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Commodity Market Integration, 1500–2000

Ronald Findlay and Kevin H. O'Rourke

1.1 Introduction

This paper provides an introduction to what is known about trends in international commodity market integration during the second half of the second millennium. Throughout, our focus is on intercontinental trade, since it is the emergence of large-scale trade between the continents that has especially distinguished the centuries following the voyages of da Gama and Columbus. This is by no means to imply that intra-European or intra-Asian trade was in any sense less significant; it is simply a consequence of the limitations of space.

How should we measure integration? Traditional historians and modern trade economists tend to focus on the volume of trade, documenting the growth of trade along particular routes or in particular commodities, or trends in total trade, or the ratio of trade to output. While such data are informative, and while we cite such data in this paper, ideally we would like to have data on the prices of identical commodities in separate markets. Commodity market integration implies that these prices should be converging over time; such price convergence will, other things being equal, drive up the volume of trade. However, the volume of trade could also increase for reasons unconnected with integration, or decline for reasons unconnected with disintegration: Shifts in supply and demand will also lead to changes in trade flows, and these have no necessary connection with “globalization.”

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Price convergence is thus the best measure of commodity market integration. Price gaps will reflect all relevant costs of doing trade between markets: not just transport costs, but also trade barriers, and those costs associated with wars, monopolies, pirates, and so on. For the nineteenth and twentieth centuries trade barriers and transport costs were the most important barriers to trade, and we have fairly detailed accounts of what happened to these, which we provide below. For earlier centuries, we have only limited information on these costs, as well on price gaps between markets; in addition, during the mercantilist era price gaps were as likely to be due to trade monopolies, pirates, and wars as to transport costs and tariffs, which are more easily quantifiable. Thus, for the earlier period we rely more on qualitative information regarding trade routes, and quantitative information regarding the volumes of commodities actually traded; for the later period we are able to switch to more systematic price-based evidence. We begin, however, with a brief description of the preconditions underlying the Voyages of Discovery.

1.2 World Trade before 1500

Although it has become conventional to see the formation of the world economy as following in the aftermath of the European Voyages of Discovery in the late fifteenth century, this should not be taken to imply that there was no relevant previous history. Columbus and da Gama were both motivated to break the monopoly of the spice trade held by the rulers of Egypt and the Italian city-states, particularly Venice and Genoa. Thus we need to have some understanding of the structure and volume of this trade, at the very least. Both China and India, with their large populations relative to Europe, traded with Southeast Asia; and both engaged in the overland trade with Eastern Europe, the Islamic world, and the Mediterranean. The Baltic trade was also of significance to both Northern and Eastern Europe. Shipping and nautical technology generally had also emerged through a complex interplay of several civilizations and economic systems.

There is also the question of incentives and capabilities in the determination of “who discovered whom?” It was once natural to assume that the Europeans were first across the seas because they were the first with the necessary technology. This comfortable Eurocentric assumption is belied by the voyages of the Ming admiral Zheng He in the first three decades of the fifteenth century. This shifts the question from technological capability to economic incentive. Findlay (1996), following Abu-Lughod (1989) and others, provides an outline of a complex pattern of linkages among wool from England and Spain, woolen cloth from Flanders and Italy, furs from Eastern Europe, gold from West Africa, cotton textiles and pepper from India, fine spices such as cloves and nutmeg from Southeast Asia, and silk and porcelain from China that existed from at least a thousand years ago. The

Islamic world, stretching from the Atlantic to the Himalayas, and Sung China were the most advanced economic systems of that era with large cities, considerable manufacturing production, and sophisticated monetary and credit systems. Western Europe, except for the Italian cities and Flanders, was a relatively backward agricultural area.

Despite the destruction unleashed during the process of its creation, the establishment of the Mongol Empire in the thirteenth century led to a unification of the Eurasian continent as a result of the “Pax Mongolica” across Central Asia. As Needham (1954) and others have argued, perhaps without sufficient specificity, the Pax Mongolica led to a significant transmission of ideas and techniques, along with an increased volume of goods and people. In addition, however, there was also the transmission of the deadly plague germs that resulted in the demographic catastrophe of the Black Death in the 1340s: This reduced the population of Europe and the Middle East by about a third. The reduced volume of production and trade led economic historians to speak of the centuries of the Renaissance in Europe as a time of economic depression. As several authors have pointed out, however, the plague raised per capita wealth, incomes, and wage-rates, replacing a large but relatively stagnant European economy in 1340 that was already at its Malthusian limits with one that had two-thirds of the population but the same amount of land, capital, and stock of precious metals in coins and bullion. The economic and monetary consequences of the Black Death are worked out by means of a general equilibrium model with endogenous population, capital, and commodity money supply in Findlay and Lundahl (2000). Real wages rise; population slowly recovers, driving real wages slowly down again; and an initial inflationary spike is followed by a long phase of deflation. The model postulates a demand for Eastern luxuries that rises with the higher per capita wealth and income, leading to an increased outflow of precious metals to the East and hence a prolonged monetary contraction. Thus what Day (1978) called the “Great Bullion Famine of the Fifteenth Century” can be explained as a consequence of the Black Death in the previous century. Eventually the model predicts a return to the initial long-run stationary equilibrium that prevailed before the onset of the Black Death, if all underlying behavioral relationships remain unchanged.

As Herlihy (1997) argues, however, the drastically altered circumstances of people’s lives would prompt alternatives in attitudes and institutions. The greater scarcity of labor would tend to dissolve feudal ties and stimulate labor-saving innovations, the higher per capita incomes could lead to postponement of the age at marriage in an effort to maintain the higher income levels, and so on. Furthermore, this period of increased incomes and a higher demand for Asian luxury goods coincided with the demise of the Pax Mongolica and its associated overland trade, and a consequent reliance (once more) on traditional Indian Ocean trade routes and monopolistic Egyptian and Venetian intermediaries. Presumably this increased the in-

centive to find a sea route to Asia. The result of all these changed incentives could well be a more modern society in 1450 than in 1350, one that was ready to venture more readily and further abroad and so usher in a true era of globalization with the Voyages of Discovery linking all the continents by sea.

1.3 World Trade 1500–1780

1.3.1 Introduction

This period opens with the European Voyages of Discovery across the Atlantic and around the Cape of Good Hope to the eastern seas, shortly followed by the crossing of the Pacific and the circumnavigation of the globe. The “globalization” of the world economy in the sense of the linking of markets in the Old and New Worlds that had hitherto been separated thus begins in this period, even if we have to wait until later for evidence of a “big bang” in terms of convergence in world product and factor prices. Thus Flynn and Giraldez (1995) are not necessarily only tongue in cheek when they date the “origin of world trade” to the year 1571 when the city of Manila was founded, directly linking the trade of Europe, Asia, Africa, and the Americas. However, with transport costs still high relative to production costs, long-distance trade was largely confined to commodities with a high ratio of value to weight and bulk, such as spices, silk, silver, and, last but not least, slaves. Nevertheless, the channels were laid along which the volume of world trade could grow later under the influence of technological change, capital accumulation, and population growth.

The most momentous immediate consequence of the discoveries was the injection of large amounts of silver into the circuits of world trade, with the influx into Europe in particular leading to the so-called “price revolution of the sixteenth century.” Within Europe the period was marked also by shifts in the locus of what Kindleberger (1996) calls “economic primacy.” The Iberian voyages led to a shift away from the earlier commercial dominance of Venice and the Italian cities, since the Cape route broke the monopoly shared by Venice and the rulers of Egypt on the spice trade through the Red Sea. The Portuguese were soon displaced, however, by the rising power of the Dutch, with Amsterdam, the “Venice of the North,” displacing the original one and its successor Antwerp. There followed the long struggle between the Dutch and the English East India companies, the “multinational corporations” of that area.

Despite the prominence of European explorers, conquistadors, and merchants during the earlier part of this period it is a profound historical mistake to imagine European dominance of the global economy as dating from soon after the original voyages. Ironically, the phrase “Vasco da Gama Epoch” was coined not by a European but by the nationalist Indian diplo-

mat and historian K. M. Panikkar (1953). We must not forget that Constantinople fell to the Ottoman Turks shortly before da Gama was born and that the Safavids and Mughals established their rule in Persia and India before his death, in the first case, and shortly after it, in the second. All three of these formidable “gunpowder empires” were involved in the network of world trade despite being essentially territorial powers, with dependence on imports of silver for their coinage being the most important link. Access to firearms and opportunities for greater revenue through taxing trade were also an important factor in strengthening native kingdoms throughout Southeast Asia and Japan. In the case of Ming China the introduction of the sweet potato, peanuts, and other New World crops led to a substantial increase in agricultural productivity, stimulating population growth and the demand for imported silver and leading in turn to the export of tea, porcelain, and silk (Ho 1959).

1.3.2 Trade after the Voyages of Discovery: Qualitative Trends

One way of thinking about the qualitative evolution of world trade over time is given in Mauro (1961), who presents an intriguing intercontinental matrix for world trade during this period, with the Americas separated into tropical and temperate zones. The Voyages of Discovery, as well as those of Captain Cook, led to the emergence of trade flows between continents where previously there had been none; thus cells in the matrix which had been empty were no longer so. Second, once this had happened the range of goods being traded between continents began to expand, in response to declining transport costs, or shifts in demand and supply in the various regions of the world. The period from 1500 to 1780 was marked by a gradual evolution in the type of goods being traded. Originally the goods concerned were for the most part noncompeting, in the sense that the trade was driven by the availability of commodities in some continents but not in others. Thus, Asia exported spices and silk, while the Americas exported silver. These goods had an extremely high value-to-bulk ratio, the high prices being due to the absence of local substitutes in destination markets. As the period progressed, bulkier commodities began to be shipped. Typically, these commodities (e.g., sugar and raw cotton) were still produced only in particular continents and faced rather imperfect substitutes in destination markets (e.g., honey and wool). The great counterexample was India’s exports of cotton textiles, which accounted for more than half of the East India Company’s exports to Europe in the 1750s (table 1.1). However, it was really only after the transport revolutions of the nineteenth century that intercontinental trade began in homogeneous bulk commodities, such as wheat, iron, and steel, that could be produced anywhere.

The discovery of the Cape route had an almost immediate impact on Venetian imports of pepper and spices, but the effect was short-lived. Wake (1979, 373) reports that pepper imports declined by 85 percent in 1501 over

Table 1.1 **Composition of European Overseas Imports, 1513–1780**

<i>A. Imports from Asia to Lisbon, 1513–1610 (% of weight)</i>						
	1513–19	1523–31	1547–48	1587–88	1600–03	1608–10
Pepper	80.0	84.0	89.0	68.0	65.0	69.0
Other spices	18.4	15.6	9.6	11.6	16.2	10.9
Indigo	0.0	0.0	0.0	8.4	4.4	7.7
Textiles	0.2	0.0	0.0	10.5	12.2	7.8
Miscellaneous	1.4	0.4	1.4	1.5	2.2	4.6
Total	100.0	100.0	100.0	100.0	100.0	100.0
<i>B. Imports of VOC into Europe, 1619–1780 (% by invoice value)</i>						
	1619–21	1648–50	1668–70	1698–1700	1738–40	1778–80
Pepper	56.5	50.4	30.5	11.2	8.1	9.0
Other spices	17.6	17.9	12.1	11.1	6.1	3.1
Textiles	16.1	14.2	36.5	54.7	41.1	49.5
Tea and coffee				4.2	32.2	27.2
Drugs, perfumes, and dye-stuffs	9.8	8.5	5.8	8.3	2.8	1.8
Sugar		6.4	4.2	0.2	3.7	0.6
Saltpeter		2.1	5.1	3.9	2.6	4.4
Metals	0.1	0.5	5.7	5.3	1.1	2.7
Miscellaneous		0.2	0.1	0.4	2.3	1.7
Total	100.0	100.0	100.0	100.0	100.0	100.0
<i>C. Imports of English East India Company into Europe, 1668–1760 (% of invoice value)</i>						
	1668–70	1698–1700	1738–40	1758–60		
Pepper	25.25	7.02	3.37	4.37		
Textiles	56.61	73.98	69.58	53.51		
Raw silk	0.6	7.09	10.89	12.27		
Tea	0.03	1.13	10.22	25.23		
Coffee	0.44	1.93	2.65			
Indigo	4.25	2.82				
Saltpeter	7.67	1.51	1.85	2.97		
Miscellaneous	5.15	4.52	1.44	1.65		
Total	100.0	100.0	100.0	100.0		

the average of the 1490s and spices by 42 percent. Portuguese imports supplied half the European market in 1503–06 and much more a decade later (Wake, 381). However, the Portuguese never succeeded in their ambition to monopolize the pepper and spice trade. As the sixteenth century progressed the Venetians and the overland trade fought back: In 1560 Venice imported 2,000 tons of pepper, more than it had imported in 1496 (Bulbeck et al.

Table 1.1 (continued)

<i>D. Estimated Annual Sales of Colonial Imports, England and the Netherlands, 1751–54</i>			
	Total Sales (thousands of pesos)	Percentage of Sales	
		From Asia	Of Total
Textiles	6,750	41.7	21.1
Pepper	1,100	6.8	3.4
Tea	2,800	17.3	8.7
Coffee	1,000	6.2	3.1
Spices	1,850	11.4	5.8
Miscellaneous	2,700	16.7	8.4
Total from Asia	16,200	100.0	50.5
		From America	Of Total
Sugar	8,050	50.8	25.1
Tobacco	3,700	23.3	11.5
Miscellaneous	4,100	25.9	12.8
Total from America	15,850	100.0	49.5
Total overseas imports	32,050		100.0

Sources: Prakesh (1998, 36, 115, 120); Steensgaard (1995, 12).

1998, table 3.2, 72–73).¹ Nor did the voyages of discovery lead to an immediate collapse in European pepper prices: Instead, figure 1.1 shows real pepper prices initially rising sharply, as the Portuguese disrupted traditional trade routes, and then rising for a second time in midcentury.² They then started to decline, especially during the seventeenth century, which saw the Portuguese displaced by the Dutch and English East India Companies. Imports into Europe increased substantially and prices fell to 30–40 percent below the prices maintained by the Portuguese in the previous century (Wake, 389). Although Venice had successfully competed with the Portuguese during the sixteenth century it could not survive the Anglo-Dutch competition in the first half of the seventeenth century. The annual consumption of pepper in Europe increased from about 3.4 million pounds in

1. Similarly, the new sea routes did *not* lead to the collapse of the traditional caravan trade across central Asia. To be sure, this trade did indeed eventually collapse in the late sixteenth and seventeenth centuries, but this was primarily due to political turmoil along the route. By contrast, caravan trade did prosper in the late seventeenth and eighteenth centuries along a northern route (through southern Siberia and northern Central Asia). This trade was conducted by Russian merchants and took place within Russian territory until the merchants reached China itself (Rossabi 1990).

2. These are the European pepper price series given in Bulbeck et al. (1998, 70), deflated by the average Valencian price level calculated in Hamilton (1934).

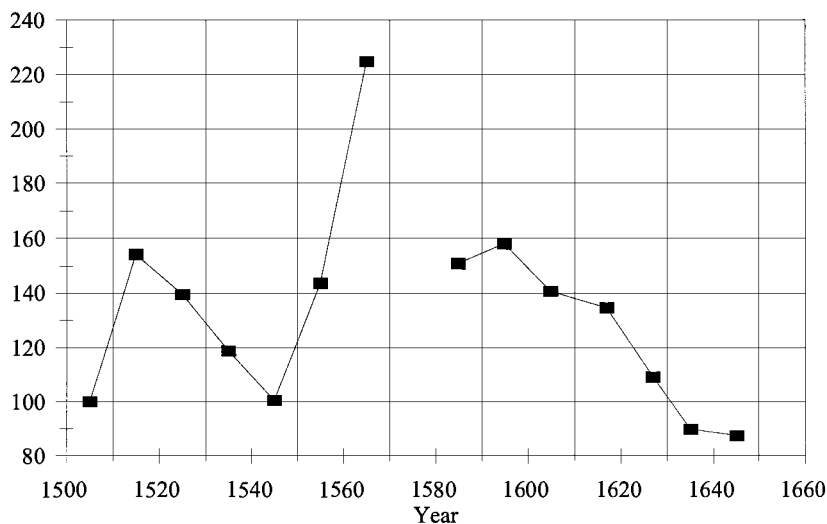


Fig. 1.1 European pepper prices, deflated (1505 = 100)

1611 to 8.6 million in 1688, of which the Dutch supplied 4.00 and the English 3.24 million (Wake, p. 391).

Pepper production and exports from Southeast Asia rose in response to the increased demand not only from Europe but also from China. Bulbeck et al. (1998, table 3.7) indicate total exports from Southeast Asia increasing by a factor of 3.4 from the beginning to the end of the sixteenth century, by a further 50 percent to the end of the seventeenth century, and by 20 percent more to the end of the eighteenth century—about sixfold from 1500–1800. The table also shows that the shares of Europe, China, and “Other Regions” in total exports were stable at roughly one-third each over the entire period, despite considerable fluctuations between decades. Chinese emigrants from the southern provinces engaged in a vigorous expansion of cultivation in Southeast Asia during the eighteenth century, using innovative labor-intensive methods that raised yields per acre substantially.

Table 1.1 presents various estimates of the commodity composition of European imports from 1513 to 1780. European imports from Asia were initially dominated by pepper and other spices (nutmeg, mace, cloves, and cinnamon), but over time the list of commodities being traded widened. Pepper, which accounted for well over half of imports from Asia in the sixteenth century (and initially accounted for more than 80 percent of Portuguese imports: table 1.1, panel A) declined sharply to less than 10 percent of Asian imports by the eighteenth. The Portuguese were importing textiles from Asia by the late sixteenth century; cotton textiles, mainly from India, made up 70 to 80 percent of British East India Company imports after 1660 and were the single most important import commodity for the Dutch as

Table 1.2 Intercontinental Silver Flows, 1501–1800 (annual average)

Years	American Production (tons)	European Imports		European Exports		Asian Imports	
		Tons	% of American Production	Tons	% of European Imports	Tons	% of American Production
1501–1525	45	40	88.9				
1526–1550	125	105	84.0				
1551–1575	240	205	85.4				
1575–1600	290	205	70.7			2.4	0.8
1601–1625	340	245	72.1	100	40.8	17	5.0
1626–1650	395	290	73.4	125	43.1	16	4.1
1651–1675	445	330	74.2	130	39.4	6	1.3
1676–1700	500	370	74.0	155	41.9	15	3.0
1701–1725	550	415	75.5	190	45.8	15	2.7
1726–1750	650	500	76.9	210	42.0	15	2.3
1751–1775	820	590	72.0	215	36.4	15	1.8
1776–1800	940	600	63.8	195	32.5	20	2.1

Source: Barrett (1990, tables 7.3, 7.6).

well after 1700 (table 1.1, panels B, C). Tea and coffee were insignificant until they rose sharply around 1700, constituting a quarter of East India Company sales in Europe by the middle of the century. Despite this diversification, however, the Asian trade was still heavily concentrated in just a few items: pepper, fine spices, cotton textiles, tea, and coffee constituted between 80 and 90 percent of imports from Asia throughout the period (Steensgaard 1995, 10).

By the middle of the eighteenth century, total colonial imports by England and the Netherlands combined were valued at 32 million pesos, about equally divided between Asia and the Americas (table 1.1, panel D). Quantification of imports from America is more difficult, since this trade was not dominated by a few large companies for long periods of time, as was the case in Asia (Steensgaard 1995, 11). The most important nonmonetary import was sugar: Total European imports of sugar were 170,000 metric tons by about 1750, ten times the level of the early seventeenth century (Steensgaard, 12). Sugar accounted for roughly 50 percent of Europe's imports from America, with the remainder being evenly divided between tobacco and miscellaneous items.

Initially, however, the most important European import from the New World, in terms of its economic consequences, was silver. Table 1.2 reproduces the data given in Barrett (1990) on flows of silver from the Americas to Europe and Asia, as well as on European exports of silver. American production rose for every quarter century over this period, from an annual average of 45 tons in 1501–25 to 340 tons in 1601–25, 550 tons in 1701–25, and 940 tons in 1776–1800. Europe imported almost 90 percent of this output

in the early sixteenth century, but the proportion shipped to Europe fell over time, reflecting increased retention within the Americas: The figure hovered between 70 and 80 percent during most of the period. Some part of silver production in the New World was exported by the Acapulco galleons across the Pacific to Manila. However, the annual average flow was around 15 tons for most of the seventeenth and eighteenth centuries. It was thus relatively insignificant compared to the export of American silver through Europe.

What happened to the silver that Europe imported? Europe's deficit on imports of Indonesian spices; Chinese porcelain, silk, and tea; and Indian cotton textiles was largely paid for by American silver drained from Spain: Exports from Europe rose from 100 tons in 1601–25 to nearly double a century later, after which they flattened out. Calculations by Steensgaard (1995, table 2) clearly show that the Asian trade of the English and Dutch East India companies would have been impossible without access to the bullion supplies of the New World to finance the gap between the invoice value of imports and exports of goods and services (the value of remittances).³ On the other hand, retention within Europe also rose, from 145 tons in 1601–25 to 225 tons in 1701–25 and over 400 tons in the last quarter of the eighteenth century. Indeed, Europe absorbed an increasing proportion of the American shipments over the period (from around 60 percent at the start of the seventeenth century to almost 70 percent at the end of the eighteenth, despite the widespread allegation that China and India had a supposedly irrational desire to hoard specie unproductively. Since bullion formed the high-powered money of the period, these figures indicate the extent of monetization in Europe and Asia. The impact on Europe of this monetary expansion continues to be a hotly debated issue, and its possible ramifications as far afield as Ottoman Turkey, Mughal India, and Ming China have also been examined. Despite its turbulence, the sixteenth century was almost everywhere an age of monetary, economic, and demographic expansion, while the seventeenth has been associated with a famous crisis (first identified by Hobsbawm 1954) during which growth stagnated and prices fell. Here again the phenomenon was first debated in a European

3. Steensgaard presents a calculation of the values of exports, imports, and profits of the two East India companies, expressed as annual averages for the 1740–45 period. Total exports were 6.1 million pesos, while the sales value of imports was 12.8 million pesos, compared with an invoice value of 5.7 million pesos, leaving a gross profit of 7.1 million pesos. Dividends were 1.3 million with 5.8 million left over to cover all costs other than the invoice value of imports. The exports of 6.1 million pesos break down into only 1.2 million for commodity exports, while exports of treasure (mainly silver) were over half the total at 3.6 million, the rest being remittances by merchants and staff of 1.2 million, or 20 percent of the total. The gross profit margin (ratio to invoice value of sales) was huge, at over 125 percent, roughly the same for both companies, while net profits were estimated by Steensgaard at about 13 percent for the English and 10 percent for the Dutch company. These net profit figures indicate that the companies were not in any way exceptionally profitable, contrary to the implication by Wallerstein (1980), for example, that vast profits were extracted by the “core” from the “periphery.”

context but was later extended to the global stage, as in Parker and Smith (1978) and later work.

Another important source of silver, and also copper, in this period was Japan. Everyone is familiar with the idea of a secluded island forced open to world commerce by Commodore Perry in 1853; but there was a period (roughly from 1560 to 1640) when Japan was actively involved in world trade, both directly and indirectly, during which Portuguese and Dutch contacts played a major intermediary role between Japan on the one hand and China and Southeast Asia on the other. Silver exports to China and Southeast Asia were made through the Ryukyu Islands and also through the Dutch East India Company in exchange for Chinese silk and other products. The company, in turn, used the silver thus obtained for the purchase of pepper and spices in the Indonesian archipelago, and for cotton textiles in India for eventual shipment to Europe. Barrett (1990, table 7.4, p. 246) reports that Japan exported an average of 34 to 49 tons per year to China between 1560 and 1599, and 150 to 187 tons per year between 1600 and 1640.

Portugal first obtained a lucrative foothold in Japan when the Ming in 1557 banned trade with Japan because of the depredations of Japanese pirates along the southern coasts. Japanese merchants were eager to maintain supplies of raw and woven silk and other Chinese and Southeast Asian products, which they attempted to obtain from Chinese sources through Formosa, the Philippines, and Indochina. With Chinese merchants and emigrants established in Southeast Asian ports, the Ming ban on trade with China was effectively circumvented. The Portuguese took the opportunity to purchase large quantities of silk and other products at their base in Macau, with silver from the Americas, which they then exchanged in Japan for silver at better prices, in effect profiting by arbitraging the silk-silver price differential between China and Japan at a rate of 70–80 percent according to Iwao (1976, 6).

The unification of the country in the second half of the sixteenth century by the great warlord Hideyoshi after a century of civil war led to a boom in economic activity. In particular, the output of Japanese silver mines increased greatly because of a new smelting technology introduced by Korean miners in western Japan. Large amounts of silver came to be exported in return for greatly expanded imports of raw silk, which jumped fourfold according to Iwao (1976, 4). Hideyoshi maintained a privileged position for himself in the regulated trade with the Portuguese and the Spanish, having first claim on all the imports that they brought into the country. Lead ingots for ammunition was an important imported item, with firearms copied from Portuguese models being produced on the island of Tanegashima. After 1600 the new Tokugawa shogun continued the policy of regulated trade through the port of Nagasaki. At the same time the Tokugawa permitted licensed ships, the so-called vermilion-seal ships, to trade with Southeast

Asia, effectively reducing the monopoly power of the Portuguese in raw silk imports. Iwao (10) states that, in all, about 350 of these ships left Japan in the thirty-year period between the inception and cessation of the policy around 1640. Again, the main commodity exported was silver in return mostly for raw silk but for other products such as deerskins as well. Iwao (10) claims that Japan exported 130–60 thousand kilograms of silver over the period 1615–25, or as much as 30 to 40 percent of world silver production outside Japan. The ships that carried the silver were Japanese, Chinese, Dutch, and Portuguese.

The Dutch enjoyed a complete monopoly of Western trade with Japan after 1640, since they were able to persuade the shogun that the Catholic powers were intent on subverting his regime through proselytization by the Jesuits. The Japanese silver influx to Batavia between 1630 and 1680 was at least a third of the total inflow to the company from all sources, according to de Vries and van der Woude (1997, table 9.5). The Japanese bonanza increased the total trade revenue and net surplus over expenses very much over the 1630–50 period, (de Vries and van der Woude, table 9.4), and raised the profit rate for the company from its inception to 1650 to as high as 27 percent per annum (de Vries and van der Woude, 396).

Japanese silver production and exports both declined during the close of the seventeenth century as the seclusion policy of the Tokugawa took hold. China continued to obtain silver through imports, but now the source was increasingly from the Americas through Manila (von Glahn 1996, table 5).

1.3.3 Government Policy

The role of government policy in relation to trade during the 1500–1780 period was a very active one. Its character, however, was very different from what we have become familiar with in more recent times. Tariff policy for protective purposes, which we assume today to be the standard form of trade intervention, was not then of major importance. According to Davis (1966, 306), customs duties revealed “the influence neither of economists’ theories nor of ministers’ long-term commercial policies, but simply of urgent fiscal needs.” Many high customs duties were on noncompeting imports such as tea, giving rise to lucrative opportunities for smuggling. More ambitious interventions, such as the ill-fated “Cockayne project” to convert exports of raw wool into woollen cloth to increase domestic value-added and employment, succeeded only in disrupting trade before they were abandoned.

Government policy during this Age of Mercantilism was geared to the active promotion of positive trade balances by the establishment of chartered monopolies, and by the acquisition of overseas colonies as sources of raw materials and profitable re-exports and as markets for manufactures from the mother country. As Wilson (1949) and others have convincingly argued, the emphasis on obtaining specie was not irrational if it provided

the means for obtaining strategic imports such as naval stores from the Baltic, and Oriental wares such as tea and muslin for re-export to other European markets. In a classic formulation, Viner (1948) pointed out that the “power” of the state (primarily naval) was used to obtain “plenty” through trade, which could be taxed in turn to finance the sources of power. The history of the Anglo-Dutch wars of the seventeenth century and the Anglo-French wars of the eighteenth illustrate the links between commercial and geopolitical factors exemplified by Viner’s analysis.

The wars on the continent of Europe involving France, Prussia, and Austria were over territorial acquisition and dynastic aggrandizement. These became intertwined, however, with commercial conflicts in the New World and India, leading some to speak of the Seven Years’ War from 1756 to 1763 as the first “world” war. The bonanza opened up by the Iberian voyages of discovery led to a series of sustained conflicts between their predatory successors that was not to be resolved until the triumph of Britain at the end of the Napoleonic Wars. It is only within a framework such as this that we can obtain a proper perspective on the plethora of monopoly rights, navigation acts, bounties, drawbacks, prohibitions, and blockades that constituted trade policy during the Age of Mercantilism. Needless to say, such an attempt, fascinating as it would be, is well beyond the scope of this paper.

1.3.4 Trade after the Voyages of Discovery: Quantitative Trends

O’Rourke and Williamson (2001, table 1) assemble an extensive range of published estimates for particular channels of trade for the past five centuries, and compute growth rates of world trade for each of them. The results show that intercontinental trade grew at 1.26 percent per annum in the sixteenth century, and that growth fell to 0.66 percent per annum in the seventeenth century before rising back to 1.26 percent per annum in the eighteenth century. The growth rate for the entire 1500–1800 period was 1.06 percent per annum. Although this may look small to modern eyes it was certainly well ahead of the growth rate of world population during this period, which increased from 461 million in 1500 to 954 million in 1800, or at a rate of 0.24 percent per annum. While we do not have data it is highly unlikely that intercontinental trade as a whole grew faster than world population for any previous century; in this sense, the post-1500 period does mark a clear break with the past. Similarly, the qualitative evidence assembled above regarding the development of new trade routes, especially across the Atlantic, the growing volume of trade in particular commodities over those routes, and changing patterns of comparative advantage, also suggest that 1500 marked an important turning point in the history of world trade.

Nonetheless, the best measure of international commodity market integration remains international price convergence. Figure 1.2 plots markups for cloves, pepper, and coffee (O’Rourke and Williamson 2000, based on Bulbeck et al. 1998), where markups are defined as the ratio of European to

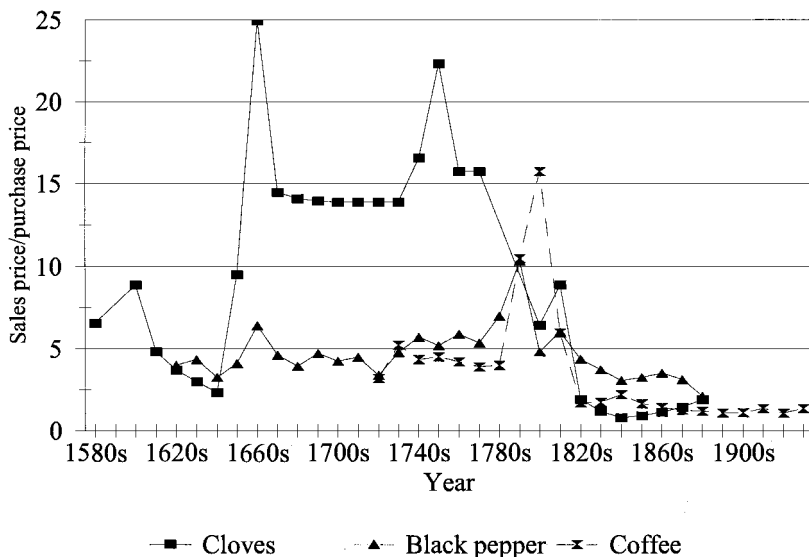


Fig. 1.2 Spice and coffee markups: Amsterdam versus Southeast Asia, 1580–1939

Asian price. The figure shows price convergence for cloves from the 1590s to the 1640s, but it was short-lived, since the spread rose to a 350-year high in the 1660s and maintained that high level during the Vereenigde Oostindische Compagnie (VOC) monopoly and up to the 1770s. The clove price spread fell steeply at the end of the French Wars, and by the 1820s was one-fourteenth of the 1730s level. This low spread was maintained across the nineteenth century. Between the 1620s and the 1730s the pepper price spread remained fairly stable, after which it soared to a 250-year high in the 1790s. By the 1820s, the pepper price spread of the early seventeenth century was recovered, and price convergence continued up to the 1880s, when the series ends. While there was some modest price convergence for coffee during the half century between the 1730s and the 1780s, the French Wars saw a dramatic rise in price spreads. At the war's end, price convergence resumed, so that the coffee price spread in the 1850s was one-sixth of what it had been in the 1750s, and in the 1930s it was one-thirteenth of what it had been in the 1730s. Thus, there is absolutely no evidence of commodity price convergence for these important Dutch imports prior to the nineteenth century. Was English trade in Asia any different than Dutch trade? Apparently not. Figure 1.3 plots the average prices received by the East India Company on its Asian textile sales in Europe, divided by the average prices it paid for those textiles in Asia. Again, there is no sign of declining markups (where markups include all trade costs, as well as any East India Company monopoly profits) over the century between 1664 and 1769. Figure 5 in

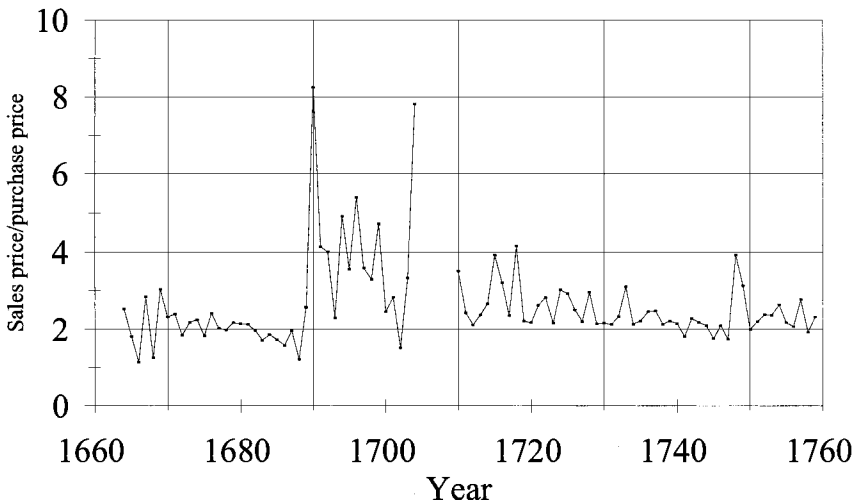


Fig. 1.3 Asian textile trade markups, 1664–1759

O'Rourke and Williamson (2000) reproduces Chaudhuri's markup figures for the East India Company's trade in pepper, saltpeter, tea, raw silk, coffee, and indigo, between about 1660 and 1710. With the possible exception of saltpeter, it would be very hard to establish a convincing case that markups were declining during this fifty-year period.

Of course, these price spreads were not driven solely, or even mainly, by the costs of shipping, but rather, and most importantly, by monopoly, international conflict, and government tariff and nontariff restrictions. For example, for pepper the markup in figure 1.2 was relatively stable at between 3 and 6 over the entire period, reflecting relatively competitive conditions in the pepper market. Where the Dutch were able to secure a monopoly, as with the cloves of the Spice Islands and the cinnamon of Ceylon, this ratio could become enormous, reaching 25 around 1640 for cloves and remaining at about 15 for the next century.⁴ Nonetheless, anything that impedes price convergence suppresses trade, and there is no evidence of secular, intercontinental commodity price convergence before the 1820s. Nor have scholars such as Menard (1991) uncovered much evidence of transport revolutions during this period (O'Rourke and Williamson 2000). What, then, drove the unprecedented growth in world trade in the three centuries following Columbus? Outward shifts in export supply and import demand is

4. The competition in the seventeenth century between the two great rival companies has been elegantly analyzed in terms of the Brander-Spencer duopoly model of strategic trade policy by Irwin (1991). He demonstrates the advantage of the Dutch institutional form in which the decision makers obtained a share not only of the profit but also of gross revenue.

the answer suggested by O'Rourke and Williamson (2001), who estimate that between 50 and 65 percent of the boom could have been due to European income growth alone.

1.3.5 The Economic Impact of World Trade: Economic Primacy within Europe

Economic geography models typically ask what the impact of international integration is on the relative welfare of core and periphery. One of the most notable features of this period of globalization, however, was a change in the location of the core itself; and such changes were intimately linked with the changing nature of international trade. In the case of Western Europe the discoveries were said to have induced a shift in the main locus of economic activity from the Mediterranean to the Atlantic, as exemplified by the rise of Antwerp, Amsterdam, Seville, Lisbon, and London relative to Venice and Genoa. This makes one think of intercontinental trade as displacing intra-European trade, and therefore illustrating a dramatic early instance of the importance of "globalization." This claim is disputed, however: According to Rapp (1975, 501), "it was the invasion of the Mediterranean, not the exploitation of the Atlantic, that produced the Golden Ages of Amsterdam and London." Production and marketing innovations in English woolen textiles, Dutch improvements in shipping, and a growing dependence of southern Europe on northern grain imports were important factors in shifting economic primacy away from the south to Holland and England before the trade with Asia and the New World grew sufficiently in importance. In the 1660s almost half of London's total exports were to the Mediterranean, compared with only 9 percent to the Americas and 6 percent to Asia (Davis 1962).⁵

The discoveries can be looked upon as creating the prospect for a "new global economy," displacing traditional trade routes and centers. As with the new economy of today it was not clear who the eventual winners were to be. The Portuguese were the pioneers and Spain controlled the territories in the New World, but neither of the Iberian states had the commercial and organizational capacity to fully exploit the opportunities that were opened up. Thus Portugal found it necessary from as early as 1501 to use Antwerp as the emporium through which to dispose of the spices obtained from the East. Antwerp also attracted the woolen cloth of England; silver, copper, and financial capital from South Germany; and many other items of European and colonial trade. The city grew rapidly in population to over 100,000 by the 1560s and could rightly be considered the first truly global emporium, with a range and diversity of commodities vastly exceeding those of

5. Subsequently, however, intercontinental trade grew in absolute and relative importance. The share of colonial commodities in the total imports of London rose from practically nil in 1600 to 24 percent in 1660 and to 46 percent of total English imports in 1750.

Venice, Bruges, and other earlier commercial centers. Despite its wealth and splendor, however, Israel (1989) argues that Antwerp was too passive to be a truly dynamic center of world trade, with no active involvement in creating and attracting business toward itself. Its dominance did not last long and the peak was passed before it succumbed to the depredations of the Spanish armies in the last quarter of the sixteenth century. Its entrepreneurs and skilled craftsmen mostly fled to the United Provinces, benefiting the rival that was to supplant it: Amsterdam.

The Dutch golden age is usually taken to begin from about 1590 and lasted until about 1740, with a peak in the second half of the seventeenth century. Maddison (1991, 31) states that Dutch income per head in 1700 was around 50 percent higher than in Britain, with the shares of industry and services in total employment substantially higher. He also cites Gregory King as estimating the Dutch savings rate to be 11 percent in 1688, as compared with 4 percent for Britain and France. The volume of international trade was approximately the same as in Britain, which meant that it was five times as high per capita. How a country whose population never exceeded 2 million during these years could have led the world economy for so long has been a never-ending source of wonder and controversy among historians down to the present day. Geography provides part of the answer: The foundations were laid by taking advantage of location, midway between the Bay of Biscay and the Baltic. Seville and Lisbon and the Baltic ports were too far apart for direct trade between the two terminal points, enabling the Dutch to provide profitable intermediation, carrying salt, wine, and cloth and later silver, spices, and colonial products eastward while bringing Baltic grains, fish, and naval stores to the west. The Dutch share of European shipping tonnage was enormous, well over half during most of the period of their ascendancy. With such a small population this concentration on trade, shipping, and manufacture required reliance on imported grain, most of which was from the Baltic regions. The urban population was over half of the total, with the 57 cities of the seven United Provinces making it one of the most densely populated parts of Europe. The Calvinistic ethic promoted thrift and education, with the lowest interest rates and the highest literacy rates in Europe. The abundance of capital made it possible to maintain an impressive stock of wealth, embodied not only in the large fleet but in the plentiful stocks of an array of commodities that were used to stabilize prices and take advantage of profit opportunities. The grading, sorting, and packaging of goods provided the essential services of a commercial hub.

In comparison with the larger European states the Dutch offset their inferiority in numbers with a concentration on commerce and finance that the others could not match, distracted as they were by dynastic ambitions and other rivalries. While Amsterdam and Holland were undoubtedly the leaders, the other provinces and cities cooperated in their own interest. Unlike

Antwerp, which was a dependency of the Habsburgs, Amsterdam and the United Provinces were fiercely independent, carrying on a long and successful military struggle against their erstwhile Habsburg masters while continuing to trade with them to obtain silver and other necessities for the operation of their global commercial system. War and trade were inseparable in the Age of Mercantilism, and the Dutch excelled at both, particularly at sea.

There has been an ongoing historical controversy about the modernity of the Dutch Republic in the seventeenth century. Identifying modernity with the industrial revolution, writers such as Braudel, Hobsbawm, and Wallerstein have stressed continuities with past patterns of trade and commercial organization, such as Dutch experience with the bulk trade of the Baltic in the case of Braudel, as opposed to any innovative departures. As against this Israel (1989), de Vries and van der Woude (1997), and Steensgaard (1982) have emphasized the originality of the Dutch in creating new institutions and practices to take advantage of the new opportunities opened up by the prospect of intercontinental trade. Steensgaard convincingly demonstrates how the fusion of public and private interests in creating a large and growing fund of "permanent, anonymous capital" that internalized protection costs while maintaining a steady annual dividend of 12.5 percent made the Dutch East India Company of the seventeenth century a truly revolutionary global organization. De Vries and van der Woude are also convincing in entitling their splendid work on the Dutch economy from 1500 to 1815 "The First Modern Economy," since, as they say, "the harbors of the Republic were in direct and continuous contact with Dutch settlements stretching from New Amsterdam and Curacao in the west to Formosa and Nagasaki in the east, and from Smeerenburg on Spitzbergen in the north to Capetown at the southern tip of Africa" (376).

1.3.6 The Economic Impact of World Trade: Trade and the Industrial Revolution

The industrial revolution that got underway in Britain in the late eighteenth century undoubtedly ushered in a new era in the evolution of the world economy, and confirmed the emergence of Britain as the dominant world economic power. As Wrigley (1988) has emphasized, the use of coal and other fossil fuels radically altered the constraints on the world's energy supplies. Until the eighteenth century even major technical innovations in Europe and Asia raised living standards only temporarily, until they were whittled down by induced population growth. Improvements could be made in specialization and the division of labor, and population growth held in check by such factors as the delay of marriages, but ultimately there was always a limit. This is what Wrigley called the "advanced organic economy" that can exhibit only "Smithian" growth, as opposed to the "mineral-based energy economy" that can exhibit "Schumpeterian" growth, contin-

uously raising per capita incomes as a result of incessant technical change, accompanied by a demographic revolution that reduces fertility rates to maintain the higher per capita incomes.

If silver was the main commodity in the Atlantic trade of the seventeenth century there is little doubt that the slave trade and its ramifications dominated that of the eighteenth century. Africa's participation in the world economy, long confined to the almost-legendary "golden trade of the Moors," grew to major proportions with the expansion of sugar, tobacco, and cotton cultivation in the New World on slave plantations. The eighteenth century accounted for about two-thirds of the total transfer of 9–10 million persons over the entire history of the trade from its inception around 1450 to its abolition in the nineteenth century. The last two decades of the eighteenth century in particular saw a surge in slave imports in response to the cotton boom triggered by the onset of the industrial revolution in Britain.

This pattern of relationship in the international trade of the Atlantic gave rise to the celebrated thesis of Eric Williams (1944) that the profits of the slave trade spurred the industrial revolution. This argument was heavily criticized by several prominent historians but sympathetically treated by William A. Darity and Barbara L. Solow, and by Findlay (1990), who provides the relevant references as well as a simple general-equilibrium model of the "triangular trade" among Europe (largely Britain), Africa, and the New World. O'Brien and Engerman (1991) are also somewhat receptive to the Williams thesis, after having been among its most prominent critics in earlier work. For a current review and references, see Morgan (2000).

A more general issue is the question of the role of foreign trade as a whole in relation to the origin and sustainability of the industrial revolution. The growing importance of international trade for the British economy is indicated by the rise in the share of exports in national income from 8.4 percent in 1700 to 14.6 percent in 1760 and 15.7 percent in 1801 (Crafts 1985, table 6.6). Even more interesting is the shift in the geographical distribution of British trade reported by Davis (1962). North America, Africa, and the West Indies took 12 percent of exports and provided 20 percent of retained imports in 1700, with these shares rising to 60 percent of exports and 32 percent of imports.⁶ Thus the triangular trade grew faster than total trade, which in turn grew faster than national income. Findlay (1982) considered a model in which a discrete but substantial technical innovation in the export sector is responsible for the initial spurt, rather than an exogenous shift in foreign demand. The apparent deterioration of Britain's terms of trade in the aftermath of the original spurt is consistent with this supply-side explanation; however, it may be that the existence of wide and growing foreign

6. Esteban (1997) presents valuable evidence on the rising share of manufactured exports to industrial output in Britain from 1700 to 1851.

markets made it possible for the impulse from technological change in the export sector not to be choked off by too sharp a decline in relative prices.

The triangular trade model in Findlay (1990) also predicts an expansion of demand for raw cotton imports into Britain and of slaves to the Americas as a consequence of the innovation in Manchester in the 1780s. There is abundant evidence for both, together with improvements in the terms of trade for the newly independent United States, where cotton was the main export, and also for the slave-exporting kingdoms on the west coast of Africa. One further interesting aspect of the intercontinental complex was the role of Indian cotton textiles. These were a major import of the East India Company, sold to Britain itself and re-exported to Africa in payment for slaves. Ultimately Lancashire, with its raw cotton imports from the slave plantations of the New World, displaced the long-standing Indian cotton textile industry, leading to the sad fate of the handloom weavers of Bengal. "Globalization" was thus fully at work at the turn of the eighteenth century to the nineteenth century, with both positive and negative consequences in all four continents.

1.4 The French and Napoleonic Wars

The previous sections have documented the growth and maturation of a well-defined global economy encompassing not just Europe and Asia, but Africa and the Americas as well. However, progress toward greater economic integration had been periodically impeded by war, as various European nations struggled for supremacy. This was not a new phenomenon: For example, Menard (1991, 240–43) finds a threefold increase in freight charges on the English-Continental wine trade during the fourteenth century, due to the onset of the Hundred Years' War. Figure 1.2 indicates increases in clove and pepper markups during the 1650s and 1660s, coinciding with the first and second Anglo-Dutch Wars (1652–54 and 1665–67); and the spike in the clove markup during the 1750s coincides with the outbreak of the Seven Years' War (1756–63). Even more noticeable are the increases in markups during the 1790s, coinciding with the outbreak of what have become known as the French and Napoleonic Wars. On 1 February 1793 the French National Convention declared war on Great Britain. The ensuing period of warfare, which lasted almost uninterrupted until 1815, had profound and long-lasting effects on international trade.

Within a month, the convention had prohibited the importation of large classes of British goods, and in October it banned all British manufactured goods; meanwhile, the British side adopted a policy of blockading the coast of France. As Eli Heckscher's (1922) classic account emphasizes, each side was motivated by a mercantilist desire to prevent the other's exporting, and thus acquiring precious metals, rather than by a desire to prevent the other side's importing food or other goods that might be useful to

the war effort.⁷ In addition, both the French and the British took measures against neutral shipping that transported enemy goods, but trade disruption was to become far more widespread in the aftermath of Napoleon's military victories over Austria in 1805 and Prussia in 1806. In November 1806, his Berlin Decree declared that the British Isles were under blockade (somewhat fancifully, since Britain controlled the seas); he also began applying these restrictions, not just in France, but in vassal states such as Spain, Naples, and Holland. The result was that virtually the entire Continent was now in a state of self-blockade against the exports of Britain, the overwhelmingly dominant industrial power of the time.⁸ In November 1807 the British declared that neutral ships could be seized if found to be carrying goods from enemy colonies directly to their mother countries; Napoleon retaliated by declaring that any neutral ship putting into a British port was fair prize, and could be seized. Faced with a situation where neutral ships carrying colonial goods to the Continent were now subject to seizure from either one side or the other, the U.S. government closed its ports in December to belligerent shipping and forbade its own ships to leave these ports.

This Embargo Act was repealed in 1809, and replaced with a Non-Intercourse Act which banned trade only with Britain and France (and which was clearly difficult to enforce, once ships had been given leave to sail to Europe). Russia broke with France in 1810; by 1813 Napoleon was in retreat and the Continental blockade was unraveling in several directions; and the blockade legislation was finally repealed following Napoleon's abdication in 1814. Nonetheless, for over twenty years leading governments had acted so as to severely disrupt international trade, and under the Continental system that disruption had been widespread and rather extreme. Did these measures seriously impede the integration of international commodity markets, or were they so undermined by smuggling, corruption, and fiscally motivated legal exceptions to the general protectionist rule as to have had no significant effect?

The literature on these issues is sparse, and to a large effect relies on qualitative evidence, or quantity data, rather than the price data we really need. In a classic article, Crouzet (1964) drew attention to the disruptive effects of the wars on Continental industry. The sea blockade by the British Royal Navy affected Atlantic-oriented export activities severely: shipbuilding, rope making, sailmaking, sugar refining, and the linen industry all suffered. Industrial activity shifted from the Atlantic seaboard to the interior, as import-substituting industries such as cotton textiles flourished behind the protection from British competition afforded by the Continental system.

7. The exception being that food exports were occasionally banned when domestic food supplies were scarce.

8. The only Continental country to hold out was Sweden, which was eventually forced to join the blockade in 1810.

The gains to interior regions such as Alsace were mirrored by the population loss in coastal cities such as Amsterdam, Bordeaux, and Marseilles. Naturally, Continental industries that had prospered under these wartime circumstances were unlikely to favor peacetime moves toward free trade; the effects of the wartime shock were thus to prove quite persistent, with path dependency being induced by the political process.

Frankel (1982) has produced more price-based evidence speaking to the issue of how Jefferson's Embargo Act affected trade and welfare in the United States and Britain during 1808 and early 1809. In 1807, the Liverpool price of cotton was 27.5 percent higher than the Charleston price; in the final two months of the embargo, the Liverpool price was 293.3 percent higher than the Charleston price (Frankel 1982, 307–08). Using prices for a number of key agricultural and industrial commodities, Frankel found that the British terms of trade deteriorated by between 41.9 percent and 49.7 percent during the dispute, while the U.S. terms of trade deteriorated by between 31.6 percent and 32.7 percent (Frankel, 304). The smaller impact on the U.S. economy was largely due to its success in developing import-substituting industries in states such as Pennsylvania. As in the French case, these new industries and their home states would form the basis of a powerful protectionist lobby in the years ahead, yet another example of politically induced hysteresis.

By how much did the wars increase the costs of trade between Britain and the Continent? According to Thomas Tooke, it cost between 30 and 50 shillings per quarter to ship wheat from the Baltic to Britain in 1810, as compared with 4s. 6d. in 1837.⁹ Hueckel (1973) has estimated that wartime freight, insurance, and licence costs accounted for between 25 and 40 percent of British wheat prices in 1812, and that over the period 1790–1815, wartime disruption raised the relative price of agricultural commodities in Britain by 28 percent (Hueckel, 369, 389). Not surprisingly, this raised landowners' incomes significantly (Hueckel; Williamson 1984), and equally unsurprisingly, British landowners tried to hold onto those gains after the war by means of strict protection.

It seems as though the Napoleonic Wars not only managed to disrupt the workings of international commodity markets in the years before 1815; in France and the United States the hothouse protection afforded by war created import-substituting industries that would require continuing protection for their survival. The resulting emergence of powerful protectionist constituencies would ensure that the road to free trade in the nineteenth century would not be as universal or as smooth as is sometimes supposed. North-South conflict over tariff policy would be a feature of American politics for decades to come; Crouzet (1964, 588) goes so far as to speculate that the instinctively interventionist French attitude toward protection evi-

9. Cited in Hueckel (1973, 369).

dent at the time he was writing (the early 1960s) might be traced back to these long-run political effects of the Napoleonic Wars.

Moreover, in Britain the Corn Laws survived until 1846. When Europe eventually moved toward freer trade in the late nineteenth century, it was largely as a result of Britain's example; might Britain have liberalized earlier had the Napoleonic Wars not intervened? Such an argument assumes that industrialization (which would have proceeded more rapidly in the absence of the war; Williamson 1984) would have led to the emergence of powerful export interests, which would have eventually triumphed as their political power grew. Would the extension of the franchise-favoring urban interests have predated the 1832 Reform Act, had war not occurred? Alternatively, might landlords have diversified into nonagricultural interests earlier, and been coopted by the free trade side as eventually happened (Schonhardt-Bailey 1991)? Did the Napoleonic Wars delay the advent of free trade in Britain and Europe by as much as several decades? We confess that we do not know the answers to these important questions.

1.5 World Trade 1815–1914

1.5.1 The Worldwide Nineteenth-century Decline in Transport Costs

Although canals also made a significant contribution to commodity market integration (Slaughter 1995), steamships were the most important nineteenth-century innovation in shipping technology.¹⁰ In the first half of the century, steamships were mainly used on rivers, the Great Lakes, and inland seas such as the Baltic and the Mediterranean. A regular transatlantic steam service was inaugurated in 1838, but until 1860 steamers mainly carried high-value goods like passengers and mail, similar to those carried by airplanes today (Cameron 1989, 206). As late as 1874, steamships carried 90 percent of the ginger, 90 percent of the poppyseed, 90 percent of the tea, and 99 percent of the cowhides from Calcutta to Britain, but only 40 percent of the jute cuttings and one-third of the rice (Fletcher 1958, 561).

A series of innovations in subsequent decades helped make steamships more efficient: the screw propeller, the compound engine, steel hulls, bigger size, and shorter turnaround time in port. Another important development was the opening of the Suez Canal on 17 November 1869. Far Eastern trade was still dominated by sail: In the absence of sufficient coaling stations around the coast, the trip around Africa by steamer required carrying too much coal. The compound engine reduced fuel requirements, and the Suez Canal made it possible to pick up coal at Gibraltar, Malta, and Port Said, in addition to halving the distance from London to Bombay. Not only did the Suez Canal make it possible for steamships to compete on Asian routes,

10. This section draws heavily on O'Rourke and Williamson (1999, chap. 3).

but it was of no use to sailing ships, which would have to be towed for the roughly 100-mile journey. Before 1869, steam tonnage had never exceeded sail tonnage in British shipyards; in 1870, steam tonnage was over twice as great as sail, and sail tonnage exceeded steam in only two years after that date (Fletcher 1958).

The other major nineteenth-century development in transportation was, of course, the railroad. The Liverpool-Manchester line opened in 1830; early Continental emulators included Belgium, France, and Germany. The growth in railway mileage during the late nineteenth century was phenomenal, particularly in the United States, where trains would play a major role in creating a truly national market. Indeed, transport costs between the American Midwest and East Coast fell even more dramatically than transatlantic transport costs during the late nineteenth century. Drawing on American sources, the British Board of Trade published in 1903 an annual series of transport costs for the wheat trade between Chicago, New York, and Liverpool. It cost 6 shillings and 11 pence to ship a quarter of wheat by lake and rail from Chicago to New York in 1868. The cost using rail alone was 10s. 2d. The cost of shipping a quarter of wheat from New York to Liverpool by steamer was 4s. 7 1/2d.¹¹ In 1902, these costs had fallen to 1s. 11d., 2s. 11d., and 11 1/2d., respectively. While the percentage decline in transatlantic costs was greater, in absolute terms it was the American railways that did most of the work in reducing price gaps between producer and consumer.¹² In any case, regional price convergence within the United States was dramatic. The wheat price spread between New York City and Iowa fell from 69 to 19 percent from 1870 to 1910, and from 52 to 10 percent between New York City and Wisconsin (Williamson 1974, 259).

The railroad had similar effects elsewhere. Metzger (1974) provided the evidence for Russia, where railway construction took off after the mid-1860s. He finds a clear decline in St. Petersburg-Odessa price gaps for wheat and rye, starting in the 1870s; bilateral grain price differentials declined for a wider sample of nine markets between 1893 and 1913. Corresponding to this price convergence was a growing regional dispersion of wheat and rye production, as regions specialized according to their comparative advantage. Hurd (1975) has documented the predictable consequences of the railroad for Indian food grain prices, as internal transport costs were reduced by about 80 percent. The coefficient of variation of wheat and rice prices across districts fell from over 40 percent in 1870 to well below 20 percent in the decade before World War I; moreover, the coefficient of variation was consistently higher among India's districts without railways than among districts with railways.

What was the impact of these transport innovations on the cost of mov-

11. These figures imply that transport costs from Chicago to Liverpool were about 19 percent of the New York wheat price in 1868.

12. Harley's (1980) data tell a similar story.

ing goods between countries? Harley's (1988) index of British ocean freight rates remains relatively constant between 1740 and 1840, before dropping by about 70 percent between 1840 and 1910. The North (1958) freight rate index among American export routes drops by more than 41 percent in real terms between 1870 and 1910. These two indices imply a decline in Atlantic-economy transport costs of about 1.5 percent per annum, or a total of 45 percentage points up to 1913. The transport revolution was not limited to the Atlantic economy: Harlaftis and Kardasis (2000) have shown that the declines in freight rates between 1870 and 1914 were just as dramatic on routes involving Black Sea and Egyptian ports as on those involving Atlantic ports. Meanwhile, the tramp charter rate for shipping rice from Rangoon to Europe, for example, fell from 73.8 to 18.1 percent of the Rangoon price between 1882 and 1914;¹³ the freight rate on coal (relative to its export price) between Nagasaki and Shanghai fell by 76 percent between 1880 and 1910; and total factor productivity on Japan's tramp freighter routes serving Asia advanced at 2.5 percent per annum in the thirty years between 1879 and 1909 (Yasuba 1978, tables 1 and 5).

1.5.2 Nineteenth-century Trade Policy: Two Steps Forward, One Step Back

Bairoch (1989, 7) has described European trade policy after Waterloo as "an ocean of protectionism surrounding a few liberal islands."¹⁴ Gradually, however, the demand for trade liberalization in Britain grew, partly under the influence of economists like David Ricardo, partly as a result of the growing power of urban interests, symbolized by the Reform Act of 1832. The proglobalization movement applied to both commodity and factor markets. Skilled workers were allowed to emigrate in 1825, an option that had not been available to them since 1719. A new Corn Law Act in 1828 abandoned import prohibitions for grains, replacing them with a sliding-scale tariff that varied inversely with the domestic price of grain. Various tariffs were reduced again in 1833. Robert Peel allowed the export of machinery in 1842 (banned since 1774), abolished the export tax on wool, and reduced protection on grains and other goods still further. Tariffs were again reduced in 1845. Britain finally made the decisive move toward free trade by repealing the Corn Laws in 1846.

The British example was followed by the rest of Europe, but much more slowly:

Before 1860 only a few small Continental countries, representing only 4% of Europe's population, had adopted a truly liberal trade policy. These were the Netherlands, Denmark, Portugal and Switzerland, to which we

13. The Asian material that follows (in this section and later) draws on Williamson (2000, 2002).

14. This section draws heavily on O'Rourke and Williamson (1999, chaps. 3, 6), who in turn draw heavily on Bairoch (1989), the standard reference on European trade policy in this period.

may add Sweden and Belgium (but only from 1856–7 onwards), and even these maintained some degree of protection. (Bairoch 1993, 22)

The Cobden Chevalier treaty between France and the United Kingdom was not signed until 23 January 1860, but, although delayed, the signature heralded a decisive shift toward European free trade. The treaty abolished all French import prohibitions, replacing them with ad valorem duties not to exceed 30 percent. Britain reduced wine tariffs by more than 80 percent, admitted many French products duty free, and abolished the export duty on coal. Most importantly, perhaps, the treaty's use of the most-favored-nation (MFN) clause established the principle of nondiscrimination as a cornerstone of European commercial practice. The clause stipulated that each country would automatically extend to the other any trade concessions granted to third parties. Most-favored-nation clauses were inserted into the many bilateral trade treaties that followed in the ensuing years, ensuring that bilateral concessions were generalized to all. France and Belgium signed a treaty in 1861; a Franco-Prussian treaty was signed in 1862; Italy entered the "network of Cobden-Chevalier treaties" in 1863 (Bairoch 1989, 40); Switzerland in 1864; Sweden, Norway, Spain, the Netherlands, and the Hanseatic towns in 1865; and Austria in 1866. By 1877, less than two decades after the Cobden Chevalier treaty and three decades after British Repeal, Germany "had virtually become a free trade country" (Bairoch, 41). Average duties on manufactured products had declined to 9–12 percent on the Continent, a far cry from the 50 percent British tariffs, and numerous prohibitions elsewhere, of the immediate post-Waterloo era (Bairoch, table 3, p. 6, and table 5, p. 42).

Until the 1870s, therefore, European trade policy trends were reinforcing the impact of the transport cost declines outlined earlier. Things would soon change, however. The turning point came in the late 1870s and 1880s, when the impact of cheap New World and Russian grain began to make itself felt in European markets: For example, real British land rents fell by over 50 percent between 1870 and 1913. Almost all of this British decline can be attributed to international commodity market integration (O'Rourke and Williamson 1994); more generally, by the late nineteenth century international trade was having a profound impact on income distribution, lowering the incomes of landowners relative to those of workers throughout Europe (Lindert and Williamson, chap. 5 in this volume). Wherever landed interests were powerful enough, the legislative reaction was predictable. The German turning point came in 1879, when Bismarck protected both agriculture and industry. While the specific tariffs started low, they were raised in 1885, and again in 1887, reaching the equivalent of about 33 percent ad valorem on wheat and 47 percent on rye. In France, tariffs were raised in the 1880s, but the protectionist breakthrough is commonly taken to be 1892 when the Méline tariff was adopted; by 1894, the

duty on wheat was equivalent to an *ad valorem* rate of 32 percent. In Sweden, agricultural protection was reimposed in 1888, and industrial protection was increased in 1892. Italy had been a free trader in the wake of unification, but shortly thereafter it introduced moderate tariffs in 1878, followed by rather more severe tariffs in 1887.

There was thus a common pattern across western Europe of liberalization followed by a reversion to protection, prompted by the distributional effects of the grain invasion. There were exceptions; for example, liberalization was both shorter and less dramatic in Iberia. Other small countries were more liberal in the wake of the grain invasion; Denmark, for example, adhered to agricultural free trade throughout, switching from being a net grain exporter to a net grain importer (to feed its booming animal husbandry).¹⁵ The Netherlands followed a similar path, maintaining free trade throughout the period. Dutch farmers also adopted improved techniques, and developed a strong export trade in animal products, fruit, and vegetables (Tracy 1989, 23). Both Belgium and Switzerland maintained free or nearly free grain imports, although they did impose some duties on animal products, as well as moderate duties on manufactured goods. Most importantly, the United Kingdom also maintained free trade, despite some domestic dissension.

In summary, there was a major retreat from open trade policies in Europe toward the end of the nineteenth century, triggered largely by pressure from landowners. Transport cost declines led to distributional changes, which in turn prompted an attempt by the losers to insulate themselves from the international economy. Moreover, it turns out that countries such as Denmark that retained agricultural free trade were less vulnerable to the agricultural output and land price reductions that globalization implied (O'Rourke 1997). Elsewhere, it seems that globalization undermined itself.

New World landowners benefited from free trade, of course, but this does not mean that New World trade policy was any more liberal. In the United States, those infant industries mentioned earlier that sprang up during the French Wars had formed the basis for a long-standing Northern protariff lobby: Northern victory in the Civil War had predictable consequences for subsequent tariff policy. Tariffs were raised during the war for revenue purposes, but Republican domination of Congress would ensure that they remained exceptionally high for a very long time thereafter.

Canada also protected manufacturing, especially after 1878 when the conservatives were elected on a protectionist platform. In Australia, the Victoria tariff bill of 1865 allowed for maximum *ad valorem* tariffs of 10 percent, but by 1893, after a succession of tariff increases, the maximum rates stood at 45 percent (Siriwardana 1991, 47). The first federal tariff of

15. It did, however, impose tariffs on various manufactured goods: Manufactured textiles faced duties between 20 and 25 percent (Bairoch 1989, 81).

1902 represented a compromise between protectionist Victoria and the other more liberal colonies, but protection was greatly strengthened in 1906 and 1908 (Bairoch 1989, 146–47) and it proved to be remarkably enduring.

While the third quarter of the nineteenth century saw an easing of protection in Latin America, tariffs rose again in the final quarter. Argentina increased tariffs from the 1870s onward (Bairoch 1989, 150–51). By 1913, average tariffs were almost 35 percent in Uruguay, almost 40 percent in Brazil, and over 45 percent in Venezuela (Bulmer-Thomas 1994, 142). It appears that the highest tariff barriers were in the New World, not Europe. The tariffs were directed toward manufactures and they served to favor scarce urban labor and capital while penalizing possession of abundant land.

Late-nineteenth-century trade policy thus offset the impact of transport cost declines in both Europe and the New World. The opposite was the case in Asia, where Japan switched from virtual autarky to free trade in 1858. Other Asian nations—China, Siam, Korea, India, and Indonesia—also followed this liberal path, mostly forced to do so by colonial dominance or gunboat diplomacy. This shift had largely taken place from the 1860s; from then on, commodity price convergence was driven entirely by sharply declining transport costs in Asia without much change in tariffs one way or the other.

1.5.3 Nineteenth-century Commodity Market Integration

What impact did these technological and political developments have on international commodity markets? As we have seen, world trade grew at a little over 1 percent per annum between 1500 and 1800, but it has grown at around 3.5 percent per annum since 1820, with the nineteenth- and twentieth-century growth rates being roughly equal (Maddison 1995). Indeed, the nineteenth-century growth rate was more impressive than the twentieth-, in the sense that world gross domestic product (GDP) growth was twice as high since 1913 as it was between 1820 and 1913: The implication is that trade ratios (e.g., the ratio of merchandise exports to GDP) grew more rapidly during the nineteenth century than they did during the twentieth. Table 1.3 documents the eightfold increase in this ratio worldwide between 1820 and 1913, when merchandise exports accounted for almost 8 percent of world GDP and more than 16 percent of western European GDP.

The nineteenth century marks a dramatic break with the past insofar as intercontinental commodity market integration is concerned, since as we have seen there was little or no intercontinental price convergence prior to 1800. By contrast, figure 1.2 indicated that there was substantial Dutch-Asian price convergence during the nineteenth century, while late-nineteenth-century price convergence more generally has been extensively documented. For example, Liverpool wheat prices exceeded Chicago prices

Table 1.3 Merchandise Exports as a Share of GDP (%)

Country	1820	1870	1913	1929	1950	1973	1992	1998
France	1.3	4.9	7.8	8.6	7.6	15.2	22.9	28.7
Germany	n.a.	9.5	16.1	12.8	6.2	23.8	32.6	38.9
The Netherlands	n.a.	17.4	17.3	17.2	12.2	40.7	55.3	61.2
United Kingdom	3.1	12.2	17.5	13.3	11.3	14.0	21.4	25.0
Total Western Europe	n.a.	10.0	16.3	13.3	9.4	20.9	29.7	n.a.
Spain	1.1	3.8	8.1	5.0	3.0	5.0	13.4	23.5
U.S.S.R./Russia	n.a.	n.a.	2.9	1.6	1.3	3.8	5.1	10.6
Australia	n.a.	7.1	12.3	11.2	8.8	11.0	16.9	18.1
Canada	n.a.	12.0	12.2	15.8	13.0	19.9	27.2	n.a.
United States	2.0	2.5	3.7	3.6	3.0	4.9	8.2	10.1
Argentina	n.a.	9.4	6.8	6.1	2.4	2.1	4.3	7.0
Brazil	n.a.	12.2	9.8	6.9	3.9	2.5	4.7	5.4
Mexico	n.a.	3.9	9.1	12.5	3.0	1.9	6.4	10.7
Total Latin America	n.a.	9.0	9.5	9.7	6.2	4.6	6.2	n.a.
China	n.a.	0.7	1.7	1.8	2.6	1.5	2.3	4.9
India	n.a.	2.6	4.6	3.7	2.9	2.0	1.7	2.4
Indonesia	n.a.	0.9	2.2	3.6	3.4	5.1	7.4	9.0
Japan	n.a.	0.2	2.4	3.5	2.2	7.7	12.4	13.4
Korea	0.0	0.0	1.2	4.5	0.7	8.2	17.8	36.3
Taiwan	n.a.	n.a.	2.5	5.2	2.5	10.2	34.4	n.a.
Thailand	n.a.	n.a.	2.5	5.2	2.5	10.2	34.4	n.a.
Total Asia	n.a.	1.3	2.6	2.8	2.3	4.4	7.2	n.a.
World	1.0	4.6	7.9	9.0	5.5	10.5	13.5	17.2

Source: Maddison (1995, 38); these have been updated for some countries using Maddison (2001, 363) and for other countries using the raw export and GDP data given in Maddison (2001), where these produced results consistent with the earlier data series.

Note: n.a. = not available.

by 57.6 percent in 1870, by 17.8 percent in 1895, and by only 15.6 percent in 1913 (O'Rourke and Williamson 1994, based on Harley 1980). London-Cincinnati price differentials for bacon were 92.5 percent in 1870, over 100 in 1880, 92.3 in 1895, and 17.9 in 1913. The Boston-Manchester cotton textile price gap fell from 13.7 percent in 1870 to -3.6 percent in 1913; the Philadelphia-London iron bar price gap fell from 75.0 to 20.6 percent, while the pig iron price gap fell from 85.2 to 19.3 percent, and the copper price gap fell from 32.7 to almost zero; the Boston-London hides price gap fell from 27.7 to 8.7 percent, while the wool price gap fell from 59.1 to 27.9 percent. Commodity price convergence can also be documented for coal, tin, and coffee (O'Rourke and Williamson).

Continental European grain tariffs did succeed in impeding international price convergence (O'Rourke 1997), but O'Rourke and Williamson (1995) document significant price convergence in the British-Swedish case.

Meanwhile, in Asia trade policy strengthened the impact of technological developments.¹⁶ The cotton price spread between Liverpool and Bombay fell from 57 percent in 1873 to 20 percent in 1913, and the jute price spread between London and Calcutta fell from 35 to 4 percent (Collins 1996, table 4). The same events were taking place even farther east, involving Burma and the rest of Southeast Asia: The rice price spread between London and Rangoon fell from 93 to 26 percent in the four decades prior to 1913 (Collins, table 4). Finally, the impact of transport revolutions on commodity price convergence involving the eastern Mediterranean was just as powerful. The average percentage by which Liverpool cotton prices exceeded Alexandria price quotes was as follows: 1824–32, 42.1; 1837–46, 63.2; 1863–67, 40.8; 1882–89, 14.7; 1890–99, 5.3 (Issawi 1966, 447–48). Commodity market integration in the late nineteenth century was both impressive in scale and global in scope; indeed, third world economies were becoming more rapidly integrated with the rest of the world than their Atlantic economy counterparts during this period (Williamson 2002).

1.5.4 Trade in the Late Nineteenth Century: Conclusion

By 1913, international commodity markets were vastly more integrated than they had been in 1750; world trade accounted for a far higher share of world output; and a far broader range of goods, including commodities with a high bulk-to-value ratio, was being transported between continents. These trends, in combination with rapid industrialization in northwest Europe and its overseas offshoots, had a dramatic impact on the worldwide division of labor. By the late nineteenth century there was a stark distinction between industrial and primary producing economies. According to the available figures (given in table 1.4), primary products accounted for between 62 and 64 percent of total world exports in the late nineteenth century; in 1913, food accounted for 27 percent of world exports, agricultural raw materials for 23 percent, and minerals for 14 percent. The United Kingdom and northwest Europe were net importers of primary products and net exporters of manufactured goods. North America still exported primary products, but rapid industrialization there was leading to a more balanced trade in manufactures over time. Meanwhile, Oceania, Latin America, and Africa exported virtually no manufactured goods, and Asian exports were overwhelmingly composed of primary products; for example, according to Lamartine Yates (1959, 250) primary products accounted for more than three-quarters of India's exports in 1913. By contrast, textiles had still accounted for more than half of the English East India Company's exports to Europe in the late 1750s (table 1.1, panel C). By 1811–12 the share of piece-goods in India's exports had declined to 33 percent; the figure was 14 percent just three years later, and only 4 percent in 1850–51. By 1910–11 the

16. The remainder of this paragraph draws on O'Rourke and Williamson (2000).

Table 1.4 World Trade, 1876–80 and 1913 (\$ millions)

Region	1876–80			1913		
	Exports	Imports	Balance	Exports	Imports	Balance
<i>Primary Products</i>						
United States and Canada	600	330	270	2,101	1,542	559
United Kingdom	117	1,362	–1,245	760	2,596	–1,836
Northwestern Europe	840	1,800	–960	3,064	5,894	–2,830
Other Europe	750	515	235	1,793	1,689	104
Oceania				455	129	326
Latin America				1,531	595	936
Africa				680	307	373
Asia				1,792	949	843
All four	1,413	575	838			
Total	3,720	4,582	–862	12,176	13,701	–1,525
<i>Manufactures</i>						
United States and Canada	100	190	–90	734	891	–157
United Kingdom	865	225	640	1,751	601	1,150
Northwestern Europe	1,080	450	630	3,318	1,795	1,523
Other Europe	210	330	–120	578	1,133	–555
Oceania				9	370	–361
Latin America				51	879	–828
Africa				26	451	–425
Asia				461	1,247	–786
All four	35	1,285	–1,250			
Total	2,290	2,480	–190	6,928	7,367	–439

Source: Lamartine Yates (1959).

Note: World trade does not balance due to unrecorded trade.

share of cotton goods in exports had increased to 6 percent, but this was dwarfed by the share of raw cotton in exports (17 percent; Chaudhuri 1983, 842, 844). The contrast with the situation 150 years earlier was striking; the impact of this changing division of labor on growth in both the core and periphery would become a major subject of economic debate in the twentieth century, particularly in the periphery. In turn, this would eventually have significant effects on policy in the developing world.

1.6 World Trade 1914–2000

1.6.1 The First World War and Its Aftermath

World War I brought the liberal economic order of the late nineteenth century to an abrupt end: While there were signs of a globalization backlash from the 1870s onward, 1914 clearly marked a dramatic and discontinuous break with the past. Each side attempted to disrupt the other's trade,

through blockades or U-boat campaigns; even more serious was the centralized control that even traditionally liberal governments, such as the British, imposed on trade and shipping, with scarce cargo space necessitating that government dictate both the composition of imports through a system of quotas and the allocation of shipping capacity. This was, of course, part of a more general shift toward massive and unprecedented government intervention in the economy, with military expenditure absorbing 38 percent of U.K. national output during 1916–17, and 53 percent of German national output during 1917 (Feinstein, Temin, and Toniolo 1997, 189). In Britain, the McKenna tariff of 1915, designed to save on scarce shipping space, was explicitly protectionist. Moreover, this shift was not reversed after the war: The Key Industries Act of 1919 and the Safeguarding of Industries Act of 1921 introduced additional protection (Kindleberger 1989). These acts did not represent widespread and severe protection—at the beginning of the 1930s, only £13 million worth of imports were subject to these tariffs, compared with the £138 million subject to traditional revenue duties, and a total import bill of £1030 million (Kenwood and Loughheed 1983, 216). Nonetheless, they represented a break with Britain's free-trade past.

Surprisingly, import shares fell only marginally in Britain during the war; it was exports that collapsed (from 20 to 13 percent of GDP) as resources were diverted to the war effort and raw materials for export industries were rationed. In France, the import share rose from 20 percent before the war to 37 percent during it; again, exports fell sharply.¹⁷ Correspondingly, export ratios rose in neutral economies, such as Sweden; in Japan; and in North America, where grain production expanded sharply during the war years to meet Allied demand. It was this reorientation of trade, and the consequent supply responses, that led to some of the most destructive long-term economic consequences of the war: Agricultural oversupply would be a chronic problem contributing to trade tensions after the war. In addition, the absence of European manufactured exports on world markets stimulated the expansion of industrial capacity, above all in the United States and Japan, but also in countries such as India, Australia, and Latin America. Just as excess food supplies would lead to pressures for agricultural protection, so the hothouse stimulation of industrial “war babies” would lead to postwar demands for industrial protection in India, Australia, and Argentina (Kenwood and Loughheed 1983, 185–86; Eichengreen 1994, 88–89). Once again, wartime shocks would have a long-run impact on trade flows and resource allocation, in part because of their impact on policy. To this (by now, traditional) mechanism was added the impact of the emergence of new nation states in Europe (Feinstein, Temin, and Toniolo 1997, 28–32). Although nationalist leaders in today's aspiring nation states, such as Scotland and Quebec, speak of a free-trading future (Alesina and Spolaore

17. Based on Jones and Obstfeld (1997) and Mitchell (1992).

1997), in the early twentieth century independence was typically costly from an economic standpoint, involving the adoption of protectionist policies (Johnson 1965).

The end of war did not imply an end to protection. Subsequent British tariff acts have already been mentioned; quantitative restrictions on trade remained prevalent, particularly in Central and Southeastern Europe, due largely to shortages of food, raw materials, and currency problems; meanwhile, antidumping legislation was introduced in Japan in 1920, and in Australia, New Zealand, the United Kingdom, and the United States in 1921. In 1922 the United States, whose government was once again in Republican hands, passed the Fordney-McCumber tariff act, which substantially raised tariffs (Kindleberger 1989, 162–63; League of Nations 1942, 18; Irwin 1998b, 328). While quantitative restrictions were eventually abolished, these were replaced with high tariffs; for example, average tariffs on industrial products were 28 percent in Yugoslavia, compared with a prewar figure of 18 percent. The corresponding figures for France were 25.8 percent, as compared with 16.3 percent; and for Germany, 19 percent, as compared with 10 percent (Liepmann 1938, cited in Irwin 1993, 105).

The international community was active, but ultimately ineffectual, in calling for liberalization. Appeals for the resumption of free trade were made by the Supreme Economic Council in 1920, by the Genoa Conference in 1922, and by the World Economic Conference in 1927, among others. In its retrospective on the interwar period, the League of Nations itself ruefully acknowledged the paradox that “the international conferences unanimously recommended, and the great majority of Governments repeatedly proclaimed their intention to pursue, policies designed to bring about conditions of ‘freer and more equal trade’; yet never before in history were trade barriers raised so rapidly or discrimination so widely practised” (League of Nations 1942, 101). Few if any commentators have dissented from this negative assessment.

The symbol of interwar protection remains the American Smoot-Hawley tariff, whose roots lay in the wartime extension of non-European agricultural supplies mentioned earlier. With the resumption of European supplies, overproduction began to be a chronic problem, and agricultural prices fell—wheat prices, for example, fell sharply from 1925. Continental European protection made the situation of New World suppliers worse; while some exporting governments (the Canadians and Americans) attempted to keep domestic prices high, the Soviet Union’s aim of earning sufficient revenues to pay for capital equipment imports led it to export more as prices fell, thus exacerbating the problem (Kindleberger 1973, chap. 4). The fact that Russian peasants’ supply curves were upward sloping, unlike that of their government, inevitably led to conflict and widespread suffering (Kindleberger 1989, 184).

Herbert Hoover thus promised U.S. farmers tariff protection, and called

a special session of Congress in early 1929 to deliver on his pledge. The Smoot-Hawley tariff, which emerged in mid-1930, protected industry as well as agriculture, and represented a substantial increase in overall protection.¹⁸ Deflation over the course of the next two years would increase average tariffs by an even greater extent (Crucini 1994; Irwin 1998a). In contrast to the nineteenth-century experience, the United States was now sufficiently important that the tariff triggered a wave of tariff increases in countries such as Canada, France, Italy, Spain, and Switzerland (Kindleberger 1989; Jones 1934), although the extent to which the more general rise in tariffs that followed was due to retaliation, as opposed to various domestic causes, remains subject to dispute (Eichengreen 1989; Irwin 1998b). At a minimum, the tariff sent the signal that the United States was not willing to be the unilateral guarantor of open markets that the United Kingdom had been before the war. In any event, the increases were severe: By 1931, average tariffs on foodstuffs had risen to 83 percent in Germany, 53 percent in France, 66 percent in Italy, 60 percent in Austria, and 75 percent in Yugoslavia (Liepmann 1938, cited in Irwin 1993, 105). Even the traditionally free-trading Netherlands abandoned a three-centuries-long tradition of open markets when it intervened to prop up agricultural prices in 1931 (Kindleberger 1989, 178–79).

In 1932 Britain took a decisive move toward protection, establishing 10 percent tariffs on a wide variety of imports; for a few months, little Ireland was one of the only free-trade holdouts in Europe, but later that year it succumbed as Éamon de Valera was elected, and embarked on a wholesale trade war with the United Kingdom. In opting for a policy of import substitution, Ireland was typical of primary producers around the periphery, most notably in Latin America, and as in Latin America the policy seemed initially to be successful in insulating the economy from the worst effects of the Great Depression (Diaz Alejandro 1984; O'Rourke 1991). Certainly, the traditional export-oriented policy seemed no longer to be working: Between 1928–29 and 1932–33, the value of exports fell by over 80 percent in Chile; by 75–80 percent in China; by 70–75 percent in Bolivia, Cuba, Malaya, Peru, and Salvador; by 65–70 percent in thirteen other primary exporters; and by over 50 percent in another twenty-two (Kindleberger 1973, 191).

The Great Depression was of course another major reason for the adoption of severe protection, and not just in the periphery. In France, quotas became widespread during the 1930s, while in Germany the Nazi regime in-

18. How substantial depends on how the average tariff is measured. As a share of total imports, tariff revenues in 1931 were around 18 percent, which (as De Long 1998 points out) would have been a low tariff by nineteenth-century standards, and was less than the level attained at the start of the century (De Long, 358; Eichengreen 1989, 16). As a share of dutiable imports, however, tariff revenues were higher in 1931 and 1932 than they had been in 1900, and, Irwin (1998b) claims, the Smoot-Hawley tariffs were “arguably the highest since the Civil War” (327).

stituted totalitarian quantitative controls on foreign trade reminiscent of a war economy. By 1937, 58 percent of French imports were covered by some sort of quantitative restriction, with the corresponding figures for Switzerland, the Netherlands, and Belgium being 52, 26, and 24 percent respectively (Haberler 1943, cited in Irwin 1993, 108). Irwin (1993) makes the point that there was a trade-off between countries' adherence to monetary orthodoxy and their adherence to free trade orthodoxy: The four countries just mentioned stuck rigidly to the gold standard for much of the 1930s, leading to deflation, overvaluation, and balance-of-payments difficulties. Quantitative restrictions were in large measure a response to these difficulties. In Central and Eastern Europe, countries responded to similar problems by following Germany's lead and introducing widespread exchange controls; this "pernicious bilateralism", as Irwin (1993) calls it, combined with the imperial preferences of Britain (established in Ottawa in 1932) and other colonial powers, led to the complete breakdown of the MFN principle of nondiscrimination.

Beginning in 1932, there were several signs that at least some countries were trying to moderate, if not reverse, the increases in protectionism of the previous year or two, although the World Economic Conference of 1933 proved a failure. In 1932 what we now know as the three Benelux countries agreed at Ouchy to start cutting tariffs on each others' exports; this agreement came to nothing as it required other countries, with whom the Ouchy group had MFN relations, to waive their MFN rights, which the United Kingdom refused to do. The Oslo group, comprising the Ouchy three, plus Denmark, Norway, Sweden, and (eventually) Finland, had met in 1930 for discussions on tariff reform, and agreed in The Hague in 1937 to a program of eliminating quotas between member states—on the basis that this would not violate others' MFN rights, which applied only to tariffs. Most importantly, perhaps, the 1932 U.S. presidential election led to the appointment of the strongly pro-free trade Cordell Hull as secretary of state. In 1934, the U.S. Reciprocal Trade Agreements Act delegated authority to the executive to conclude trade agreements, which Hull proceeded to do. By 1939, the United States had signed twenty treaties with countries accounting for 60 percent of its trade, the most important of which was with the United Kingdom—although this last treaty only came into effect in 1939, and was soon overtaken by other events.

One interesting theme that emerges from the literature on interwar trade policy concerns the role of the MFN principle during the period. As mentioned previously, the common perception is that the MFN clause played a crucial role in the years after 1860 in speeding up Europe's shift to free trade, by generalizing concessions that were being made anyway. By contrast, the literature has not been so kind regarding the impact of the clause during the 1920s and 1930s. We have already mentioned the chilling effect that the MFN principle had on the Ouchy group's attempts to promote

more rapid regional trade liberalization; more generally, it has long been recognized that once countries are bound together in a web of MFN treaty obligations, and attempt to advance tariff reductions through bilateral deals, a free-rider problem may arise, with all parties waiting to reap the benefits of other parties' agreements. The League of Nations had been a persistent advocate of the principle of nondiscrimination, but was forced to admit in 1942, in its review of trade policy in the 1920s, that

instead of facilitating, the clause tended to obstruct the reduction of tariffs by means of bilateral or multilateral agreements, owing to the reluctance of governments to make concessions which would be generalized by it. This was the result, mainly, of two causes: first, the refusal of the United States to reduce its own very high tariff by negotiation while claiming to benefit from any tariff reduction negotiated between European countries; secondly, the opposition of certain countries—notably the United Kingdom, the United States and the British Dominions—to derogations from strict MFN practice permitting the conclusion of regional or similar agreements for tariff reduction, the benefits of which would be limited to the participants. (League of Nations 1942, 119)

How to explain this distinction between the experiences of the 1860s and 1870s, and the interwar period? One approach would be to speculate that, in a multicountry situation in which bilateral tariff bargaining might produce multiple equilibria, the introduction of the MFN clause might serve to produce more extreme equilibria, both good and bad. An alternative interpretation of the data is that the 1860s wave of tariff-cutting succeeded because the bilateral MFN treaties were, initially, discriminatory: Once Britain and France had granted each other concessions, the Belgians found themselves at a disadvantage in these markets, and had an incentive to conclude a treaty, and so on. Thus, the MFN treaties of the 1860s in fact constituted an example of what Irwin (1993, 112) calls “progressive” bilateralism, of the sort that Cordell Hull was advocating in the 1930s: In his submission to the 1933 London conference, he proposed that the MFN principle not be invoked to prevent agreements among groups of countries, but suggested that a number of conditions be attached, one of which was that such agreements be “open to the accession of all countries” (Viner 1950, 35).¹⁹

19. The latter interpretation would lead to a sanguine view of regional trade agreements; on the other hand, some of the *costs* of discrimination identified by recent authors have their echoes in the historical record, too. For example, the argument that in the absence of the MFN principle, countries may be reluctant to reach bilateral agreements on the grounds that their partners may reach subsequent agreements that, “by granting to third countries concessions still greater than those given to themselves, and to which they would have no claim, would render nugatory the concessions which they received” (Viner 1951, 107; Bagwell and Staiger 1999) finds support in the failure of the United States (and Sardinia) to negotiate satisfactory trade agreements while pursuing a conditional MFN policy in the nineteenth century. It was largely as a result of this experience that the United States adopted the unconditional form of the MFN in 1923.

Most-favored-nation status was of course a cornerstone of the postwar General Agreement on Trade and Tariffs (GATT), which has seen a dramatic decline in tariff barriers (see below). The initial rounds continued to cut tariffs on the basis of bilateral agreements that were then multilateralized through the MFN principle to all GATT members. (However, initially it was only the richer countries that were involved: Less developed countries only joined in from the mid-1960s onward.) While the initial Geneva round was a success, other rounds, such as Torquay, were less so, and eventually the GATT shifted to multilateral deal-making, which was to prove such a success in the 1960s (Irwin 1995).

1.6.2 Twentieth-century Transport Costs

Transport costs continued to fall during the twentieth century, but at a slower rate than previously. Isserlis (1938) provides an index of British tramp freight rates from 1869 to 1936. As figure 1.4 shows, between 1869–71 and 1911–13 these freight rates (deflated by the Statist wholesale price index) fell by 22 percentage points, a figure that is reduced by the fact that rates increased sharply in 1911 and 1912; fitted values based on a regression of these deflated rates on time and time-squared show a drop of 34 percent. As expected, the rates increased sharply during the war, remaining abnormally high until 1920. While they continued to fall until 1925, they never attained their prewar levels, and rose thereafter, with the overall trend between 1921 and 1936 being broadly flat (at a level roughly equal to the 1869 level).

In the most careful study to date of post-1945 trends, Hummels (1999)

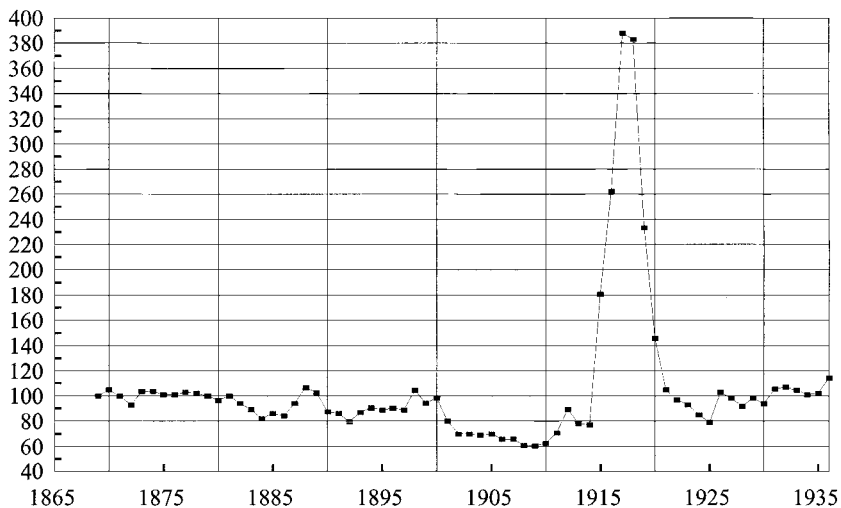


Fig. 1.4 Deflated freight rates, 1869–1914 (1869 = 100)

concludes that ocean freight rates have actually increased over much of the period. An index of liner shipping prices, calculated by the German Ministry of Transport, rises from 1954 to 1958, is fairly flat until 1970 (despite the introduction of containers in the 1960s), rises through the 1970s, peaks in 1985, and falls sharply thereafter. Deflated by the German GDP deflator, it never attains its 1960s levels, even as late as 1997; deflated by the U.S. GDP deflator, it only recovers to its 1954 position by 1993. A less representative tramp-shipping index, constructed by the *Norwegian Shipping News*, shows that tramp freight rates were constant or increased between 1952 and 1997, when deflated by a commodity price deflator; when deflated by a U.S. GDP deflator they declined over the period as a whole, but were flat or increased over long subperiods. Moreover, the tramp rates, unlike the liner rates, exclude port costs, which were sharply rising during the period.

On the other hand, it is important to stress that air freight rates have declined dramatically in the 1950s, 1960s, and 1980s, while declining more slowly in the 1990s, and rising in the 1970s. These declines were greatest on North American routes. The result, predictably enough, has been a more than tenfold increase in the ratio of air to ocean shipments in the years since 1962 (Hummels 1999).

1.6.3 Late Twentieth-century Trade Policies

If transport cost declines were much less impressive during the late twentieth century than they were in the late nineteenth, then it follows that trade liberalization probably played a much greater role in commodity market integration in the later period than it did during the former. Table 1.5 gives average tariffs on manufactured products in a number of countries for which data are available back to 1913. It shows clearly the rise in protection during the interwar period, and the decline in tariff barriers since 1950. It also shows that for most of these countries, tariffs are much lower today than in 1913. There are exceptions, of course, notably Britain, as well as certain Asian countries that had a low tariff regime forced upon them by European powers or the United States. Both China and India, for example, have substantially higher tariffs now than in 1913: An extremely important caveat given these countries' populations. As table 1.5 suggests, tariffs are much higher now in developing countries than in rich countries, while the opposite was more true of the late nineteenth century. Table 1.6 gives average tariffs on manufactured goods in Latin America, East Asia, and sub-Saharan Africa during the 1980s and early 1990s: It shows a substantial decline in Latin America, and smaller declines in the other two regions. By the early 1990s, these average tariffs stood at 12.5 percent in Latin America, 17.1 percent in East Asia, and 22.5 percent in sub-Saharan Africa, as compared with figures of 4 or 5 percent for the United States, the European Union, and Japan.

Table 1.5 Average Tariffs on Manufactured Goods, Selected Countries, 1913–98

	1913	1931	1950	1980	1998–99
Austria	18	24	18	14.6	n.a.
Belgium	9	14	11	n.a.	n.a.
Denmark	14	—	3	n.a.	n.a.
France	20	30	18	n.a.	n.a.
Germany	13	21	26	n.a.	n.a.
Italy	18	46	25	n.a.	n.a.
The Netherlands	4	—	11	n.a.	n.a.
Spain	41	63	—	8.3	n.a.
Sweden	20	21	9	6.2	n.a.
United Kingdom	0	—	23	n.a.	n.a.
European Union	n.a.	n.a.	n.a.	8.3	4.1
Russia	84	^a	^a	^a	13.4 ^b
Switzerland	9	19	—	3.3	3.2 ^c
Australia	16	—	—	—	6.0
Canada	26	—	—	—	4.9
Japan	25–30	—	—	9.9	5.5
New Zealand	15–20	—	—	—	4.4
United States	44	48	14	7.0	4.5
Argentina	28	—	—	—	14.0
Brazil	50–70	—	—	—	15.2
Colombia	40–60	—	—	—	11.4
Mexico	40–50	—	—	—	12.6
China	4–5	—	—	—	17.4
India	approx. 5	—	—	—	34.2
Iran	3–4	—	—	—	—
Thailand	2–3	—	—	—	47.2 ^d
Turkey	5–10	—	—	—	0.3

Sources: Bairoch (1989, 1993); World Bank's *World Development Indicators* (2000).

Notes: n.a. = not applicable; dash = not available.

^aRefers to the fact that the USSR ran such a restrictive trade policy that average tariffs were irrelevant.

^b1997.

^c1996.

^d1993.

Table 1.6 Average Tariffs on Manufactured Goods, DCs, 1980–93

Region	1980–83	1984–87	1988–90	1991–93
Latin America and the Caribbean	23.6	25.1	22.7	12.5
East Asia	21.6	18.1	18.0	17.1
Sub-Saharan Africa	32.8	23.5	22.5	n.a.

Source: Rodrik (1999).

Note: n.a. = not available.

It is important to remember, of course, that emphasizing industrial tariffs overstates the extent to which industrial countries today have moved toward free trade, since agricultural protection (which triggered the move back toward protection in late-nineteenth-century Europe, as well as the protection of the late 1920s) remains extremely high in many wealthy countries, higher certainly than in 1913. Coppel and Durand (1999) report that protection raises the prices received by farmers by about 60 percent in Japan, 40 percent in the European Union, 15 percent in Canada, and 20 percent in the United States. Moreover, nontariff barriers (or NTBs, such as countervailing and antidumping duties, quotas, voluntary export restraints, production subsidies, and technical barriers to trade) are much more important today than they were in 1913. According to Coppel and Durand (1999, table 2), NTBs became less pervasive in all the major industrial economies between 1988 and 1996, although the use of antidumping measures has become more common, and has been on the increase in the European Union and outside the Organization for Economic Cooperation and Development (OECD). Meanwhile, the average incidence of NTBs on manufactured imports fell in Latin America from 28.4 percent in the mid-1980s to 1.8 percent in the early 1990s; it fell from 23.1 percent to 5.5 percent in East Asia; and it *increased* from 42.7 percent to 45.4 percent in sub-Saharan Africa between 1984–87 and 1988–90 (Rodrik 1999, table 1.3). For all these reasons one cannot automatically assume that average worldwide protection is less severe today than it was in 1913.

Given the increased importance of NTBs, it is difficult to measure long-run trends in the overall stance of trade policy, although in principle, measures such as the trade restrictiveness index (Anderson and Neary 1994) could do precisely this. Nonetheless, the consensus is that the world is becoming more open; for example, according to Sachs and Warner (1995) all regions have become more open in recent decades. However, Africa still lags well behind the rest of the world: As late as 1992, only 30 percent of African countries were judged open by Sachs and Warner, as compared with 86 percent of countries in the Latin American and Caribbean (LAC) region and 67 percent of Asian countries (fig. 1.5).

The reasons for the descent of the interwar economy into protectionism are well understood, and have been touched on above; but what were the fundamentals driving postwar liberalization, and even more importantly, what can explain the different timing of liberalization across regions? The United States liberalized almost immediately; as figure 1.5 (based on Sachs and Warner 1995) suggests, Western Europe waited about fifteen years to liberalize, and when it did, it did so in a rush at the end of the 1950s (although the European Payments Union, European Coal and Steel Community, and the Organization for European Economic Cooperation had been promoting intra-European trade since the beginning of the decade). By contrast, Latin America became progressively more closed from the 1950s

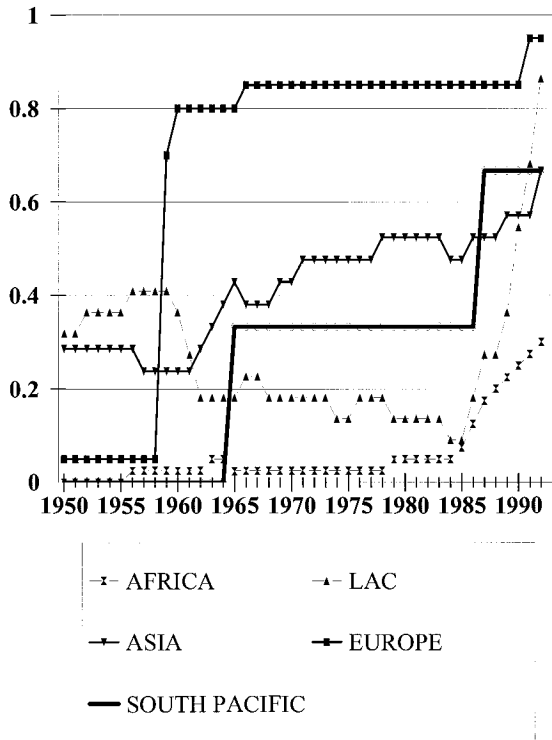


Fig. 1.5 Sachs-Warner indicator, fraction in each region open

onward, only opening in the 1980s (along with New Zealand), a quarter-century after the Europeans—yet another powerful example of path dependence arising from an exogenous shock (in this case, world depression rather than war) and operating through the political process. The former Communist economies only opened during the 1990s; much of Africa still remains closed.

Were ideas or interests responsible for these differences between regions? On the one hand, when countries in Latin America or elsewhere turned to import substitution during the 1930s and 1940s, this created constituencies that now depended on protection, and lobbied for its maintenance; an interest-based explanation would require arguing that for some reason, the protectionist coalitions of capital and labor that characterized Latin America or Australasia were more powerful than similar coalitions that emerged in peripheral European economies, for example. Alternatively, disillusion with the market as a result of the interwar experience led many intellectuals and policymakers to advocate socialism or state-led industrialization, which was inimical to open markets. Bodies such as the United Nations Economic Commission for Latin America were influential in advocating

import substitution, and their hostility to free trade was shared by many development economists (Corbo 1992; Krueger 1997). Were these ideas more appealing to developing country elites, and if so, why? If ideas explain post-war protection, then disillusion with those ideas must explain eventual liberalization; and indeed, in countries such as Ireland there was deep disillusionment with import substitution by the late 1950s. Why did it take longer for the failures of that policy to become apparent elsewhere? And what were the roles of the Cold War in explaining OECD liberalization, or of decolonization in explaining sub-Saharan or Indian protection? Although much work has been done on individual countries and regions, we have not yet seen a comprehensive and comparative account that can explain the diversity of the post-1945 experience worldwide.

1.6.4 Commodity Market Integration in the Twentieth Century

What has been the combined impact of the transport cost and trade policy developments documented above? Turning first to the volume of trade, table 1.3 shows that merchandise exports accounted for a smaller share of world GDP in 1950 than they had done in 1913; and that the 1913 levels of openness (on this measure) had not been recouped as late as 1973 in the United Kingdom, Spain, Australia, Latin America, China, India, and Thailand. Indeed, consistent with the average tariff data in table 1.5, they had not been recouped as late as 1992 in much of the developing world, in particular Latin America and India (where they had not even been recouped by 1998).

However, as stressed in the introduction, trade shares may vary because of shifts in export supply or import demand, rather than reflecting changes in international commodity market integration. In addition, the merchandise share of GDP has been shrinking since 1913, which would tend to pull down the share of merchandise exports in GDP, irrespective of globalization trends. As Feenstra (1998), among others, has pointed out, the growth in merchandise trade has been far more impressive relative to merchandise value-added than relative to GDP (although even his table 2, which gives data for advanced countries only, shows Japanese and U.K. ratios lower in 1990 than in 1913). Other, more qualitative criteria, such as the amount of intrafirm trade, associated with outsourcing and what Feenstra calls the “disintegration of production,” also clearly demarcate the present era from the period before World War I.

However, on other criteria the contribution of commodity market integration during the twentieth century does not seem so impressive. Baier and Bergstrand (2001) report that income growth explains fully two-thirds of world trade growth between the late 1950s and the late 1980s, leaving only 25 percent to tariff reductions, and a mere 8 percent to transport cost declines. Strikingly, the share of trade growth due to income growth during the late twentieth century is very similar to that during the three centuries fol-

lowing Columbus—a period for which there is little or no evidence of commodity market integration (section 1.3.4). Whether a much larger share of trade growth in the rapidly globalizing nineteenth century was due to commodity market integration is not yet known.

Price gaps for identical commodities in different markets remain the best measure of commodity market integration; yet surprisingly little work has been done collecting such evidence for the twentieth century. Presumably, the post-1945 trade liberalization documented above has swamped any increases in ocean freight rates, and the result has been price convergence; but this remains purely speculative.²⁰ Of course, documenting price convergence requires laborious work in the archives, ensuring that price quotes are for identical goods in various markets; but if the nineteenth century can yield such evidence for economic historians, then cannot the twentieth century surely do the same?

Finally, what has happened to the composition of trade over the course of the twentieth century? Table 1.7 gives the World Bank's estimates of the shares of primary and manufactured goods in the various regions' exports and imports. Recall that in 1913, primary products had accounted for between 62 and 64 percent of total merchandise exports, with food accounting for 27 percent, agricultural raw materials for 22.7 percent, and minerals for 14 percent. By 1999, the share of primary products in merchandise exports had declined to 18 percent, with the shares of food, agricultural raw materials, and minerals (including fuel) accounting for a mere 8, 2, and 8 percent, respectively, of the total. The impact of third world industrialization comes across clearly from these figures: Manufactures now account for more than half of merchandise exports everywhere, barring the Middle East and North Africa, and sub-Saharan Africa. Even in the case of Africa, however, manufactures are now vastly more important than they were on the eve of World War I (compare with table 1.4).²¹

1.7 Conclusions

There are several themes that have emerged from this survey. The range of goods that have been traded between continents since the Voyages of Dis-

20. Indeed, obvious international sources of price data (e.g., the commodity price data to be found in the *World Bank Development Indicators* or the International Monetary Fund's *International Financial Statistics*) reveal no discernable general trend toward commodity price convergence during the past four decades.

21. Table 1.7 also indicates the importance of trade in commercial services, which accounted for 19 percent of total exports (i.e., of merchandise exports plus commercial services exports) worldwide in 1999, and for between 10 and 20 percent of exports from all regions. In 1913, services had accounted for 22 percent of total exports from the United Kingdom; commercial service exports accounted for 27 percent of U.K. exports in 1999. For the United States, the figures were 8 percent in 1913 and 27 percent in 1999 (Mitchell 1988; U.S. Department of Commerce 1975; World Bank 2001).

Table 1.7 **Composition of Trade by Region**

Region	Food	Ag. Raw Materials	Fuels	Ores and Metals	Primary	Manufactures	Primary	Manufactures	Services
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Percent of Merchandise Exports								
East Asia and Pacific	7	2	5	2	16	81	14	73	13
Europe and Central Asia	6	3	20	7	36	56	31	48	21
Latin America and Caribbean	24	3	17	6	50	51	44	44	12
Middle East and North Africa	4	1	73	1	79	21	67	18	15
South Asia	16	2	0	2	20	79	16	63	21
Sub-Saharan Africa	15	4	29	14	62	39	55	35	11
High-income	7	2	3	2	14	82	12	68	20
World	8	2	5	3	18	82	15	66	19
	Percent of total imports								
East Asia and Pacific	5	3	10	5	23	74	19	63	18
Europe and Central Asia	10	2	7	3	22	67	21	63	16
Latin America and Caribbean	9	2	7	2	20	80	17	69	14
Middle East and North Africa	12	4	18	5	39	56	33	47	21
South Asia	11	2	10	2	25	71	22	63	15
Sub-Saharan Africa	8	2	7	3	20	77	17	64	19
High-income	8	2	7	3	20	76	17	65	18

Source: World Bank's *World Development Indicators* (2001).

Notes: The entry in column (5) is the sum of columns (1) through (4). The sum of primary and manufactured trade in columns (5) and (6) is less than 100 because of unclassified trade. The data in column (9) are for commercial service exports only. "Total" exports in columns (7) through (9) equals total merchandise exports plus commercial service exports. Columns (7) and (8) are calculated by assuming that total merchandise exports are allocated between the two categories in the same proportion as the figures in columns (5) and (6).

covery has steadily increased over time, and there has been substantial commodity market integration over the period, driven by technology in the nineteenth century and politics in the late twentieth century. However, this trend toward greater market integration was *not* monotonic; it was periodically interrupted by shocks such as wars and world depressions, or by endogenous political responses to the distributional effects of globalization itself. In some periods, politics has reinforced the effects of technology, while in other periods it has offset them. In several cases, severe shocks have had long-run effects on the international integration of commodity markets, as a result of politically induced hysteresis. Finally, we know remarkably little about international commodity market integration during the twentieth century.

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Comment Douglas A. Irwin

The conference organizers have given Findlay and O'Rourke the “modest” task of examining what we know about commodity market integration—over the past half-millennium! And that is exactly what they do in this wide-ranging and close-to-exhaustive survey of what we know about world trade from 1500 to the present. This informative paper will serve as an excellent introduction for those who are not familiar with this history and the extensive secondary literature that has studied that history in detail. It is difficult to disagree with Findlay and O'Rourke's assessment of various periods, so I will not take much issue with the authors' conclusions. Rather, my comments will focus on some aspects of commodity market integration that the paper has not emphasized, not by way of criticism but more as a reminder to the reader that there are other potentially important features of integration during this period.

The authors confine their focus to intercontinental trade, an understandable choice that conveniently limits the scope of the paper to manageable

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proportions. But the reader should not conclude that local, national, and regional commodity market integration was unimportant. Quite to the contrary, this trade was quantitatively more important than intercontinental trade, and it would be helpful to have a brief comparison of the relative size of each. Intra-European trade, for example, was quite extensive after 1500. A large literature in economic history examines this thriving trade in raw materials, foodstuffs, and textiles in detail. This trade promoted market integration throughout Europe, and presumably led to gains from specialization.

This intranational and intraregional trade was promoted by the reduction of government trade barriers. The authors discuss the fall (and subsequent rise) in European tariffs after the mid-1840s. But these developments came after a period in which there were dramatic reductions in intranational trade barriers, notably the elimination of the last tolls on intra-French trade in 1790 and the formation of the Zollverein in Germany in 1832.

Intra-European trade also differed from the early intercontinental trade in terms of the commodities exchanged. The authors note that intercontinental trade from 1500 to 1800 was largely confined to goods with a high value-to-bulk ratio, such as spices (pepper and cloves), tea and coffee, and silk. Intra-European trade was much more mundane, consisting of commodities such as grain, animals, wool, timber, and textiles. I suspect that the laboring masses during this period may have been largely unaffected by the exotic intercontinental trade of the day because most of their expenditures were confined to food, clothing, and shelter. Thus, intranational and regional trade may have been more important for European standards of living and economic welfare than trade in the luxury commodities that were consumed mainly by the wealthy. (However, intercontinental trade in slaves and in silver had a more pervasive economic effect in Europe: the former for altering production patterns in the New World, and the latter for having real as well as monetary effects, as Findlay and Lundahl 2000 point out).

Thus, while the authors have justifiably chosen to restrict their focus on intercontinental trade, we should remember that intranational (as well as international with a region) trade was also a powerful force throughout this period.

Aside from that major point, a few smaller details deserve comment. The authors rightly stress that price convergence is the best measure of market integration. But, as I am sure they would agree, this should not be the sole metric of interest. The best evidence on price gaps is from the 1850 to 1913 period, and here O'Rourke and Williamson (1999) have presented evidence showing a great deal of price convergence. In the early modern period from 1500 to 1800, however, the authors point out that there is little evidence of commodity price convergence. (Figure 1.1 of the paper makes this point.) But the lack of price convergence could be an unimportant piece of evidence in relation to the fact that trade existed at all. Ideally, one would like to compare autarky prices and traded prices, and not simply examine

whether traded prices have converged. Thus, figure 1.1 shows that the markups on spices were stuck at roughly a factor of 5 throughout the seventeenth century. But if the price gap had been a factor of 50 prior to the introduction of trade, then the movement from 50 to 5 would constitute massive convergence and the lack of subsequent convergence would be second order. (The problem, of course, is that autarky or pretrade prices are virtually impossible to come by.) In the post-1950 period, unfortunately, comparing prices on similar goods is difficult because trade is dominated by manufactured goods, whose different product characteristics and terms of sale make the exercise hazardous.

The reader should also be reminded that quantitative magnitudes do not always correspond to economic importance. In terms of the quantity of trade, spices dominated exchange between Europe and Asia. Although quantitatively small, trade in other goods, such as those that embody new technology, may have been of key importance. As work by Elhanan Helpman, Jonathan Eaton, and others has pointed out, trade in capital goods, in tools, and in “new” goods can have important and lasting productivity effects. As a good example, the paper mentions that the introduction of the sweet potato in Asia brought about widespread productivity improvements in agriculture. The introduction of gunpowder from Asia to Europe does not feature in the trade statistics, but also had explosive repercussions. If Paul Romer is right, then the welfare effect of introducing new goods and product innovations is also much larger than standard gains from reductions of tariffs on existing trade in goods.

Finally, the authors tantalize us by posing a major question at the end of the paper that they do not answer, namely, what drives policy liberalization and why different regions liberalize at different times. The authors’ speculation on this point, in light of their review of 500 years of trade, would be quite interesting. For example, the Napoleonic War and World War I were followed by periods of protection (for the new industries stimulated by disruption of trade due to the war), whereas World War II was followed by a concerted effort to eliminate trade barriers. What accounts for the difference? A political-economy explanation for the timing of liberalization would be quite interesting to explore, and could perhaps be the subject of a future conference.

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