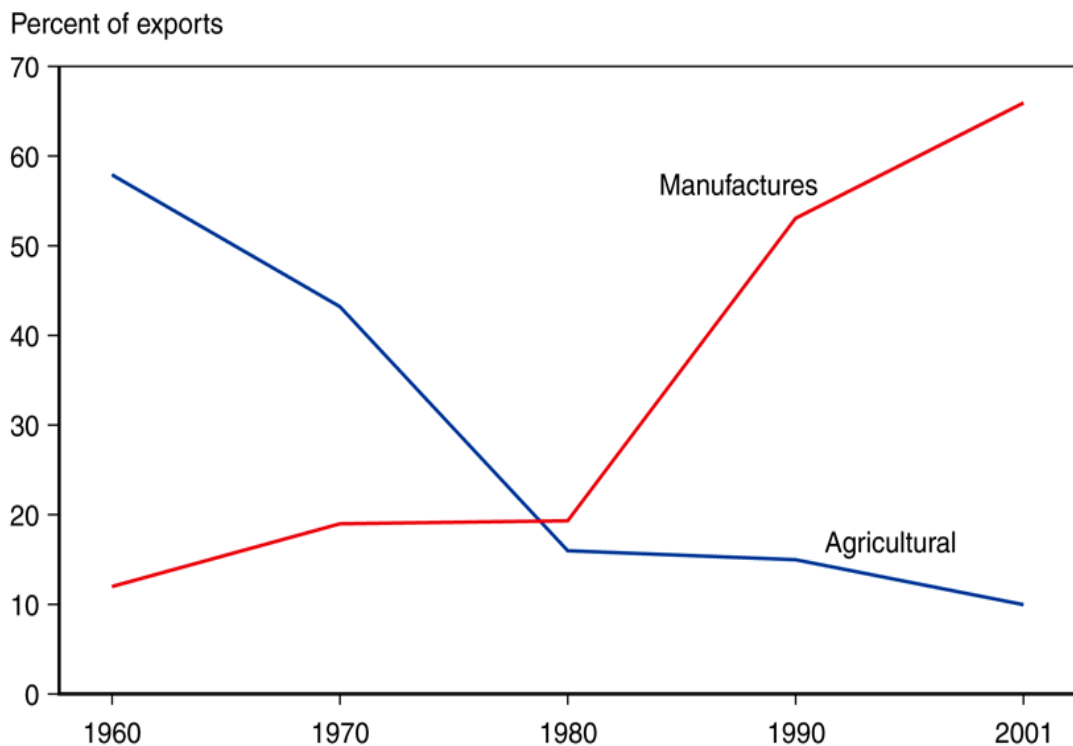


Exhibit 3.2 (5b): The Changing Composition of Developing-Country Exports
Source: Krugman/Obstfeld/Melitz (2022), p. 45

(6) Service outsourcing

Service outsourcing (or offshoring) occurs when a firm that provides services moves its operations to a foreign location.

Example:

- a firm may move its customer service centers the telephone calls of which can be transmitted electronically to a foreign location, e. g. to the Indian town of Bangalore
- if you then call an 800 number for information or technical help from the US, the person on the other end of the line may well be in Bangalore.

A much debated question is whether service offshoring leads to a strong increase in new forms of international trade and at the same time to a significant shift of jobs to low-income countries. The American economist Alan Blinder says that we must distinguish between ...

“... services that can be delivered electronically over long distances with little or no degradation of quality and those that cannot”.

How many service providers will then be subject to cross-border competition? In order to get a first answer to this question, economists have looked at services traded over long distances within the United States. Examples for such long-distance services:

- Many financial services are provided to the entire US from New York
- Much of America's (and the world's) internet search services are provided from the Googleplex in Mountain View, California.

The following graph shows the results of a study aimed at determining which services and other products are tradable at long distances, and which are not. The study was meant to indicate which part of total US employment (service jobs as well as jobs in manufacturing) might be subject to direct international competition and thus be tradable.

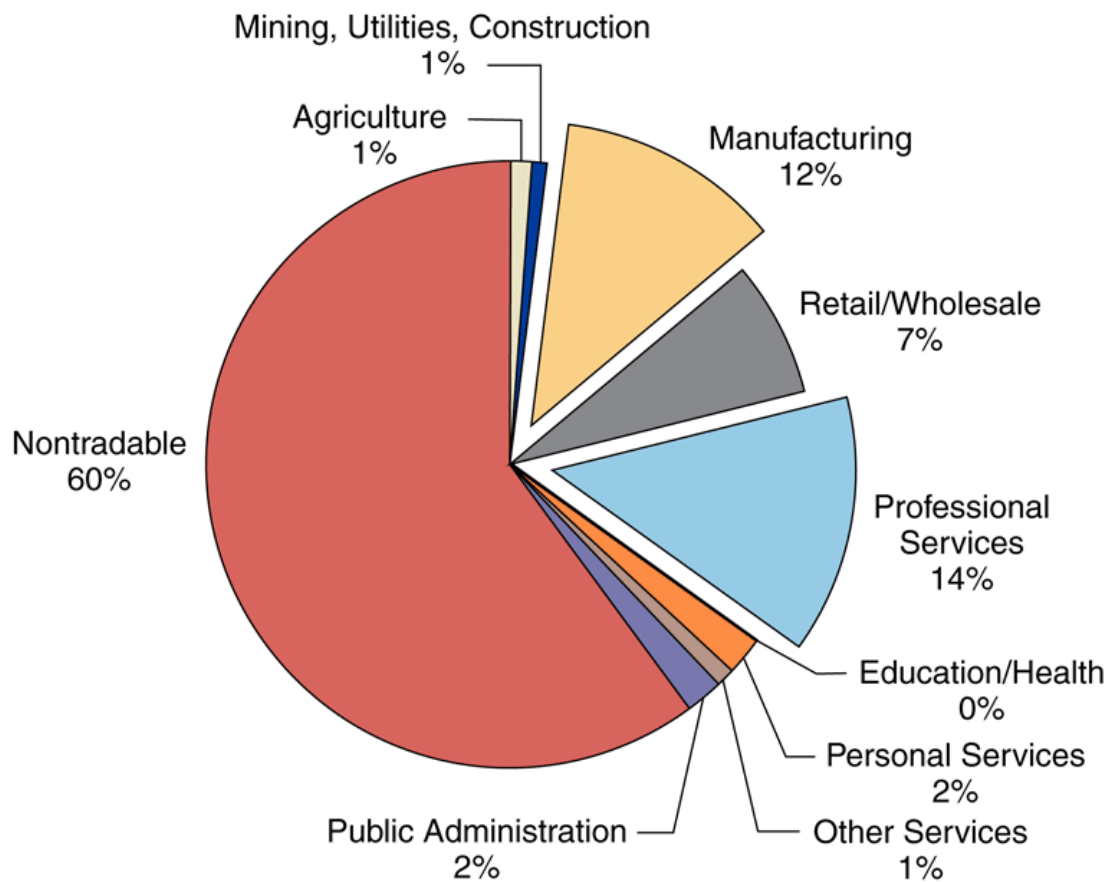


Exhibit 3.2 (6): Tradable Industries' Share of Employment

Source: Krugman/Obstfeld/Melitz (2022), p. 47

We realize that ...

- ... 60 percent of total US employment is nontradable as it must take place close to the customer
- ... the remaining 40 percent includes more service than manufacturing jobs.

The latter result implies that in the future, electronically delivered services may become the dominant component of cross-border trade. The current dominance of manufactured goods shown in exhibit 2.2 (4) could thus very well be temporary.