Undervisningsnoter

91

December 2003

A Note on Trade, Tariffs and Growth

Karl Gunnar Persson

Fag: Økonomisk historie

ØKONOMISK INSTITUT
KØBENHAVNS UNIVERSITET
Studiestræde 6
DK-1455 København K
www.econ.ku.dk

Karl Gunnar Persson
A Note on Trade, Tariffs and Growth.

1.Theory

Comparative advantages based on differences in resource endowments generate trade.

Trade theory suggests that trade is preferable to non-trade in the sense that trading nations gain from trade by exploiting their comparative advantage. According to the Hecksher-Ohlin elaboration of Ricardo's *comparative advantage*[1] argument, nations are differently endowed with resources (but have access to the same technology) and will have a comparative advantage in the production of goods that are *intensive* in their use of resources which a country is *relatively well* endowed with. History informs us that trade policy is a matter of political struggle *within* nations. Stolper and Samuelson demonstrated that there are winners and losers *within* each trading nation from trade. The intuition is simple: if a nation opens up to trade, its exports will increase in price, which will benefit owners of resources used intensively in exports, while imported goods will fall in price, which hurts owners of resources used intensively in the production of goods that compete with cheaper imports. History also informs us that trade policy causes strife *among* nations, which has to do with the fact that at any single point in time, different interests dominate trade policy-making in nations. It is worth noting that fairly small groups can have a strong, in fact much too strong, influence over trade policy, for example farmers in Europe today, who mastermind the Common Agricultural Policy, CAP, which is disadvantageous to consumers in Europe and producers in the rest of the world. The reason is that it is very rewarding and not very costly for a small group to become organized and impose small welfare losses to a large number of people, the consumers. Consumers are a diverse lot and have difficulty to getting organized because organizing costs are high relative to the potential gains.

The Hecksher-Ohlin theory is good at explaining so-called *inter*-sectoral trade, which means that nations exchange goods from different sectors and industries. The 19th century trade pattern was predominantly inter-sectoral, as is demonstrated in Table 1.

[1] If you feel uncertain about the concept of comparative advantage, please, consult 'The evolution of the comparative advantage argument for free trade' available at my homepage www.econ.ku.dk/kgp , under the heading Lecture notes.

Table 1. Shares of primary products and manufactures in total trade of each region, 1876-1913. Per cent.

Region	%					
	1876–80		1896–1900		1913	
	Primary products	Manu-factures	Primary products	Manu-factures	Primary products	Manu-factures
Export trade						
U.K. and Ireland	11.9	88.1	17.2	82.8	30.3	69.7
N.W. Europe	43.8	56.2	50.5	49.5	48.0	52.0
Other Europe	78.1	21.9	74.9	25.1	75.6	24.4
U.S. and Canada	85.7	14.3	81.0	19.0	74.1	25.9
Underdeveloped countries and rest of world	97.6	2.4	91.6	8.4	89.1	10.9
World	61.9	38.1	62.8	37.2	61.8	38.2
Export trade						
U.K. and Ireland	85.8	14.2	82.6	17.4	81.2	18.8
N.W. Europe	60.9	39.1	62.0	38.0	59.9	40.1
U.S. and Canada	63.5	36.5	63.0	37.0	63.4	36.6
Underdeveloped countries and rest of world	30.9	69.1	29.2	70.8	40.2	59.8
World	64.9	35.1	65.6	34.3	65.0	35.0

Please, note the error in the lower panel of the table. Instead of Export trade, read Import trade.

Source: A.G. Kenwood and A.L. Lougheed, *The growth of the international economy 1820-2000*, Routledge, London 1999, p. 87.

The New World (US and Canada) and the 'rest of the world', which includes many of today's developing and underdeveloped nations, exported raw materials and food and imported machinery and other manufactured goods from the European core, and Britain (UK) in particular, and consequently exploited comparative advantages from different resource endowments. Trade was predominantly inter-industrial. North America had huge endowments of land, giving that area a comparative advantage and consequently low relative prices of grain and timber. North America also imported raw-materials from tropical areas that were exploiting their climatic advantages. USA and Canada did not have as high a proportion of manufactured goods in their imports as the underdeveloped primary producers. They both protected their manufacturing and became increasingly self-sufficient in industrial goods. Manufacturing exports from North America as a fraction of total exports remained less than a quarter.

Differences in resource endowments is not a good guide to 20th century trade.

However, in the 20th century trade became increasingly *intra*-sectoral or *intra*-industrial rather than *inter*-industrial. Sweden exports cars but it also imports cars. Denmark exports pharmaceuticals but it also imports pharmaceuticals. There are several attempts to explain this new pattern of trade and theories stress the importance of scale economies, imperfect competition, product differentiation and persistent differences in access and use of technology. As long as we focus on economies of scale and exclusive access to technologies or 'know how', you might derive comparative advantages from these factors. However product differentiation is a different source of trade. [2]

Look first at economies of scale and learning by doing, which manifests itself in superior 'know-how'. Why, for example, does Switzerland excel in watch-making? History may provide an answer. Switzerland has a long tradition of skilled manufacturing of instruments and mechanical objects and then learning by doing and industry-wide economies of scale helped to make an 'accidental' or historical advantage into a permanent one. Product differentiation on the other hand might explain why **Armani** suits are exported from Italy to Germany while Germany exports **Boss** suits to Italy. That sort of trade is not based on comparative advantage in tailoring in one country over the other.

The rich industrialized countries, nations in North-America and Europe and Japan and Australia dominate world trade today despite the fact that they have similar endowments in skilled labour and capital. Table 2 below shows that about 70 per cent of world exports originate in the industrialized world, and half of the world export trade is between industrialized nations and has increased in the years after WWII. One explanation is that trade in income-elastic and that rich countries therefore trade more.

[2] See E. Helpman, The structure of foreign trade, *Journal of Economic Perspectives*, 2,13, 1999, pp. 121-44.

Table 2. Matrices for world exports, percent of the total. 1953-95.

Exports to from	*Industrial countries*	*Developing countries*	*CPEs/CITs*	*Total*[a]
1953				
Industrial countries	37.1	19.3	1.5	61.4
Developing countries	17.5	6.7	0.6	25.4
CPEs	1.1	0.4	8.0	9.6
Total	58.6	27.0	10.1	100.0
1963				
Industrial countries	44.6	14.7	2.3	64.1
Developing countries	14.2	4.5	1.7	20.8
CPEs	2.3	1.1	8.3	11.9
Total	63.6	20.8	12.3	100.0
1980				
Industrial countries	42.6	14.3	3.0	61.3
Developing countries	19.5	6.8	1.1	27.8
CPEs	2.9	1.6	4.5	8.9
Total	66.3	23.1	8.6	100.0
1990				
Industrial countries	55.4[a]	12.6	2.2	71.7
Developing countries	13.9	5.7	1.3	21.2
CPEs/CITs	2.6	1.7	2.5	7.1
Total	71.9	20.0	6.0	100.0
1995				
Industrial countries	51.0[a]	15.0	3.6	71.1
Developing countries	15.4	8.7	1.3	25.6
CPEs/CITs	2.0	0.5	0.7	3.1
Total	68.8	24.1	5.5	100.0

CPE/CIT means centrally planned and larger transition economies such as Russia.

Source: Same as for Table 1, p.302.

However, it is too early to write off the Hecksher–Ohlin trade theory entirely. Although most trade, around half of world trade, today occurs between nations with similar resource endowments, there is also trade between countries richly endowed with un-skilled labour, say China, and nations endowed with skilled labour, say Germany, and the trade pattern that comes out of this is; China exports textiles to Germany and Germany exports high tech machinery to China. The rich industrial world's trade with the developing nations is typically inter-industrial and constitutes approximately 15 per cent of total world trade. Table 2 indicates that developing nations' share of world exports has been fairly constant at 20-25 per cent since WW2. Since the share of traditional exports, i.e. primary products, from the developing world has fallen considerably, see Table 3, it follows that

developing nations increasingly export manufactured goods, which now constitute 75 per cent of total trade as against a little more than 1/3 in the late 1930s.

Table 3. Shares of commodity groups in world merchandise trade. Per cent of total value of trade.

Year	Primary products			Manufactures	Total Exports
	Food	Raw materials	Total		
1937	23	40	63	37	100
1950	23	34	57	43	100
1960	20	25	45	55	100
1973	15	23	38	62	100
1980	11	32	43	55	100
1985	11	26	37	63	100
1990	10	18	28	73	100
1995	9	17	26	74	100

Source: Same as for Table 1, p.303.

Gains from trade

You can look at the gains from trade as a one-off welfare improvement when previously inefficiently allocated resources become more efficiently used through international specialization. Traditional trade theory does not suggest that trade affects the long run *growth rate* of the economy, simply because it does not discuss growth at all.

The way to conceptualise trade and growth is to analyse the link between trade and technological change. In first generation growth theory (Solow), technology is exogenous and that theory is therefore uninformed about trade and growth.

Endogenous or 'new growth theory' indicates that since knowledge is a *non-exclusive* service, that is, your use of it does not exclude others using the same knowledge, *openness* may increase the speed of transmission of knowledge and hence growth. To the extent that new knowledge is embedded in capital equipment, trade in goods will also increase the diffusion of technology. However, new growth theory also links technological change to spending on research and development. Such spending by firms is motivated by the returns earned and both spending and returns can be negatively related to high levels of (international) competition for the following reason: if there are no barriers to entry in an industry, then research results by a firm can easily be exploited by other firms given the non-exclusive nature of knowledge. Hence the innovator does not

earn a sufficient return on its planned R&D and will therefore not undertake it. To the extent that trade leads to extreme competition, it might therefore hurt technological progress and growth.
As you can see theory is ambiguous on the effects of trade on growth so we need to turn to history to get the answers.

2. Trade regimes in history.

From Mercantilism to free trade

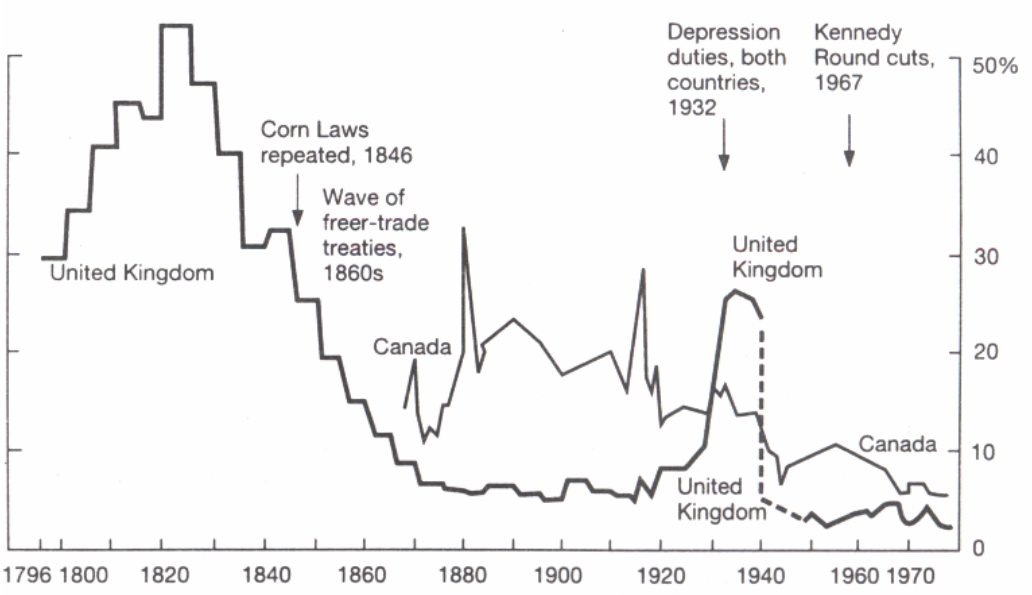
Trade has been subject to regulation and tariffs as long back in history as documents are available. Tariffs have been used for two very different reasons. First tariffs on trade have been an efficient means of raising revenue for the state in periods when collection of taxes on income and property was difficult and costly. Tariff income typically constituted between 10-50% of total state income before the free trade era and remained very high for USA during the 19th century. During the Mercantilistic era in the 17th and 18th centuries, tariffs were also used to promote or protect home industry. Mercantilistic policy aimed at building up international reserves needed in a risky environment where international conflicts were endemic – partly because of trade conflicts. Mercantilists believed that tariffs and subsidies to home industry would generate a current account surplus. However that would be possible only if other nations did not retaliate, which they did. A liberal critique of mercantilistic policies emerges among French and British liberals by the end of the 18th century.[3] The fact that trade policy involves conflicting interests becomes clear in the British campaign against the so called Corn laws in the first half of the 19th century, which protected agriculture and landed interests. However industrialists and trade unions argued that the Corn laws increased wage costs for manufacturing and/or lowered real wages. The repeal of the British corn laws in the late 1840s generated winners (workers and industrial employers) and losers (landlords) and started a general drift towards free trade in Europe. It reflected a changing balance of political power in favour of the growing urban classes. The 1850-75 period was the first free trade era in Europe and tariffs were reduced on agricultural goods as well as industrial goods. The most important trade treaty in the period was the Anglo-French Treaty, (also called the Cobden-Chevalier treaty) concluded in 1860, which introduced a principle, the **M**ost **F**avoured **N**ation clause, which is still a corner-stone in free trade policy. The MFN principle states that if two nations, A and B, extend MFN status to each other, then any further concessions in terms of lower

[3] D. Irwin, *Against the Tide*, Princeton University Press, Orinceton, 1998 and K.G. Persson, *Grain markets in Europe 1500-1900, Integration and deregulation*, Cambridge University Press, Cambridge 1999.

tariffs that A extends to a third nations, C, will automatically be extended to B. Through the MFN clause, bilateral trade negotiations had multilateral consequences.

What forces were behind this European-wide shift to free trade? Ideology and the insights from economics played a role. Campaigners for free trade used economic thinking but in the end what mattered was that emerging social forces, workers, the urban middle class and industrialists expected to be winners from free trade. Another important contributing factor was that the increase in trade automatically increased state revenue above spending plans, so governments could reconcile a moderate increase in spending with falling tariffs. Remember that this was a period of 'small government' with total government spending around 5 per cent of GDP. The accomplishments of the first free trade reforms are important as can be seen from Figure 1 below.

Figure 1 Tariff rate (customs revenue as a percentage of value of imports) in the UK and Canada 1796-1980.



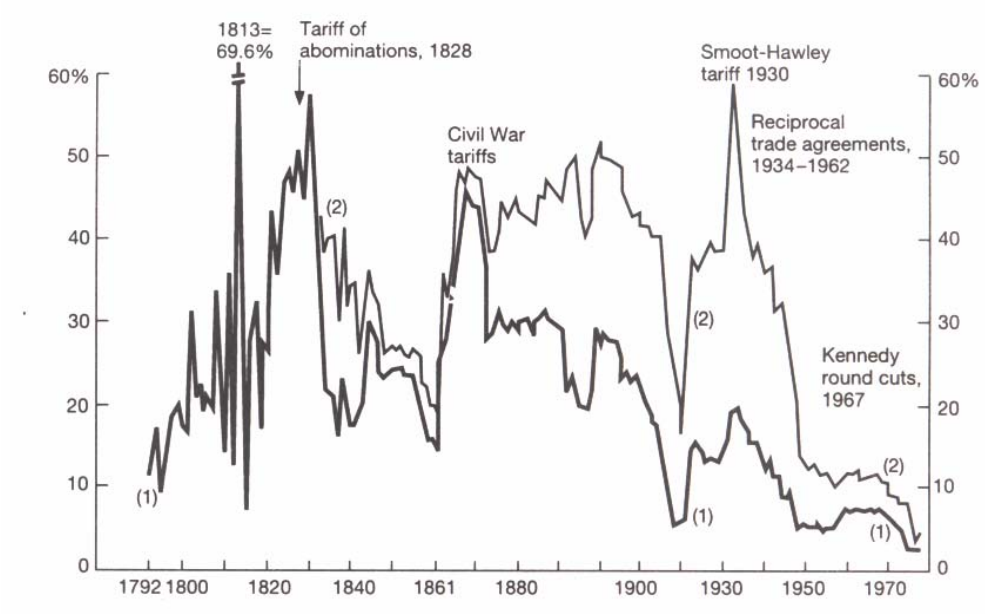
Source: F. Capie, *Tariffs and growth*, Manchester University Press, Manchester 1994, p. 32.

The tariff rate is measured as revenue from customs (tariffs) as a percentage of the value of imports. It is demonstrated that Britain (United Kingdom) remains a free trader until the Interwar period, 1920-40. Most other European nations followed the UK in the initial regime change towards free trade but quite a few, for example France, Germany, and Sweden, reversed their policies in the last two decades of the 19th century. As a response to falling grain prices, landowners campaigned for increasing tariffs and were successful in restoring some of the protection they had enjoyed before,

despite resistance from urban interests. In some nations there was a more general reaction to free trade, such as Germany, where the so-called 'iron and rye' alliance gave protection to industry and agriculture alike. Protectionists in Germany and the USA made reference to 'the infant industry argument' for *transitory* protectionism. If there is learning by doing effects on labour productivity and/or scale economies in a specific industry, a nation needed protection to develop its competitive edge, it was argued. However, average tariff rates, that is customs income as a percentage of the value of imports, were lower than before 1850 and did not exceed 10 per cent even for Germany and France. Some commodities, for example wheat, enjoyed much higher protection but these goods constituted a small fraction of total imports. Did this partial return to protectionism in the last two decades of the 19th century harm economic growth? That question is addressed below in section 4.

The European free trade policies were not shared by the New World nations such as Canada and the USA. The US case is interesting because, unlike in Europe, landed interest was free trade oriented. This is not surprising. The USA was richly endowed with land and had a comparative advantage in cotton and grain, two commodities that are intensive in their use of land. So landowners were to gain from free trade. However, landowners lost political influence relative to urban interests, in particular Southern landowners. Due to labour scarcity, urban wages were quite high and manufacturing interests wanted and got protection from cheaper imports. The rest of the world did not retaliate. Trade unions in the USA were, and have remained, critical of free trade. However, the US 19th century history of tariffs also demonstrates the importance of the revenue raising side of tariffs. Figure 2 below indicates that tariff rates increased after independence but then declined in the mid 19th century. The early rise in tariffs was part of the effort of the new independent state to raise income but it was also part of deliberate protectionist policy to help home industry. The Civil War in the first half of the 1860s increased the need for revenue to finance the war effort and tariffs increased again. Tariffs remained high because the victorious northern states, with their emerging industries supplying the home market, were more inclined towards protectionism than the export-oriented southern cotton and tobacco producing agriculture. Apart from the reasons just spelled out it is worth noting that some tariffs were specific, say x cents per unit of a good. When prices were falling in the last quarter of the 19th century, tariffs increased in percentage (ad valorem) terms unless the specific duty was lowered.

Figure 2. US tariff rates 1792-1980.



Source: F. Capie, *Tariffs and growth*, Manchester University Press, Manchester 1994, p. 31.

Please, note that the thin curve, denoted 2, in Figure 2 is a better approximation of the incidence of tariff protection since it measures the customs revenue as a percentage of the value of *dutiable* imports only. (*Dutiable* means those goods which enjoy tariff protection). The tariff rate remained substantial throughout the 19th century once it had been increased during the Civil War. However, that curve is not directly comparable with the tariff rate curve for the UK in Figure 1, which records customs revenue as a percentage of the value of imports of *all* goods, whether duties (tariffs) are paid on the goods or not. The thick line, denoted 1, in Figure 2 is, however, comparable to the one for the UK and indicates that US tariff rates are about four to five times those of the United Kingdom and two to three times the rates in Germany and France after the partial return to protectionism in the 1880s.

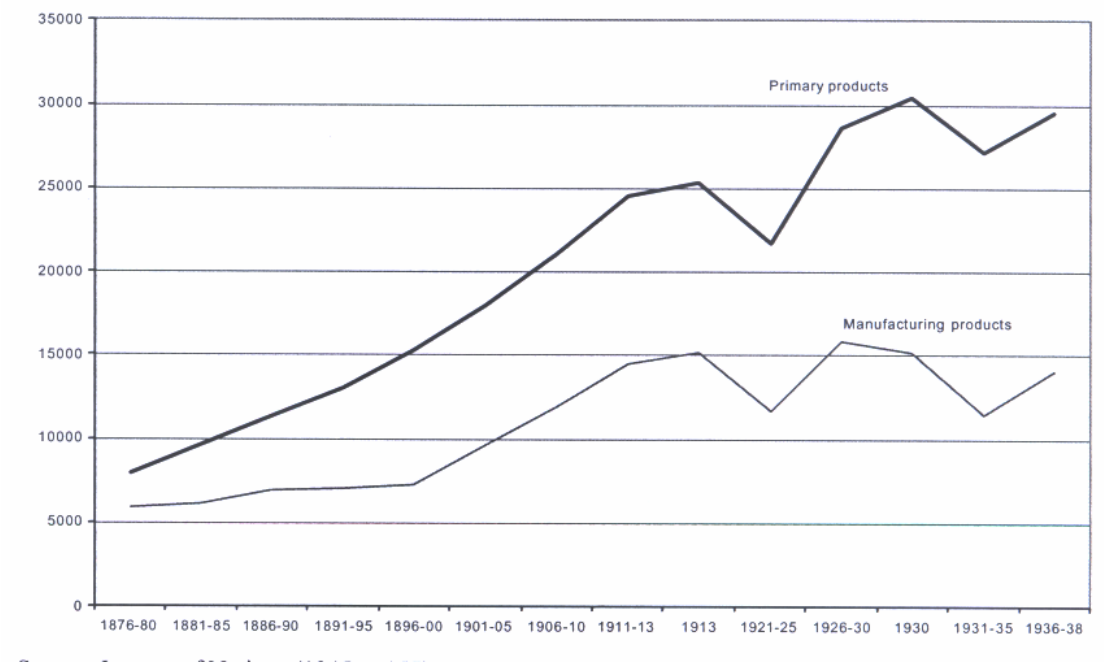
The disintegration of international trade in the Inter-war period.

Even though some nations such as UK, Denmark and the Netherlands remained free traders until WWI there was a growing protectionist sentiment in the world. Elections were fought in the UK, Sweden, Germany and France over the issue before the outbreak of the WWI.. It was not until the Interwar period, however, that the world again returned to full-scale protectionism. That period was not unlike early Mercantilism in its attempt to protect and promote home industry at the expense of

foreign competitors. It was a period of escalating trade restrictions. Although there were always some protectionist measures taken in the 1920s, it was the early 1930s and outbreak of the Great Depression that marked the radical departure from earlier policies. The US took the lead by enacting the Smoot-Hawley Act in 1930, which increased tariffs considerably. The response of other nations was to impose their own trade barriers mainly because there did not seem to be any other options available given what others did. The world needed policy co-ordination but no nation was willing or able to sacrifice short run national interests for uncertain future benefits of a return to the free trade regime.

The combined effect of the economic crisis and protectionism generated a substantial negative shock to world trade in constant prices. On top of that there was also a severe shock to prices, in particular for primary products, that is raw materials and food. Figure 3 indicates that manufacturing trade declined by about a third from a slow recovery during the 1920s.

Figure 3.World trade in manufactured goods and primary products 1876 –1938. 1913 prices. Million US$.



Source: *Industrialization and foreign trade*, Geneva: League of Nations, 1945, p. 157.

The logic of fragmentation of the established trade regime was simple. The Great Depression decreased US demand for imports and in the absence of international liquidity other nations also curbed their imports because export earnings fell. This initial negative shock to traded volumes

triggered off a fall in prices, in particular food and raw material prices, and the combination of the fall in prices and traded volumes meant falling export revenues. But the fall in prices differed among nations. Food and raw material producers were hardest hit because export prices fell more than the prices of their imports. A great many nations had inadequate international reserves so when export earnings fell, they had to borrow money on the international capital market. US financial institutions, which used to lend to nations with current account deficits, practically stopped doing so after 1929. Nations had to find other means of restoring the balance on the current account. Tariffs and quotas on imports was the quickest way to restore the current account. An alternative was to come off the gold standard but many a nation was hesitant to do so until the UK did in 1931. The world became segmented into trade blocs. The British Commonwealth (colonies and 'white dominions' such as Canada and Australia) established preferential treatment of members. As a consequence trade increased *within* that diverse group of nations while third country trade with the Commonwealth fell. Germany introduced a system of administrative regulation of trade on a bilateral basis. Lacking sufficient international reserves, Germany rationed those for trade with Western Europe and the US and forced junior partners in Eastern and Central Europe to accept payments in a non-convertible mark, the so-called ASKI mark. Thereby trade was almost balanced on a bilateral basis because, say, Romanian exporters of goods to Germany got payments in ASKI-mark which could be used only by Romanian importers for goods from Germany.

Not only did world trade fall in real terms but so did the trade/income ratio, that is the ratio of exports to GDP, in the 1930s for almost all nations. In fact trade/income ratios did not recover their pre-1913 rates until the 1960s. The fall in trade absolutely and relative to income is worth stressing because, since 1850 trade had been growing by up to one or two percentage points above annual growth in income per head.

The restoration of the free trade regime after WW2.

There was an acknowledgment in the 1930s that the disintegration of the trading network was deplorable. Figure 3 above indicates that the Interwar crisis departed from a trend of fast increasing world trade. During WW2 discussions started to form a better international environment for world trade. The idea was to create a world trade organization that aimed at solving trade disputes and negotiate future tariff cuts. That organization did not materialize until 1995 as WTO (World Trade Organization) but tariff negotiations started in the immediate post-war period. A first round of tariff reductions was agreed on in the first so called GATT- round in Geneva in 1947. (GATT means

General Agreement on Tariffs and Trade.) The return to free trade was not as swift as after 1850. Early after WW2 many nations had current account constraints and a quick opening up of the extremely protected economies was not a priority. Some initial tariff reductions were agreed upon. Over the years an increasing number of nations joined the GATT negotiations and the prosperous 1960s saw a breakthrough in the negotiations with the so-called Kennedy-round. Intra-Europe trade was moving faster towards free trade with the creation of the Common Market (EEC then and now EU) and the European Free Trade Area (EFTA, which was composed of those nations that were not admitted to the EEC or did not want to join). The European Common Market was, however, a customs union, keeping tariffs in relation to third countries. From the start agriculture was left out of the negotiations and agriculture has since been a pocket of especially US and European protectionism poisoning world trade relations. The phasing out of agricultural subsidies in the European CAP, is still controversial, with France and the Latin Europeans leading the resistance and the speed of that (inevitable?) process is a matter of dispute both within Europe and in the rest of the world. Other areas, especially in manufacturing, have experienced radical reductions in tariffs. Today manufacturing tariff rates are again on par with or lower than in the first free trade era (1850-75). However, these numbers are giving too rosy a picture. As tariffs came down, quantitative restrictions have increased, for example the Multifibre Agreement, restricting imports of textiles from low wage developing countries. That's the clothing you buy at ***H&M***. There are also so-called voluntary trade restrictions, meaning that an exporting nation 'voluntarily' imposes quantitative restrictions on its exports.

Despite the slow pace of liberalization, there is no denying that important advances have been made. The Uruguay round starting in 1987 not only created the WTO with about 130 members, compared to the 23 nations signing the 1947 Geneva agreement, but also accomplished a major new breakthrough in trade generating tariff reductions and opened up discussions on agricultural trade and intellectual property rights. Judging trade liberalization from its effect in terms of world trade growth, it is also impressive. Trade has grown at one or two percentage points above growth in world income, much as in the pre 1913 era, but not all of that growth can be ascribed to liberalization.

3.Trade and income.

Trade has grown faster than income for the last 200 years, except for the Interwar period, indicating the high income elasticity of imports. The obvious implication is of course that the so called

trade/income ratio must increase. Table 4 traces the evolution of that ratio over the last 130 years. By and large, small nations have a higher trade income ratio than large nations, because the latter can benefit more from inter-regional trade. The table also shows the magnitude of the setback to trade of the Interwar crisis.

Table 4. Ratios of merchandise trade to GDP. 1890-1990.Percent.

Country	*1890*	*1913*	*1960*	*1970*	*1980*	*1990*
Australia	15.7	21.0	13.0	11.5	13.6	13.4
Canada	12.8	17.0	14.5	18.0	24.1	22.0
Denmark	24.0	30.7	26.9	23.3	26.8	24.3
France	14.2	15.5	9.9	11.9	16.7	17.1
Germany	15.9	19.9	14.5	16.5	21.6	24.0
Italy	9.7	14.4	10.0	12.8	19.3	15.9
Japan[a]	5.1	12.5	8.8	8.3	11.8	8.4
Norway	21.8	25.5	24.9	27.6	30.8	28.8
Sweden	23.6	21.2	18.8	19.7	25.0	23.5
United Kingdom	27.3	29.8	15.3	16.5	20.3	20.6
United States[b]	5.6	6.1	3.4	4.1	8.8	8.0

Source: R. C. Feenstra, 'Integration of trade and disintegration of production in the Global economy', *Journal of Economic Perspectives*, 12, 1988, pp. 21-50.

The general conclusion from Table 4 is that trade penetration of most economies has increased but not in a dramatic way. One reason is that the Interwar years imposed a fall in trade income ratios and it took a decade or so after WWII before trade income ratios reached their 1913 rate. Another reason is that the denominator of the trade income ratio has changed over the years to the effect that the non-traded sectors, the public sector and other non-trading service sectors have increased their share of GDP. Another way of estimating the trade income/income ratio would be to look at the ratio of manufactured goods trade to manufactured sector value added.

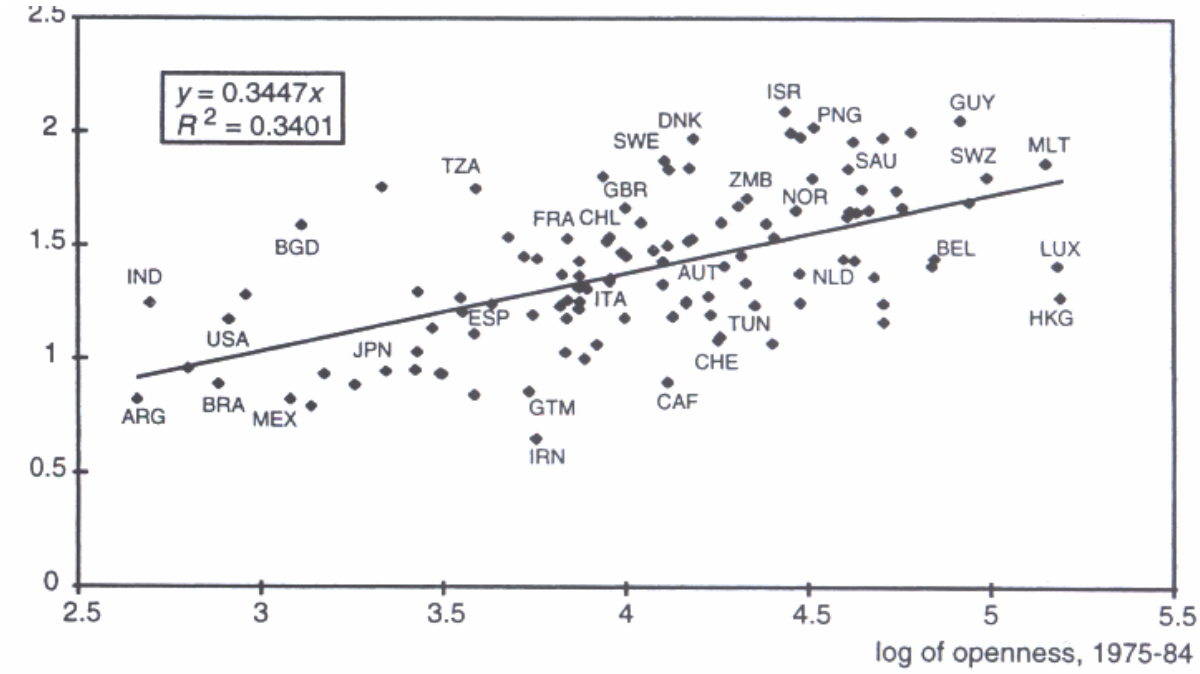
Table 5. Ratios of merchandise trade to merchandise value added.

Country	*1890*	*1913*	*1960[a]*	*1970*	*1980*	*1990[b]*
Australia	27.2	35.6	24.4	25.6	32.4	38.7
Canada	29.7	39.4	37.6	50.5	65.6	69.8
Denmark	47.4	66.2	60.2	65.9	90.0	85.9
France	18.5	23.3	16.8	25.7	44.0	53.5
Germany	22.7	29.2	24.6	31.3	48.5	57.8
Italy	14.4	21.9	19.2	26.0	43.1	43.9
Japan	10.2	23.9	15.3	15.7	25.8	18.9
Norway	46.2	55.2	60.0	73.2	70.9	74.8
Sweden	42.5	37.5	39.7	48.8	72.9	73.1
United Kingdom	61.5	76.3	33.8	40.7	52.6	62.8
United States[c]	14.3	13.2	9.6	13.7	30.9	35.8

Source: Same as for Table 4.

The conclusion is that the manufacturing sector alone has become very much more dependent on trade, especially in recent years. Large industrial companies in small and middle-sized nations today typically export between 70 and 95 percent of their output. Small economies do have a more intense reliance on trade because they are too small to reap benefits from economies of scale internally. Consequently, the USA, the world's largest economy, also has the lowest ratio of merchandise trade to merchandise value added, with the exception of Japan. You can imagine that an economy that has a high exposure to trade will also be sensitive to exogenous shocks. R. Feenstra argues that, as a consequence, these economies tend to develop welfare institutions to protect citizens from the adverse consequences of globalization. Figure 4 shows that government spending as a percentage of GDP (interpreted as a proxy for welfare spending) is correlated to openness when controlled for other factors that influence government spending, such as income per capita, urbanization etc. That relationship can be interpreted as (weak) support for the hypothesis advanced by Feenstra.

Figure 4. Partial correlation of government expenditures and openness in 115 countries.



Source: D. Rodrik, *Has globalization gone too far?* Institute for International Affairs, Washington 1998. Please note that the units on the vertical axis are the log of government consumption as a percentage of GDP.

4. Tariffs and growth.

The 19th century experience.

We noted in section 1 that theory is ambiguous as to the effect of tariffs on economic growth. We will therefore look into the empirical literature for the answers. Bairoch[4] noted that the growth experience of industrialising nations was not favoured by free trade in the 19th century. However, that conclusion was reached from a mono-causal explanatory framework which was much too crude to be of lasting value. Clearly growth is influenced by a large number of factors such as human physical capital formation, labour supply, and economic policies, including trade policy. K. O´Rourke[5] has, however, confirmed the Bairoch results in a much more sophisticated econometric test. There are a series of delicate problems that have to be dealt with to make his results stick, however. First and foremost, we are interested to see the partial effect of trade policy on growth, partial meaning the effect of trade policy given the effect of other factors on growth. O'Rourke measures a nation's trade policy by tariff revenue divided with value of imports. This is not an ideal

[4] P. Bairoch, 'Free trade and European economic development in the 19th century', *European Economic Review*, 3, 3, 1972, pp. 211-45.
[5] K. H. O'Rourke, Tariffs and Growth in the Late 19th Century', *Economic Journal*, 110, 463, 2000, pp. 456-83.

measure because commodities with high tariffs will shrink in import volumes, and hence value, and therefore underestimate 'true' tariffs levels. (Imagine that a nation sets very high tariffs on some goods and zero tariffs on others. Assume now the special case of imports of protected goods falling to zero. In that case, this measure would then give this particular nation an average tariff of zero).

O'Rourke explains the annual growth rate by the growth of land endowments per unit of labour, capital per labour, tariff level and initial income. The latter is a so-called catch up factor: the lower the initial income of a nation, the higher the expected subsequent growth. The expected sign on the parameters in this regression is negative on initial income, for reasons just stated, and positive for land endowments and capital. The sign of the parameter on the tariff variable is not known a priori, i.e. the theoretical expectation can go both ways. It turns out that it is *positive* based on an analysis of seven 'old world ' countries and three 'new world' countries. The result that tariffs actually stimulate growth is fairly robust and can be interpreted (roughly) as their effect on total factor productivity,[6] i.e., on technology as suggested by new growth theory. O'Rourke investigates a possible asymmetric effect of tariffs. Is it possible, he asks, that the finding that tariffs stimulate growth is due to the fact that tariffs help economies in recessions, that is, by isolating the nation from negative exogenous shocks, and that this connection explains the effect on growth? The answer is that when you control for the 'recession effect', the estimated tariff on growth is reduced by almost half, but it nonetheless remains positive and significant.

Results from statistical analysis are usually of little value if you do not have a good explanation for your result. So why should tariffs be good for growth? O'Rourke offers a number of explanations.

1. Due to the agricultural bias in protection, tariffs might make capital goods cheaper in relative terms, which can be expected to stimulate investments. (But since growth in capital is controlled for in O'Rourke's estimation, you should run the regression omitting the growth of capital variable. It turns out that the positive impact of tariffs on growth remains when the capital variable is omitted).
2. Learning by doing and dynamic economies of scale might be an important element in total factor productivity growth and can be helped by so-called infant industry protection.
3. Labour productivity was higher in manufacturing than in agriculture in most late 19th century nations. Assume now that the structure of tariffs helped manufacturing output relative to agrarian and speeded up the relocation of labour from agriculture to manufacturing. If so, the economic effects would translate into transitory (i.e. until labour

[6] Total factor productivity is the increase in output that cannot be accounted for by the weighted impact of observed factors of production such as capital, labour, land and education.

reserves in agriculture had been tapped) higher growth rates. Note that this hypothesis does not seem to be compatible with the first explanation above, which suggests that agrarian prices were protected relative to prices on industrial goods.

The late 20th century experience.

The interwar period has generally been interpreted as a prime example of the negative effects of restrictive trade policies on growth. It is true that the Great Depression, originating in US, in itself had a large negative effect on world exports made even worse by the introduction of higher tariffs in the US in 1930. What then followed was an escalating 'war' of reciprocal trade restrictions, which meant that trade volumes actually declined. That a single nation could do better in terms of growth by pursuing a free trade policy given the trade restrictions of others is highly unlikely, however. The post WW2 period has, on the other hand, generally been credited of having experienced a positive and robust relationship between free trade and growth. If the Bairoch-O'Rourke result is correct for the pre WW1 era, why not for the post WW2 period? It turns out that the results for the two periods answer different questions. It has been a shift in focus from pure trade policy effects to effects of 'openness'.

The Sachs and Warner 1995[7] paper is usually quoted as a major contribution to the literature demonstrating a positive empirical relationship between trade and growth. On closer scrutiny, it is a paper arguing for a positive relationship between a number of 'openness' indicators and growth. Important as these findings are in their own right, it is not obvious that they relate clearly to trade policy.

Much of the recent literature is concerned with how to measure trade policy. Sachs and Warner tried to improve a previous attempt by D. Dollar.[8] He used deviations of a nation's price level to that of the USA as an indirect measure of trade restrictions. That interpretation is based on, among other things, the notion that the law of one price holds permanently. As I showed in a previous lecture, the law of one price should not be interpreted as an equilibrium state but as an equilibrium attractor, that is, deviations which can occur because of nominal exchange rate shocks, local supply or demand shocks, take time to be corrected for, and, furthermore, there are shocks all the time.

[7] J. D. Sachs and A. Warner, 'Economic reform and the process of global integration', *Brookings Papers on Economic Activity*, 1, 1995, pp. 1-118. Cf. also A. Harrison, 'Openness and growth: A time-series, cross-country analysis for developing countries', *Journal of Development Economics*, 48, 1996, pp. 419-447.

[8] D. Dollar, 'Outward-oriented developing economies really grow more rapidly: Evidence from 95 LDCs, 1976-85', *Economic Development and Cultural Change*, 1992, pp. 523-544.

Sachs and Warner construct an index of openness that is supposed to catch aspects of trade policy. An economy is considered *closed* if it does have *any one* of the following five characteristics:

1. average tariffs higher than 40 percent;
2. more than 40 per cent of imports covered by non-tariff barriers;
3. a socialist economic system;
4. a state monopoly of major exports;
5. a black market exchange rate premium of more than 20 per cent.

Sachs and Warner show that, in a large sample of nations for the 1970-89 period, growth is significantly and negatively related to being 'closed'. However, this result is not easily interpreted as a pure trade policy effect because the result is driven almost entirely by a combination of two criteria, namely 4 and 5 above. Levels of tariffs and non-tariff barriers do not seem to have a significant negative effect independently of 4 and 5.[9]

Conclusion: For the post -WW2 period, measures of openness have a significant but fairly small role in explaining growth of output or growth in total factor productivity. Of openness indicators employed in the analysis, those directly related to trade policy are usually of smaller importance, if at all significant, compared to indicators of other price or exchange rate distortions. However, very large and persistent trade barriers seem to be counter-productive. The different interpretations of the late 19th century experience and the late 20th century historical record might have to do with the fact that the *extent* of protectionism was different. After WW2 many developing nations erected prohibitively high tariffs, while 19th century tariffs were, in most cases, modest. A tentative conclusion is that small tariffs will harm neither growth nor trade much, but large tariffs harm both.

[9] F. Rodriguez and D. Rodrik, Trade policy and economic growth: A sceptic's guide to the cross-national evidence, NBER Working paper 7081, April 1999.