CHAPTER 3

Interwar Trading Blocs
Japan, Britain, and Germany, 1919–39

The collapse of the world economy into protectionism and trading blocs in the 1930s remains a mystery. An open, multilateral trading system built around a network of MFN trade treaties flourished from 1860 to 1913, but this commercial order never was restored after World War I. All but a few countries imposed higher tariffs in 1928 than they had in 1913 (Liepmann 1938). During the 1930s, states widely abrogated trade treaties and renounced MFN commitments. Tariffs, quotas, import licenses, exchange controls, and barter deals compartmentalized trade within formal and informal empires or blocked it altogether. On the eve of World War II, world trade flows were meager and heavily regionalized.

This chapter employs the theory developed in chapter 2 to explain trade policies in Japan, Britain, and Germany. The case studies highlight two important motives in domestic group lobbying in these countries. First, firms with low production volumes sought trade protection to compensate for high unit costs. Small size was most prevalent in products with the largest returns to scale, magnifying the need for trade barriers. Second, small home markets caused many firms to campaign to enlarge empires and form trading blocs. Thus, enthusiasm for imperial protection in domestic politics reflected small-scale production and limited national markets in industries facing competitive pressure to expand.

Industries with large returns to scale were not the only ones engaged in the policy process in these three countries. In each case, import-competing groups supported tariff increases but showed little enthusiasm for trading blocs; export-oriented groups opposed high tariffs and regarded trading blocs ambivalently. Several factors helped industries with large returns to scale build coalitions to influence policy, even though institutional structures in these countries differed. For one, industrial and geographic concentration facilitated collective action. In addition, supporters of imperial protection joined forces

with other groups (usually farmers) whose policy interests could be reconciled with their own. Finally, control over dual-use technologies critical to military procurement elevated the political standing of heavy industry in Japan and Germany, where governments made rearmament a high priority.

Understanding why these three countries embraced imperial trading blocs helps to illuminate important factors in the multilateral system's collapse in this era. The causal sequence in the book's argument—from preferences to politics to policy—demonstrates how trade protection and imperial blocs responded to politically powerful domestic interests. Of the interwar trading blocs, Japan's was the first and the most exclusive, as tariffs increased steadily after 1923 and efforts to expand the empire through conquest followed in 1931. Britain maintained an open economy until 1931 but then abandoned nearly a century of free trade with the General Tariff and Imperial Preference. The Nazi regime in Germany used exchange controls to block imports and bilateral agreements to expand markets in central Europe after 1933. The chapter addresses these three cases in sequence, following a review of industrial and technological conditions in the wake of the Great War.

Technological Change and Economies of Scale

A series of developments in industry, technology, and markets around the turn of the century dramatically increased optimal scales in many manufacturing activities. The extension of electricity supply through the construction of new plants and the creation of large grids shifted energy away from steam power, making it easier for firms to employ continuous flow methods. The advent of the moving assembly line and other techniques enabled firms to expand production runs and minimize overhead costs per unit. And the growth of markets, especially for consumer goods, allowed firms to standardize general-purpose items to increase volume and throughput.

In several cases, new products requiring large scale to recover R&D costs or exploit learning-by-doing emerged from the laboratories of industrial chemistry and electrical engineering. The advent of rayon fiber (1913) promoted the growth of large chemical factories, which could maximize fuel economy and take advantage of indivisibilities in the use of chemical recovery devices (Markham 1952, 52–53). Synthetic fibers (starting with nylon), rubber, plastics, resins, and oil-based fuels—all produced in tens or hundreds of thousands of tons per year—soon followed. In the electrical industry, irons (1910), vacuum cleaners (1913), clothes washers (1916), dishwashers (1922), radios and electronic tubes (1923), and refrigerators (1925) joined the telephone as

household items with a mass market.[1] Assembly lines churned out hundreds of thousands of these articles annually.

In other cases, the production of established goods expanded in response to a larger customer base or new manufacturing techniques. In automobiles, Ford Motor Company tripled its output after introducing the moving assembly line in 1913 (Wilkins and Hill 1964, 52–53). Producers of tractors, sewing machines, typewriters, lightbulbs, and the like applied the same techniques, with similar gains in efficiency. In steel, the first continuous strip mill was built in the United States in 1924 and in Europe in 1937. In chemicals, the Haber-Bosch process of nitrogen fixation made it possible to synthesize ammonia for fertilizers and explosives from air, rather than having to recover it from coke-oven byproducts. The hydrogenation of carbon led to synthetic methods for making heavy organic chemicals, while the manufacture of inorganic alkalies and sodas increased in scale with the shift from the Leblanc to the Solvay method (Svennilson 1954, 21–22, 132–33).

With these trends, products formerly made on a craft basis in small family shops were, by the 1920s, manufactured in large factories. In the United States from 1914 to 1929, output per plant jumped from 1,897 automobiles to nearly 25,000, from 210,000 tire casings to 1.6 million, from one hundred thousand pounds of rayon to four million pounds, from sixty thousand tons of steel to more than two hundred thousand tons (calculated from U.S. Bureau of the Census 1918, 1930). Growth in the scale of manufacturing coincided with the emergence of the modern, multiplant corporation and the application of scientific management principles (Chandler 1990). While producers in other countries generally lagged behind those in the United States, they were exposed to the same trends, gained access to many of the same technologies, and had to compete in the same markets. They therefore faced intense pressure to keep up. As technologies and goods requiring mass production were disseminated more widely after World War I, manufacturers in many countries experienced a systemwide shift in competitive conditions.

This shift was not uniform across industries. Many products remained handicraft items when fixed capital costs and overhead were low, basic components could not be standardized, and machines either could not effectively substitute for labor or required frequent recalibration. In cotton textiles, ring spindles and automatic power looms allowed higher throughput and lower labor content than mule spindles and manual looms, yet vertically integrated companies with

1. Bowden and Offer 1994, 729–30. The year represents when the product was introduced in the United States.

large factories still enjoyed few, if any, cost advantages over small shops. Industries such as apparel, footwear, ceramics, glass, and metal tools continued to supply customized goods using labor-intensive techniques and some simple machinery. The pressure to assimilate new technologies in response to shifts in market conditions therefore focused on specific industries.

When the potential for scale economies increases, as chapter 2 explains, the volume of output within the plant becomes a crucial determinant of a firm's competitive position and profitability. Firms producing on a small scale endure high production costs and wasted opportunities to earn excess profits; firms producing on a large scale enjoy lower costs and earn larger profits. The returns to scale, or the sensitivity of average costs to changes in scale, determine the penalty of small scale (in terms of higher unit costs) and the extent of the advantage of large-scale over small-scale producers. Finally, domestic consumption of products with large returns to scale affects the ease with which firms can introduce mass production technologies. Firms with large national markets can employ large-scale capacity producing for local consumers alone. If home demand is limited compared to the MES, however, firms need a wider market to gain scale economies that otherwise cannot be fully exploited.

These propositions inform the case studies that follow. Each country analysis begins with a review of trade policy in the interwar period. Next the primary explanatory variables are evaluated to generate predictions about domestic actors' trade preferences. These hypotheses are then compared to the political behavior of firms and organized groups. The case studies conclude by considering how collective action and institutional aspects of policy-making influenced the policy measures that governments implemented.

Imperial Protection in Japan

The Japanese Empire was the most protectionist of the interwar trading blocs. Though its colonial expansion predated World War I,[2] Japan pledged to allow "equal opportunity" for commerce in its occupied territories. Instead of reserving these markets for Japanese business, Japan for the most part observed the MFN rights of outside powers under the treaty ports until the 1920s.[3] The

2. Japan annexed Formosa (Taiwan) in 1895, took control of Manchuria and the Kwantung Leased Territory in 1906, and annexed Chosen (Korea) in 1910.

3. However, the Japanese military controlled the ports and the railways, the laying of telegraph lines, and other investments in transportation and communications infrastructures. Japan also granted colonial preference for certain primary commodity imports, but it abstained from establishing privileges for its own exports (Beasley 1987, 60–68, 91–100).

Japanese government then began to establish exclusive trade practices in its empire: it assimilated Korea into its tariff system in 1923; ten years later it severed Manchuria from Chinese customs and reduced duties on a number of products of interest to Japanese business.[4] As the Japanese army advanced into East Hopei, North China, and Shanghai in 1936–38, military-backed puppet governments dismantled the Chinese tariff regime and liberalized imports of Japanese goods. By 1940, Japan had set up special customs arrangements with Thailand, French Indochina, and the Dutch East Indies in its efforts to construct an East Asian Co-Prosperity Sphere.

The creation of an imperial bloc coincided with escalating trade barriers in Japan. After raising a number of duties in the first few years after World War I, the Diet passed a major tariff revision in 1926 to boost protection for manufactures. When the yen depreciated with the suspension of gold convertibility in 1931, specific duties were raised 35 percent to synchronize tariff rates and domestic prices. By this point, "Japan had the highest level of tariff protection in the world" (Yamazawa 1990, 146).

Myriad factors—too many to list here—played a role in the Japanese government's decision to impose high tariffs at home and exclusive trading rights in the empire. The theory developed in this book suggests that the technological changes of the postwar era created interest in an enlarged, protected market by pressuring many producers of capital goods and consumer durables to gain scale economies. Because firms could not reach optimal rates of output per plant while confined to the domestic market, they needed to sell in a wider economic area to manufacture in longer runs or larger batches. Thus, the small size of industry and the limited range of the Japanese market made tariff protection and an exclusive trading bloc attractive to producers struggling to adjust to the new competitive environment after the war.

The Scale of Japanese Industry

In Japanese manufacturing, factory-based production in large volumes began with the outbreak of World War I, as the decline in trade with the combatant powers elevated domestic prices and made import substitution profitable. An analysis of the stimulus to industry by the U.S. Consulate in Tokyo explained,

4. Jones (1949, 192) notes that Japanese firms could "secure rebates on customs duties and freight charges," which made it "practically impossible [for foreign firms] to trade directly with . . . firms located in Manchoukuo." Lockwood (1955, 50) refers to "open and disguised preferences, some of them official and others arising from the dominant position of Japanese nationals in the economic life of the colonies."

"The American principle of mass production and the application of scientific management were for the first time strongly advocated, and many factories were systematically planned on a larger scale."[5] After the war's end, heavy industry continued to expand. Contemporaries such as G. C. Allen (1940b, 43) noted, "in the trades in which there are substantial internal economies of large-scale production, Japan has lowered her costs by greatly enlarging the size of her plants." Studies record large factory expansions in steel, heavy machinery, electrical equipment, and synthetic and refined chemicals, where the doubling or tripling of output capacity per plant was common in the 1920s.

But even as the scale of manufacturing increased, Japanese firms remained far behind U.S. and European standards. According to Allen (1940b, 44), small plants and diverse product lines prevented firms from fully exploiting scale economies:

> plants in many of the large-scale industries are still either smaller or less highly specialized than are those of corresponding Western industries. In the iron and steel, motor tire and chemical trades, her producing units are small compared with those of the United States and Britain, and so she is unable to achieve all the technical economies open to her competitors. . . . In trades where she possesses some very large plants . . . these are far less highly specialized than are similar plants in competitor countries.

A survey by the Japanese government concluded: "though our productive industries are now in the early stages of transition to large scale production, they are still for the most part composed of small or medium undertakings which suffer from lack of capital resources and productive equipment" (quoted in Board of Trade, Department of Overseas Trade 1931, 31). Due to these handicaps, most producers faced high unit costs compared to foreign rivals.

Table 5 presents output per plant in Japan in a number of industries with large returns to scale, with comparisons to the scale of production in the United States. The data show that very short production runs were common. The exception is rayon, in which the leading firms (Teijin and Toray) kept pace with large increases in the MES to maintain the world's lowest unit costs (Allen 1940a, 672–73). Producers in other industries faced severe disadvantages. Steel tonnage per plant was one-fifth that of the United States, as the state-controlled Yawata Ironworks concentrated in specialty steel while a number of small producers fragmented the market for standardized articles (Yonekura

5. "Report on Private and Governmental Assistance to Export Trade in Japan," Tokyo, May 3, 1934, Consular Reports and Cablegrams, 1934–35, Box 9, RG 20.

1994, 55–56). Nissan's automobile capacity was less than one-twentieth the number of "knocked-down" cars assembled in local affiliates of Ford and GM; the other leading firm, Toyota, mainly subcontracted parts and made light trucks for the army (Mason 1992, 62–67). Yokohama and Bridgestone manufactured tires for a range of vehicles in plants one-eighth the size of U.S. factories. In a few industries, crowds of small concerns inhibited the concentration of production even when a single company (Tokyo Electric Light in lightbulbs, Chosen Nitrogen Fertilizer in chemical nitrogen) approached volumes typical of Western firms.

The main problem was that the small national market prevented mass production of goods with large returns to scale, as table 6 shows. Only rayon, due to strong demand from textiles, enjoyed a customer base comparable to that of

TABLE 5. Scale of Production in Japan, 1931

Industry/Product	Units	Output per Plant	Percentage of U.S. Production
Chemicals and fibers			
Rayon	Thousand lb.	4,075	101.3
Dyestuffs	Thousand lb.	687	33.3
Synthetic ammonia[a]	Tons	5,891	30.3
Alkalies and sodas	Tons	8,868	24.4
Explosives	Thousand lb.	598	10.7
Basic materials			
Steel	Tons	36,953	18.8
Transportation equipment			
Aircraft	No.	23	36.9
Motorcycles[b]	No.	<1,200	<29.6
Trucks and buses	No.	<432	<15.6
Tires[c]	No.	112,500	13.1
Locomotives	No.	12	11.3
Automobiles[d]	No.	282	0.7
Machinery and electrical			
Typewriters[e]	No.	<6,012	<16.3
Lightbulbs	Thousand	1,696	13.5
Tractors[b]	No.	<552	<6.4

Source: Data for number of plants: Department of Commerce and Industry (various years); data for output: Supreme Commander for the Allied Powers (various years).

Note: No. = number of individual units.

[a]USTC 1937. Data are for 1929.

[b]Includes plants producing motor vehicles of different types.

[c]"Japanese Industrial Survey: Rubber—7/18/42," Reports on Japanese Industry, 1942, Box 1, RG 81.

[d]"Automobiles—8/18/42," Reports on Japanese Industry, 1942, Box 1, RG 81. Data are for 1933.

[e]Includes plants producing office machinery of different types.

TABLE 6. MES Production and the Japanese Market

Product	Lowest MES Estimate	MES Divided by National Consumption
Trucks[a]	250,000 units	473.5
Sewing machines[a]	500,000 units	161.3
Tractors[a]	90,000 units	114.2
Typewriters[a]	500,000 units	78.8
Motorcycles	200,000 units	63.1
Automobiles	500,000 units	18.4
Tires	5 million casings	11.1
Electric motors	360,000 units	6.6
Steel	6 million tons	2.3
Oil engines	100,000 units	2.3
Synthetic ammonia	200,000 tons	2.2
Radios	1 million sets	2.1
Rayon	40 million lb.	0.9
Dyestuffs	20 million lb.	0.8
Cotton fabrics	37.5 million sq. yd.	0.04

Source: Data from USTC 1945a, 1945b.
[a]Probably overestimated because no data on net imports.

the industrial nations. Otherwise, consumption was too low to support large additions to capacity even if the entire home market were reserved for Japanese goods. As Western factories returned to civilian production after the war, Japanese firms were pushed out of Asian markets they had entered when competition was absent. Thus, the resumption of trade imposed a painful retrenchment on companies that had expanded to serve excess demand. Firms were trapped in a vicious cycle: they needed to expand production runs, but they could not profitably sell abroad because unit costs were high. Lockwood (1955, 372, 378) notes, "those industries in which the economies of large-scale production are most pronounced were also those in which Japan remained at a disadvantage in foreign competition . . . [because of] the small size of the Japanese market to which they were largely confined."

Since low volume raised unit costs and undermined market shares in sectors with large returns to scale, Japanese firms had strong incentives to seek trade protection. Data from the U.S. Tariff Commission (USTC) indicate that the import share of consumption exceeded 15 percent in several areas of heavy industry, with rates over 45 percent in motor vehicles, most types of machinery, and chemicals other than rayon.[6] But closing the domestic market to external com-

6. Interwar Japanese trade data are compiled from USTC (1945a, 1945b), Oriental Economist (1935), and Mitsubishi Economic Research Bureau (1936).

petition would not by itself enable firms to transition to mass production: consumption was too low to permit even a handful of factories approaching the MES. Expanding trade would allow firms to produce for a larger market, but Japanese industry found it difficult to sell abroad because of short production runs and high unit costs. Only through access to an imperial market on privileged terms could producers overcome the scale advantages of foreign firms.

Export-Dependent and Import-Competing Industries

Industries with small returns to scale faced none of the disadvantages of the heavy and chemical industries. In the interwar period, Japan had a revealed comparative advantage in goods with simple technologies and small production units. Studies single out raw silk, knitted goods, pottery, toys, fans, parasols, matches, bicycles, enameled ironware, and canned foodstuffs as low-cost trades with production primarily in shops of less than five employees and few firms of more than one hundred workers (Lockwood 1955, 371–73; USTC 1936, 28). Though there were modern factories in cotton yarn, traditional spinners could compete with large mills employing the latest technologies because wages dominated production costs regardless of plant size. Textile weaving remained a family enterprise; 90 percent of all shops operated less than ten looms (Mitsubishi Economic Research Bureau 1936, 237–41). Thus, export-dependent industries were labor-intensive, small in scale, and highly competitive.

Two products, raw silk and cotton fabrics, accounted for one-third of Japan's exports. Thousands of rural households engaged in silk reeling, and three-quarters of this output was sold abroad. Cotton textile producers employed one out of every six industrial workers and exported two-thirds of their sales. More than 30 percent of output went to foreign markets in apparel and knitted goods, canned foodstuffs, pottery, footwear, glass and glassware, tea, and silk and rayon textiles.

Export-oriented producers had three reasons to oppose tariff increases in Japan and trade discrimination in the empire. First, they relied on imported inputs: textile materials (mostly raw cotton) accounted for two-fifths of all imports, while other craft-based industries used foreign rubber, leather, and wood. Second, while exporters enjoyed large shares of nearby markets, they sold most of their wares overseas: 80 percent of raw silk exports were shipped to the United States; 85 percent of cotton fabrics sold abroad went to China, India, the Dutch East Indies, Hong Kong, and Egypt (Mitsubishi Economic Research Bureau 1936, 245, 526). Because export industries could sell in competitive markets,

they had little to gain from trade privileges in the region. Third, Japanese goods already faced substantial barriers abroad. Tariffs and quotas in the largest markets for cotton fabrics forced Japanese firms to find new outlets in South America, Africa, and the Middle East, while the Smoot-Hawley tariff in the United States blocked exports of footwear, pottery, porcelain, toys, canned foodstuffs, and carpets (Ishii 1981, 147–50, 194–221; Wright 1935, 219; Mitsubishi Economic Research Bureau 1936, 594). Foreign retaliation against tariff increases in Japan therefore was a serious threat to export industries.

Other than capital goods and consumer durables with economies of scale, food and raw materials were the main imports into Japan. Imports were especially large shares of consumption in sugar, soybeans, fats and oils, wheat, and rice; local producers of basic materials such as coal also faced competition. In every case except wheat, neighboring or nearby countries supplied the bulk of the imports: all soybeans came from Manchuria, Taiwan accounted for 80 percent of Japan's imported sugar, Korea and Taiwan supplied 85 percent of its imported rice, China and Manchuria provided 85 percent of imported coal.[7] In these industries, cheap imports pressured local producers to restrain prices. Opening trade with the region would drive down prices and further undermine the profits of Japanese farms and mines.[8] Import-competing producers therefore benefited from trade protection against all sources in East Asia.

Industries with Economies of Scale: Trade Preferences

Hypothesis 5 expects small-scale producers in industries with large returns to scale to support trade protection. In interwar Japan, organized groups in these industries campaigned vigorously for tariffs. Steel producers were among the first and most intense advocates of trade protection: facing renewed competition in the aftermath of the war, the Japan Industrial Club recommended higher tariffs, subsidies, and tax breaks in 1919–21; it then pushed to increase tariffs and subsidies in 1926 and 1932. To justify these demands, steel barons emphasized their need for government aid to rationalize production, expand

7. Ibid.

8. Japanese investors gained control over a substantial proportion of the farmland in Taiwan and Korea soon after they became colonies. For example, Japan's four leading sugar companies controlled 80 percent of the cane cultivated in Taiwan; four large trading firms managed 90 percent of the rice exported from Taiwan and Korea to Japan. Often colonial sugar was refined and colonial rice milled in Japan, then sold in the domestic market or reexported. This allowed Japanese firms vertically integrated with colonial suppliers to earn monopoly profits from tariffs on foreign sugar and rice, while small farmers faced price pressures from the colonies and foreign sources alike (Ho 1984, 369–75).

capacity, and reduce unit costs.[9] Nissan and Toyota worked through the Survey Council for the Establishment of the Automobile Industry to push for subsidies, tax exemptions, and higher duties on engines, chassis, and parts (Mason 1992, 73–79). Petitions to increase trade protection also were recorded for electric generators and motors, machine tools, dyestuffs, soda ash and caustic soda, and synthetic fertilizers (Uyeda 1933, 9–10; Board of Trade, Department of Overseas Trade 1928, 72; Molony 1989, 243–45; U.S. Bureau of Foreign and Domestic Commerce, various years).

Though it is difficult to link pressure for trade discrimination to specific sector groups, the available evidence is consistent with hypothesis 1 and hypothesis 2. Studies such as Tiedemann's (1971, 271–72) and Beasley's (1987, 38–39) find the strongest domestic support for an imperial trading bloc in heavy industry. "Because Japan's new large-scale industries still had high unit costs of production," Toshiyuki (1989, 24) explains, "those enterprises found it difficult to break into world markets. Therefore, they had to turn to the privileged markets in the formal Japanese empire to sell their products." Zaibatsu groups, in particular, "gave wholehearted support to the policy of militaristic expansion" (Jones 1949, 148). Once under Japan's political control, heavy industry pushed for trading privileges to favor Japanese exports in these areas. For example, the Japan Industrial Club, which represented capital goods producers, insisted: "Manchurian tariffs should be kept as low as possible to encourage the import of Japanese products. Industrial goods should be produced within Japan and exported to Manchuria" (Young 1998, 204).

Evidence of pressure for an imperial bloc is strongest in the steel industry. Steel firms generally emphasized that home market protection combined with exports to the empire would assist their efforts to reduce unit costs. Since capacity expansion also required secure supplies of iron ore and coal, steelmakers lobbied to suspend duties on imports from mines in Manchuria and Korea. In addition, integrated steel firms pushed to extend Japanese tariffs and subsidies to occupied areas to prevent imports from injuring their Manchurian operations or entering Japan at lower rates (Yonekura 1994, 113, 122, 142).

Vertical production arrangements and the need to dispose of surpluses also motivated support for imperial protection from chemical producers such as Chosen Nitrogen Fertilizer. According to Molony, "the most sophisticated Japanese companies were dependent on their manufacture in, and sales to, the

9. Steel firms with Zaibatsu ties pushed the government to subsidize only producers with capacity greater than thirty-five thousand tons. The head of the state-controlled Yawata works opposed tariff increases (Yonekura 1994, 110–21).

colonies." As a result, the advent of new methods of synthetic fertilizer production "increasingly required colonial expansion and was closely tied to economic imperialism. . . . Colonial expansion was integral to the growth of prewar technology-intensive companies like Nitchitsu" (Molony 1989, 243, 263).

On the whole, trade policy never was debated as publicly in Japan as in Britain or the United States—especially after the outbreak of war in China. The available evidence therefore does not permit a systematic, refined treatment of industry lobbying. But where business demands cannot be observed directly, tariff discrimination and its effect on trade flows can be examined. In a later section, the chapter returns to domestic support for imperial protection and provides further evidence (albeit circumstantial) that heavy industry sought closer imperial ties.

Export-Dependent and Import-Competing Industries: Trade Preferences

Export industries generally abstained from seeking higher tariff, and some actively opposed duties on other products. Producers of cotton fabrics were most favorable to open trade (Uyeda 1933, 15; Lockwood 1955, 540–44; Ishii 1981, 49–50). A British consular report, mindful of the "tendency in Japan . . . to establish industries and protect them with a high tariff wall," noted that "the cotton industry . . . has . . . never been in receipt of any direct aid from the Government and . . . do[es] not seem to be anxious for any direct help."[10] Exporters instead devoted their political efforts to blocking tariff increases for others. Cotton and silk textile firms campaigned against iron duties, out of concern that these would incite retaliation in India; weavers and hosiers pushed to limit protection for dyes and liberalize duties on yarn; and glassmakers objected to tariffs on alkalies and sodas (Yonekura 1994, 136; Uyeda 1933, 9–11; Board of Trade, Department of Overseas Trade 1930, 27). Among export-oriented industries, only producers of wool fabrics, bicycles, and wheat flour sought tariff increases on their products (Board of Trade, Department of Overseas Trade 1933, 33, 86).

Exporters also were circumspect about diverting trade to East Asia: they favored bargaining down tariffs outside the empire over discrimination within it. Thus, producers dependent on world markets generally opposed forming an imperial bloc (Fletcher 1989, 104–9). Notably, the cotton textile industry did not seek tariff privileges in Korea or in China once these areas came under Japan's

10. "Japan" 1927, 60.

control (Duus 1995, 245–48, 281–87).[11] Instead, textile trade associations pushed for trade treaties with the United States, the British Empire, and Latin American countries to preserve or expand access to these markets (Ishii 1981).

Import-competing groups lobbied to increase tariffs on their goods. The Imperial Agricultural Society campaigned for higher duties on rice, cereal farmers sought to raise tariffs on wheat, and cane growers lobbied to protect sugar (Uyeda 1933, 3–4, 11–14). Because the competition originated mostly within Japan's empire and dependent territories, these groups resisted plans to exempt imperial produce from import taxes, as hypothesis 4 expects. The Showa Coal Joint Sales Corporation, a cartel of the thirteen largest coal-mining firms, pushed for quotas on Manchurian coal.[12] Farmers lobbied to reinstate tariffs on rice from Korea and Taiwan after 1929 (Ho 1984, 363–64), and imports from the empire provoked growing protectionism among producers of sugar and soybeans (Young 1998, 211).

The Politics of Trade in Japan

Beneficiaries of imperial protection were not numerous, but they enjoyed political clout. Interwar Japan's political system systematically favored the interests of big firms and concentrated industries. The fourteen largest industrial combines controlled one-quarter of all invested capital. These "old" financial Zaibatsu owned a number of factories in engineering, electrical, and chemical industries, along with the largest steel works, coal mines, sugar refineries, and flour mills. During this period the "new" industrial Zaibatsu grew in size and influence, and this group began to dominate high-technology chemicals, motor vehicles, and machinery.[13] Industrial concentration complemented financial concentration: four or fewer firms manufactured more than two-thirds of output in dyestuffs,

11. Large cotton firms had another reason to oppose closer integration with Manchuria and China: many owned mills in North China, which ensured them access to these markets. These firms often used Chinese factories as export platforms to evade cartel restrictions in Japan. If Manchuria or China were assimilated into the Japanese empire, textile transplants would face the same export quotas and would have to compete with mills based in Japan. As a result, leading Japanese textile firms favored tariff autonomy for China and did not object to China's imposition of tariffs on cotton fabrics in the late 1920s (Chin 1937).

12. "Memorandum on Coal in Japan and Manchuria" 1933.

13. The old Zaibatsu included Mitsui Mining, Mitsubishi Mining, Sumitomo Mining, Asano Steel Works, Sumitomo Metal Industries, Mitsubishi Heavy Industries, Mitsubishi Electric Company, Asano Shipbuilding, Sumitomo Chemical, and Sumitomo Cable Manufacturing. Among the new Zaibatsu were Chosen Nitrogen Fertilizer, Hitachi, Nissan Motor Corporation, and Toyota Motor Corporation.

passenger cars, alkalies and sodas, steel, coal, sugar, and wheat flour—and each of these industries backed the protectionist cause.

Large industrial combines entered many of these activities to receive government incentives targeted to private groups with sufficient capital and managerial expertise to begin large-scale production. The mutual dependence of public and private interests enabled the "money cliques" to influence policy through informal connections with powerful bureaucrats and political sway in the Imperial Diet. Allen (1940a, 731) explains:

> while the development of the Zaibatsu has been dependent in a large degree upon privileges bestowed on them by the State, they cannot be regarded merely as the passive instrument of a policy determined independently of them. If the State uses the Zaibatsu to carry out its designs, those designs themselves can be in some measure molded by pressure from the Zaibatsu.

One-third of all members in the Diet were closely identified with business interests; 28 percent of the upper house and 12 percent of the lower house were connected to a Zaibatsu group directly or through family ties (Tiedemann 1971, 280–81). Weakly developed political parties heavily depended on financial contributions from big business.[14] While the Diet often rubber-stamped the policy initiatives of the bureaucracy, large industrial enterprises also wielded disproportionate influence with civil servants in the cabinet ministries (Johnson 1982, 47–50). Finally, protectionist businesses were overrepresented in official committees such as the Council on Tariffs, which was formed to bypass the Diet's cumbersome procedures (Fletcher 1989, 99–101).

Export industries did not enjoy the same advantages of financial and industrial concentration or affiliation with Zaibatsu groups. Only the Japan Cotton Spinners Association was highly concentrated, as six firms owned half of the industry's capital equipment. However, yarn producers lacked close ties to the Zaibatsu (Ishii 1981, 31–32). Other export industries were crowded with small, financially strapped family firms. Though some of these activities concentrated in industrial centers (cotton fabrics and ironware in Osaka, pottery in Nagoya), others such as raw silk and weaving were geographically dispersed. Small firms also relied on Zaibatsu trading networks to procure imported inputs and market their goods abroad. This made collective action against Zai-

14. According to Ishida (1968, 299), "Since the Japanese political parties lack mass organizations, economically strong interest groups that desire to influence the political parties provide them with financial support which more than compensates for the absence of membership fees or contributions from party members."

batsu interests difficult. Moreover, state organs subjected these industries to rigorous control and regulation in the 1930s, which both reflected and aggravated their overall weakness in Japanese politics (Allen 1940a, 643; Lockwood 1955, 234).

The collapse of Japan's quasi democracy and the military's ascendance after 1931 extended the political influence of the large industrial combines at the expense of small firms. Though the military, particularly the Kwantung army's officer corps, propagated an anti-Zaibatsu hostility popular with peasants and small businesses, its need for armaments, munitions, vehicles, and communications obliged it to compromise with, and rely upon, the Zaibatsu. Thus, the army courted newer firms such as Nissan and Chosen Nitrogen Fertilizer to develop colonial resources for the war in China (Udagawa 1990b; Molony 1989). In turn, "close contact with Japanese Army leaders" and "heavy Army support," in the words of the U.S. consul in Yokohama, allowed Nissan to secure policies that handicapped foreign rivals (Mason 1992, 94). Since the old Zaibatsu could mobilize large amounts of capital, the military offered them special privileges, contracts, concessions, and leases to invest in occupied territories as well (Allen 1940a, 626–45; Hadley 1970, 40–42). Thus, the large industrial combines were able to resist military control and retain substantial influence even in wartime Japan.

Tariff Changes, 1920–36

Most industries with large returns to scale, through their protectionist preferences and political influence, secured higher tariffs after 1920. Steel duties increased from 7.5 percent to more than 20 percent. The 25 percent tariff on automobile parts was raised in 1932 to 35 percent for engines and 40 percent for other components to block U.S. affiliates from assembling "knocked down" vehicle kits into complete cars. The 1936 Motor Manufacturing Enterprise Act imposed import licensing and additional taxes on foreign automobiles; another tariff increase in 1937 brought duties to 70 percent for complete vehicles and 60 percent for parts. Tariffs on synthetic dyes jumped from 20 percent to 35 percent in 1926, and imports also were subject to import licenses. Duties on electrical machinery, communications equipment, machine tools, and industrial engines more than doubled in the 1926 tariff.[15]

Along with heavy industry, primary producers also received large tariff

15. Information on tariff changes appears in *Commerce Reports* (U.S. Bureau of Foreign and Domestic Commerce) and *Board of Trade Journal,* various issues.

increases. Farmers secured higher duties on products from outside the empire to ensure that colonial imports came at the expense of foreign countries, not domestic producers. The rice tariff doubled in 1930, pushing domestic prices 40 percent above world prices. Higher duties for sugar nearly extinguished imports from outside the empire, as protection surged from 10 percent before the war to 60 percent by 1932. These measures helped to reconcile protectionist pressure from farmers and miners with free access for colonial primary produce, as barriers against imports from outside the empire caused trade diversion and created rents for landowners in Japan and the colonies.

Ordinary least squares (OLS) regression allows a more systematic test of the relationship between key variables and Japanese tariffs. In this analysis, the dependent variable *tariff* is either the tariff rate or specific duties divided by average import prices (depending on whether duties were assessed ad valorem or in fixed amounts per unit) in 1935.[16] The primary independent variable is *scale,* which is described in the appendix. *Imports* as a share of consumption and *exports* as a share of sales are proxies for comparative costs. *Concentration,* which captures an industry's capacity to organize politically, is the share of production in plants with more than one thousand workers.

The results appear in table 7. *Scale* has the correct positive sign and is statistically significant. To interpret the coefficient, consider the difference between Japan's strongest industry, rayon, and its weakest, automobiles: all else equal, the automobile industry's predicted tariff is 21.6 percentage points higher than the rayon industry's. *Imports* and *concentration* are positively signed and statistically significant. Tariff rates favor concentrated industries in particular, as each one standard deviation increase in *concentration* increases tariffs by 12 percentage points, compared to 6.8 percentage points for *scale* and 4.3 percentage points for *imports. Exports* is incorrectly signed and not significant.

While the number of cases is small, and the results must be qualified accordingly, table 7 illustrates three important points. First, small-scale industries were more likely to receive high tariffs, particularly when returns to scale were large. This shows that the Japanese government tended to satisfy protectionist demands from producers that could not take full advantage of scale economies. Second, import-competing industries also were effective at gaining high tariffs. Third, more-concentrated industries received significantly greater protection, which suggests that concentration facilitated collective action.

16. Tariff rates are from Department of Finance 1935.

TABLE 7. OLS Regression Results for Japanese Tariffs in 1935

Tariff =	−0.49	+ 0.35 (Scale)	+ 0.17 (Imports)	+ 0.02 (Exports)	+ 0.78 (Concentration)
	(0.13)	(0.08)***	(0.07)**	(0.15)	(0.11)***

$F = 16.58^{***}$
Adjusted R-squared = 0.75
$N = 22$

Note: Standard errors are in parentheses below the parameter estimates.
$^{***}p < .01$ $^{**}p < .05$ $^{*}p < .10$

The Imperial Trading Bloc

The tariff changes just described applied to Japan's colonies, Taiwan and Korea, as well as the home islands. Industries with large returns to scale and import-competing primary producers thereby gained wider margins of preference over foreign rivals in the empire. Policy in Japanese-occupied territories (Kwantung, Manchuria, and North China) favored these same interests. In Manchuria, "the import tariff was devised to encourage the inflow of capital equipment for the mining, metallic, and heavy manufacturing industries" (Jones 1949, 192). In addition to lower duties on industrial and building materials from Japan, exchange controls and government licensing prohibited foreign imports of rice, sugar, wheat, flour, and other primary goods.

Heavy industry received additional assistance through the aggressive application of TRIMs against foreign multinationals. Udagawa (1990a, 27) states, "Japan's effort to exclude foreign capital in the 1930s was the most decisive of any nation's to pursue obstructing and protective policies for the sake of its own domestic industries." Japanese telephone companies won exclusive procurement rights from the Ministry of Commerce and Information, producers of lightbulbs and sewing machines lobbied to force GE and Singer to share technology, and Nissan and Toyota secured production quotas and import restrictions against Ford and GM. After 1930, state officials pressed U.S. multinationals to sell their assets to local investors. The army even blocked Ford from buying land for a new factory at Yokohama (Mason 1992, 47–52, 79–97). Mason (1992, 72–73) concludes: "business interests wielded influence over official actions even during this extraordinary ascendancy of the military."

Military and civilian officials forced Western firms to liquidate investments in Manchurian heavy industry as well.[17] In one case, Japanese administrators

17. The Japanese administration in Manchuria sought to avoid blatant discrimination to promote international acceptance of the new regime. Thus, many trading privileges for Japanese firms were not in observable aspects of the tariff structure but in opaque regulations such as exchange allocations, import licenses, public procurement, and government-sanctioned monopolies.

raised duties on foreign motor vehicles and blocked the creation of a U.S. assembly plant in Dairen. The U.S. Consulate in Manchuria explained: "The Army's interference . . . is simply a refusal to allow these American motor cars a price advantage in the Manchurian market." The Manchurian tariff revision, this report concluded, "amounts mainly to manipulation designed to encourage construction in Manchuria and to favor Japanese export commodities."[18]

These sorts of regulations allowed Japanese firms to dominate private investment in the empire. In practice, Zaibatsu groups providing the capital and technology necessary to begin production in occupied areas were granted a monopoly position. While many Japanese firms in this "enclave economy" secured financing from public sources and final authority over certain management decisions rested with the military, nonetheless they enjoyed substantial leeway to "function like private enterprises in a free market" (Myers 1996, 138–39). These activities concentrated in armaments, explosives, munitions, primary metals, building materials, motor vehicles, communications gear, and machinery, not the light industries in which Japan enjoyed a comparative advantage. Large-scale capital inflows not only promoted industrial development and military mobilization, they also helped to finance increased imports of Japanese capital goods into occupied areas.

Trade data demonstrate that Japanese policy encouraged production and exports in industries with large returns to scale. From 1931 to 1935, steel exports jumped 900 percent, machinery 600 percent, and motor vehicles 540 percent. Sales to Manchuria, North China, and the colonies accounted for 90 percent of this increase. During this period, exports of textiles, apparel, pottery, and glassware remained stable or fell (calculated from data in Mitsubishi Economic Research Bureau 1936, 515–17). Concentration ratios for heavy and chemical industry exports to Manchuria and North China jumped dramatically after the occupation of these areas. By comparison, the regional concentration of exports was much lower for textiles, pottery, and glassware, and these ratios declined between 1929 and 1936. Yet in Hong Kong and South China—markets temporarily beyond the reach of Japan's army—exports were not skewed toward the heavy and chemical industries, and light industry enjoyed more of an advantage (Schran 1994, 214–20).

Japanese market shares for motor vehicles, machinery, and iron and steel in Korea, Taiwan, and Manchuria in the 1920s show a similar empire effect. In Korea and Taiwan, market shares declined after the war, before rebounding

18. "Tariff Revision," American Consulate General, Harbin, Manchuria, February 12, 1935, Consular Reports and Cablegrams, 1934–35, Box 9, RG 20.

once measures favoring colonial goods were instituted after 1923. In Manchuria, market shares bottomed out in 1930 and then bounced back after Japan seized control and revised the province's tariff.[19]

These trends demonstrate that the trading bloc served as "a protected Empire-wide market for Japanese-made producer goods, which were not yet competitive in free markets" (Schran 1994, 207). Imperial protection enhanced domestic market shares and provided an export outlet for firms that needed to gain scale economies to match producers outside Asia. According to Yamazawa (1975, 59), "Japan's tariff protection reached its highest level in the late 1920s and early 1930s, during which the most rapid cost reduction was realized in many production areas." Since the rapidly expanding heavy and chemical industries quickly saturated additional markets in the colonies and Manchuria, these areas provided only a temporary palliative—making further expansion into densely populated markets in North China and elsewhere in East Asia increasingly attractive.

The point is not that business interests *caused* Japan's aggressive bid for territorial conquest but rather that economic conditions *predisposed* Japan to seek out markets in the region. Nor does this imply that friction never existed between military officials who wanted more territory and business leaders who wanted larger markets. Indeed, military plans after 1937 increasingly conflicted with the interests of the heavy and chemical industries, which objected to controls on private enterprise and feared war in Asia would undermine industrial development. More than industry's need for a wider protected market, military concerns about access to oil, rubber, and iron ore dictated expansion into Southeast Asia to form the Co-Prosperity Sphere (Fletcher 1989, 144–50). Even so, a symbiotic relationship existed between firms that viewed nearby territories as an economic lifeline and military leaders who sought self-sufficiency in manufacturing, food, and raw materials. Autarky inside an imperial bloc therefore catered to varied interests: heavy industry's need for exclusive markets, the military's desire to build up armaments and control vital strategic materials, and racist-nationalist nostalgia for a united Asia under Japanese control.

Britain and Imperial Preference

Economic unity in the empire was long debated in British politics with the founding of the Fair Trade League in 1881, Joseph Chamberlain's Tariff Reform movement after 1903, and the formation of groups such as the Empire Industries

19. Market shares were compiled from data in Oriental Economist 1935 and Wright 1935, 352–58.

Association in the early 1920s. But while the dominions introduced lower tariffs for empire goods in 1894, Imperial Preference failed to gain widespread popularity in England before 1930. Finally, at the Ottawa Conference in 1932, Britain established a formal trading bloc in its empire.

Imperial Preference took a half century to materialize because Britain had to abandon the free trade policy in effect since the abolition of the Corn Laws before it could offer preferential treatment to the commonwealth. Cracks in free trade's facade first appeared with the wartime McKenna tariff, which applied duties on automobiles, clocks, watches, and musical instruments, and the Dyestuffs Importation Act, which established import licensing for dyes. After the war, the Safeguarding of Industries Act instituted protection for "key industries." The Conservative government subsequently levied tariffs on silk and rayon, reinstated McKenna duties on automobiles, and extended these tariffs to tires. Protection became the norm in 1931, when the Import Duties Act imposed across-the-board tariffs ranging from 10 to 33 percent.

When Britain abandoned free trade, it also instituted Imperial Preference. Before 1931, most imports remained free from all sources (though McKenna goods, silk, and rayon from the commonwealth were taxed at less than the general rate). In the Ottawa Agreements, however, Britain guaranteed access for dominion agriculture and imposed tariffs and quotas on foreign meat, dairy products, cereals, fruits, and vegetables, thereby establishing preferences for food. In return, the dominions expanded preferences for Britain—often by imposing new or higher duties on foreign products.[20] With these tariff changes, margins of preference for British goods reached 22.5 percent in New Zealand, 20.2 percent in Canada, 19.3 percent in Australia, 5.6 percent in India, and 2.6 percent in South Africa (MacDougall and Hutt 1954, 246–47). Though the British Empire never evolved into a self-contained unit like Japan's trading bloc in East Asia, these policy changes nonetheless represented a dramatic shift to protectionism.

As public support for free trade weakened, industries with unexploited scale economies moved to the forefront of the movement for tariff protection at home and privileged access to the commonwealth. These producers began to face competition from rivals in the United States and Germany in the years before World War I. After the war, it became clear that British firms had inefficient factories with short production runs and outmoded equipment. With too many producers vying for limited domestic demand, firms needed protection at home and markets abroad to sell more goods, expand in size, and reorganize operations. Their response was to seek shelter inside the empire.

20. "The Ottawa Conference" 1932.

The Scale of British Industry

In the nineteenth century, England's proficiency in textiles, shipbuilding, railways, and basic materials such as coal, iron, and steel earned it the title "workshop of the world." Many technological advances during the second industrial revolution also originated in England. The transition to mass production in the electrical, mechanical, and chemical industries began around World War I and continued after the war. This led to rapid increases in the size of manufacturing establishments, as the Board of Trade's Committee on Industry and Trade (1929, 176) noted "a strong tendency . . . for enterprises engaged in production to increase in average size, a tendency which shows no sign of reaching its limit."

But Britain's head start was more a liability than an advantage. The Board of Trade's Committee on Commercial and Industrial Policy (1918a) diagnosed the key problems after the war. Early industrialization made steam power so accessible that producers were slow to convert to electricity. Older factories lacked modern layouts and the latest machinery, yet firms were reluctant to demolish inefficient plant and replace outmoded equipment. Because large capital investments could not be quickly amortized, firms often expanded by enlarging and remodeling existing plants rather than constructing new ones. In the United States and Germany, on the other hand, a late start encouraged producers to build large, modern plants and close old factories.

Britain's liabilities in the new, large-scale industries were apparent even before World War I. In 1914, the biggest companies in metallurgy, in mechanical and electrical engineering, and in chemicals produced on a smaller scale and captured lower home market shares than foreign rivals. In contrast to the United States and Germany, Britain's largest enterprises clustered in light industry, not heavy industry (Chandler 1990, 275–78). As a result, its position was strongest in textiles, coal, and shipbuilding—products of the first industrial revolution—and consumer goods such as food, beverages, and tobacco. As Broadberry (1997, 157–58) explains, British industry achieved high productivity and performed well in global competition when it could rely on "craft-based flexible production" (as in textiles) or when mass production was difficult to implement (as in shipbuilding).[21] But firms were weakest in the industries with the greatest scale economies, where intensive use of skilled labor could not compensate for low volume.

21. Broadberry (1997, 158) finds that "poor British performers tended to be industries where high throughput techniques had been successfully developed in the United States, but where demand conditions or resources and factor endowments simply prevented the adoption of such techniques in Britain."

Table 8 shows the scale of production in British industry. In industries with large returns to scale, volume was lowest in automobiles, tractors, electrical goods, steel, and dyestuffs. Britain's automobile factories employed as many workers as U.S. plants but produced one-tenth as many vehicles; even the largest plants had considerably shorter production runs than in the United States. Similar disadvantages existed in machinery, as the total British production of tractors and typewriters trailed output per factory in the United States. In the electrical industry, the Board of Trade's Committee on Commercial and Industrial Policy (1918a, 14) noted, large "numbers of small concerns have arisen, each struggling against the other, with resultant high costs of production." Short production runs prevailed in household items such as refrigerators, lightbulbs, vacuum cleaners, and small electric motors (Jackson 1954). Britain's twenty largest steel firms produced just one-third the output of U.S. Steel and barely equaled Germany's Vereinigte Stahlwerke (Hannah 1976, 121).[22] In dyes, "even the largest British firms . . . were pygmies in comparison . . . [to] the large-scale operations of [German] coal tar firms" (Richardson 1968, 286–87).

In most other chemicals and products such as tires and aircraft, British industry was less far behind but still trailed foreign rivals. Only producers of motorcycles reached world-class standards. Nobel's explosives plant was the largest of its kind, and firms had a strong position in alkalies (Broadberry 1997, 159–63). ICI owned the world's second-largest synthetic nitrogen plant, but its capacity was just one-quarter that of IG Farben's giant facility at Merseburg (Reader 1975, 39). Courtaulds was among the leading rayon producers, though it could not match the output per plant of its U.S. subsidiary, AVC (Coleman 1969, 322–29). As the aircraft industry expanded production for military procurement, several medium-sized firms competed for market shares (Fearon 1978).

The limited range of the British market was a handicap for small-scale producers. The Board of Trade's Committee on Industry and Trade (1928a, 162) observes, "the Americans' huge home market gives them a great advantage in the prosecution of [mass production] methods . . . [but] attempts in the same direction in this country ha[ve] been discouraging." Table 9 shows local consumption compared to the MES for several products. Only in motorcycles, dyes, and rayon was British consumption at least one-third the U.S. level. Moreover, the British market could support more than one MES plant in just a handful of cases. As a result, firms attempting to increase volume often created a glut of goods and triggered painful adjustments.[23] With so little domestic steel con-

22. Only three steel mills could produce four hundred thousand tons annually (Burn 1961, 432–33).

23. Cases in point include Ford's auto plant at Dagenham and ICI's synthetic nitrogen facility at Billingham (Hannah 1976, 133).

TABLE 8. Scale of Production in Britain, 1930

Industry/Product	Units	Output per Plant	Percentage of U.S. Production
Chemicals and fibers			
Synthetic ammonia[a]	Tons	58,975	303.8
Alkalies and sodas	Tons	31,852	87.7
Dyestuffs	Thousand lb.	1,374	66.6
Explosives	Thousand lb.	2,862	51.3
Rayon	Thousand lb.	2,034	50.6
Transportation equipment			
Motorcycles	No.	3,206	79.0
Aircraft	No.	31	49.1
Tires	No.	347,514	40.4
Locomotives	No.	37	34.5
Trucks and buses	No.	316	11.4
Automobiles	No.	3,909	9.9
Basic materials			
Steel	Tons	55,458	28.2
Pig iron	Tons	89,745	22.2
Electrical and machinery			
Electronic tubes	Thousand	625	33.0
Lightbulbs	Thousand	3,272	26.0
Sewing machines	No.	8,116	23.5
Tractors	No.	1,682	19.4
Vacuum cleaners	No.	37,534	11.6
Typewriters	No.	2,010	5.4

Source: Data from Board of Trade 1934.
Note: No. = number of individual units.
[a]USTC 1937. Data are for 1929.

sumption, Chandler (1990, 284) observes, "Only a courageous and somewhat irrational set of British steelmakers . . . would have made the investment required to build and integrate works in Britain large enough to compete in price with those of Pittsburgh and the Ruhr." The steel industry was not alone in this challenge: the six leading automakers controlled 90 percent of a market one-twentieth the size of the United States, where four firms dominated.

Since firms could not achieve large volumes producing for domestic demand, many sought to export. But manufacturing for a number of markets made it difficult to capture unexploited scale economies. In automobiles, machinery, electric motors, and basic steel, the diverse needs of foreign consumers prevented firms from mass producing standardized articles. Many firms specialized in craft-based, skill-intensive goods where low volume was less of a liability, such as custom-built textile machinery and boat engines; simple farm implements such as plows, harrows, and drills; and larger projects such as railway electrification,

TABLE 9. MES Production and the British Market

Product	Lowest MES Estimate	MES Divided by National Consumption
Tractors	90,000 units	26.94
Typewriters	500,000 units	8.24
Synthetic ammonia	200,000 tons	3.85
Trucks	250,000 units	3.74
Electric motors	360,000 units	3.35
Automobiles	500,000 units	3.15
Sewing machines	500,000 units	3.12
Motorcycles	200,000 units	2.42
Oil engines	100,000 units	0.93
Rayon	40 million lb.	0.89
Radios	1 million sets	0.61
Dyestuffs	20 million lb.	0.57
Tires	5 million casings	0.50
Steel	6 million tons	0.24
Footwear	300,000 pairs	0.003

Source: Data from Board of Trade 1934.

power plant construction, and wire and cable installation (Saul 1977, 35–36). British firms therefore fared best in export markets when they could differentiate their products and compete on quality and craftsmanship.

Variety could not substitute for low costs and inexpensive prices in generic, mass-produced goods, however. As U.S. factories expanded to serve foreign consumers, British firms were pushed back first in neutral markets and then inside the empire (Marrison 1996, 12–13). Of the industries producing on a small scale, none captured even 30 percent of the imperial market in 1929. Only producers of motorcycles managed large increases in market share after the war.[24] With the burden of high unit costs, "British firms found it difficult to secure the requisite market outlets to justify mass production" (Elbaum and Lazonick 1986, 15–16).[25] As a result, even as their market position in the empire deteriorated, they became increasingly dependent on it.

In sum, industries with large returns to scale manufactured in short production runs compared to the same industries in the United States. The small

24. Data are available in Board of Trade, Customs and Excise Department 1930.
25. Elbaum and Lazonick (1986, 7) add:

> Britain's rivals were better able to rationalize the structure of orders and ensure themselves market outlets required for mass production. . . . [With] more secure and expansive domestic markets, foreign rivals, with more modern, capital-intensive technology attained longer production runs and higher speeds of throughput than the British.

British market forced producers to export, but these firms could not undersell rivals abroad. To compensate for insufficient home demand, they needed access to a wider trading area. This made Imperial Preference an attractive means to divert imports and gain market shares in the commonwealth. Firms with size disadvantages also needed tariffs in the domestic market because of high unit costs. Most industries with large returns to scale therefore had incentives to seek both trade protection at home and a trading bloc in the empire.

Exporting and Import-Competing Industries

Two-fifths of industrial labor in interwar Britain worked in three export trades: textiles, shipbuilding, and coal. Mass production techniques were difficult to apply in these areas, so few scale economies existed. Textile manufacturers were beginning to use capital-intensive methods with mechanical innovations in spinning and weaving, but the need to tailor fabrics to shifting consumer tastes inhibited volume and throughput (Lazonick 1986, 19–23). In shipbuilding, basic components were not standardized, and the largest yards could accommodate the construction of only four to six ships at a time (Lorenz and Wilkinson 1986, 110–19). In coal, productivity declined with total output as workers had to dig deeper and thinner seams. In these cases, firms relied on the high productivity-to-wage ratio of Britain's skilled workforce and a reputation for quality (and in coal, the proximity of British collieries to the sea).

When local factor endowments rather than scale determined production costs, industries using skilled workers tended to be export oriented, while those intensively using low-skill labor, natural resources, and land faced import competition. The textile industry was the most export-dependent branch of the economy: more than 80 percent of cotton fabrics and 40 percent of wool fabrics were sold abroad. Producers of pottery and china, cutlery, and metal tools exported more than one-third of their output. One out of every five tons of coal excavated from British mines was sent overseas.

However, a number of factors conspired to create falling export volumes and growing unemployment after the war: overvalued sterling, rising real wages, declining productivity, higher foreign tariffs, and import substitution abroad. In coal, output per man-shift fell behind continental European mines, undermining Britain's position in nearby markets (Svennilson 1954, 109–10). Cotton textile sales to Japan, China, Hong Kong, and India—markets that absorbed more than half of exports in 1913—failed to rebound after the war and declined further in the 1920s. Exports of wool textiles also fell, and imports doubled; unemployment reached 25 percent in 1930. Other consumer goods

such as apparel, footwear, hosiery, and carpets faced intense import competition and negative trade balances as foreign labor surpassed British productivity at lower wages.

In the three major export trades (cotton textiles, shipbuilding, and coal), imports were less than 1 percent of consumption; the problem was falling export volumes, not competition at home. These industries had nothing to gain from abandoning free trade: tariffs could only provoke retaliation and a further loss of markets abroad.

Incentives for Imperial Preference also were mixed. On one hand, most foreign sales of export-oriented industries were outside the empire. For example, 80 percent of coal exports went to Europe, Scandinavia, and the Mediterranean due to high transport costs; even with tariff advantages over foreign competitors, the empire was too far away to take more British coal (Allen 1933, 37–41). In cotton fabrics, the dominions other than India absorbed only 15 percent of exports. Moreover, when labor-intensive industries sold large amounts in the empire, they enjoyed dominant market shares even without tariff discrimination. British wool producers, for instance, accounted for 90 percent of the yarn, flannel, and fabric imports in the dominions (Board of Trade, Committee on Industry and Trade 1928b, 226). There simply was not much trade from other countries to divert.

On the other hand, Australia, New Zealand, and Canada had become increasingly protectionist to promote import substitution. When British firms faced difficulty selling in the commonwealth, competition from foreign exporters was less of a problem than tariffs that often surpassed 30 percent. Indian duties on British cotton fabrics increased from 3.5 percent during the war to 25 percent by 1931. Even higher barriers existed in Australia, New Zealand, and Canada.[26] Cotton mill owners therefore had an interest in tariff concessions to defend access to India's market. Exporters of footwear, cutlery, metal manufactures, pottery, and china also could benefit from Imperial Preference if this induced trade creation (by reducing tariffs on British goods) more than trade diversion (by raising margins of preference over foreign goods).

In contrast to export-oriented producers, industries facing import competition could benefit from trade barriers in the domestic market. Import pressures were most intense in silk textiles and fabric gloves, and foreign currency depreciation created import competition in paper, glass and glassware, apparel,

26. In India, British textiles enjoyed a 5 percent margin of preference over foreign goods, which increased to 6.25 percent in 1931. This, however, was not enough to allow them to maintain their position in competition with local cotton mills and cheap Japanese exports (Redford 1956, 231–32, 281–84).

hosiery, and rubber footwear as well. Each of these industries had strong incentives to demand trade protection. Moreover, the commonwealth presented no competition: imports from the empire exceeded 2 percent of consumption only in paper manufactures. Since Imperial Preference required first abandoning free trade and imposing tariffs on products from outside the empire, it would be just as attractive to these industries as tariffs alone.

Producers of foodstuffs and other agricultural goods, however, faced competition from the dominions' vast ranches and croplands. Initially, displacement was most severe in grains and dairy products. But with the development of new refrigeration methods, foreign beef, pork, and livestock began to appear in the United Kingdom. Even if there were no imports from outside the empire, British farmers would have to contend with cheap produce from the dominions. Stabilizing domestic food prices therefore required restrictions on imports from all sources. The dominions, however, sought to promote food exports, and they would not grant increased margins of preference unless they received corresponding benefits in food. Thus, protection for British farmers conflicted with Imperial Preference for industry. Still, tariffs on foreign food to establish Imperial Preference were a necessary first step to defeating the free trade system. And for British farmers, some protection was better than none at all.

Industries with Economies of Scale: Trade Preferences

A major political cleavage in interwar Britain was the division between industries with large returns to scale and the traditional export trades. Members of these two factions belonged to the same trade associations—the Federation of British Industries (FBI), the National Union of Manufacturers, the Empire Industries Association, and the like.[27] Yet the differing market interests of large, capital-intensive heavy industries and the skilled labor-intensive light industries created antagonism after World War I. The electrical, chemical, and motor industries, which needed to maintain high volume, were more likely to petition for McKenna or Safeguarding of Industries duties. In contrast, textiles, coal, shipbuilding, engineering, and other export industries were anxious about losing markets overseas and less inclined to seek trade protection at home. These

27. The FBI was Britain's largest industrial association: by 1920 it counted twenty thousand firms as members, as it brought together Manchester's free traders and Birmingham's protectionists. The National Union of Manufacturers was smaller and more homogenous, with about three thousand firms in the steel, engineering, and motor industries. With more freedom to engage in political activity, it faithfully represented the protectionist cause. The Empire Industries Association also was important in the push for tariff protection and Imperial Preference (Boyce 1987, 9–11).

divisions immobilized the large manufacturing associations, which generally took a neutral position on trade matters, leaving industry-based pressure groups and local chambers of commerce to fill the political vacuum (Marrison 1996, 328–29, 339–40, 348–51).

Trade groups in activities with large returns to scale formed the backbone of the movement to end free trade. Industries with small-scale production relative to foreign rivals issued the earliest and most persistent appeals for trade protection, as hypothesis 5 anticipates. The automobile industry "actively supported the protectionist cause" (Snyder 1944, 152). Austin, Morris, Leyland, and Joseph Lucas lobbied through the British Motor and Allied Manufacturers Association to continue wartime tariffs as the McKenna duties were set to expire in 1919 and 1923. These firms also sought to extend the tariff on cars to commercial vehicles and tractors (Marrison 1996, 318, 375–76; Snyder 1944, 31–32). In the dye industry, British Dyestuffs and ICI pushed to extend tariffs and licensing in the Dyestuffs Importation Act to block German competition (Reader 1970, 271). As for steel, the Board of Trade's Departmental Committee on the Iron and Steel Trades (1918d, 29) noted the "practically united feeling of the British iron and steel producers" in favor of tariffs. The National Federation of Iron and Steel Manufacturers (NFISM) petitioned for Safeguarding duties on a number of iron, steel, and wire products in 1925 (Carr and Taplin 1962, 350–53, 375–80).[28] Steel firms insisted they could not begin to reorganize "unless assured of the home market" because "the small orders . . . are not nearly enough. . . . it is the orders for imported steel that can alone give the big plants what they need" (Tolliday 1984, 52, 56). While the NFISM recommended 25 percent duties on steel products, large steelmakers pushed for 33 percent; producers of wrought iron sought tariffs as high as 50 percent (Carr and Taplin 1962, 477).

Other industries with unexploited scale economies sought trade protection as well. Producers of electrical goods advocated tariffs "sufficiently high to protect effectively the electrical industry" (Board of Trade, Departmental Committee on the Electrical Trades 1918a, 11–12). The Electrical and Allied Manufacturers Association later told the government that it wanted "to get a

28. The Steel Rerollers Association initially opposed tariffs on basic steel, which firms imported from northern Europe and then rolled into finished steel products. Integrated steel firms (United Steel, Richard Thomas, Stewarts and Lloyds, South Durham) sought tariff protection to secure these orders for themselves and drive the rerollers out of business. The largest importer of unfinished steel (Guest, Keen, and Nettlefolds) dropped its opposition to steel duties in 1926, and the rerollers then pushed for tariffs on finished steel (Tolliday 1984, 53–54; "Iron and Steel Reorganization 1932" 107–9).

protectionist tariff" (Rooth 1992, 39).[29] This group sought duties on radio components, lightbulbs, and spark plugs (Marrison 1996, 272–73). Producers of sewing machines, farm machinery, and locomotives also were inclined toward protection (Marrison 1996, 247–48).[30] The leading tire producer, Dunlop, began to push for restrictions on U.S. imports in 1916, and after the war the Rubber Tire Manufacturers Association petitioned to extend McKenna duties to tires (Dunlop 1949, 139–42; Snyder 1944, 154). Courtaulds supported rayon tariffs, while small firms in the Cellulose and Chemical Manufacturers Association were even more emphatic about the need for protection.[31]

In a few cases, firms remained favorable to open trade or made a halfhearted conversion to protectionism. Lower ammonium sulfate prices due to foreign dumping eventually led ICI and other agrochemical manufacturers to ask the Board of Trade for duties on artificial fertilizers in 1932 (Reader 1975, 149). Other sectors of the chemical industry, such as alkalies and explosives, declined to seek protection (Marrison 1996, 71–72, 307). Rooth's (1992, 39) study of protectionist pressures in Britain finds that only two capital-intensive industries backed free trade: motorcycles and electric wire and cable.

Heavy industry also was a vocal supporter of Imperial Preference. Boyce (1987, 114) notes that leaders in heavy industry widely believed "that the world was being transformed by the advent of large-scale, mass production industry with its demand for large and stable markets." These executives argued that the United States would flood world markets with low-cost manufactures and drive down prices as its production outpaced national consumption. Many concluded that tighter economic links with the empire were needed to ensure a secure mass market for high-volume goods (Rooth 1992, 71–73). In response, corporate leaders formed the Empire Industries Association, the Empire Economic Union, and the Empire Producers Organization to advance their interest in imperial protection (Garside 1998, 50–51). In addition, sixteen prominent figures in the heavy and chemical industries united to

29. The chairman of General Electric (not affiliated with GE in the United States) explained, "if the sluices of importation are not closed only one of two things can happen—we shall be ruined, or in self-defense we must make an agreement with our foreign competitors asking them to please let us live . . . in England and they may have the rest of the world" (Davenport-Hines 1984, 200).

30. The Board of Trade's Committee on Commercial and Industrial Policy (1918a, 13) noted that "a majority [of firms] consider that import duties are necessary," but it declined to recommend tariffs. The protrade views of skill-intensive producers (textile machinery, marine engines, boilers, wagons, and structural engineering products) apparently outweighed the interests of high-volume sectors such as sewing machines, office and farm machinery, and locomotives.

31. "The Silk Duties" 1932, 1066. Coleman (1969, 260–63, 328) implies that Courtaulds did not lobby for tariffs, but his discussion and other sources suggest otherwise.

sponsor a proclamation favoring Imperial Preference in the *London Times* in November 1929.

The steel industry was an early convert to Imperial Preference. As far back as 1886, steel barons told a Royal Commission they needed preferential trade to reserve imperial markets for surplus produce. Steel firms also backed Chamberlain's Tariff Commission in 1903. When that failed, many pushed the dominions for preferences to divert trade from the United States and Germany (Carr and Taplin 1962, 119–24, 254, 374, 509–11). After the war, the Board of Trade's Departmental Committee on the Iron and Steel Trades (1918d, 29–30) recommended a commonwealth exemption from tariffs. In the 1920s, the NFISM pushed for duties on food and raw materials from outside the empire and criticized the government's refusal to abrogate MFN, and steel representatives sought a generous scale of tariff preferences at Ottawa (Wurm 1993, 38, 81, 176).

In the chemical industry, ICI sought to retain the empire "as an exclusively British trading area" through a system of tariffs and cartel arrangements in alkalies, explosives, and agrochemicals (Reader 1970, 170). According to Reader (1975, 229), "ICI's foreign policy . . . was the policy of establishing the British Empire as ICI's 'natural market,' which foreigners did not invade, and of leaving foreigners alone in theirs." Alfred Mond, the chairman of ICI and a founder of its predecessor, Brunner-Mond, advocated trade protection in Britain with a common imperial tariff.[32] As a leading figure in the Empire Industries Association and the Empire Producers Organization, Mond hoped to join Britain and the commonwealth in "a self-sufficient economic system" (Reader 1975, 9).

Newer industries joined the movement for an imperial bloc later, but with the same enthusiasm. Automakers were particularly favorable to Imperial Preference. The Society of Motor Traders and Manufacturers emphasized the need for tariff advantages in the empire to combat U.S. "dumping" (Lowe 1942, 93). In addition, automakers favored tariffs on foreign food with free entry for imperial produce to encourage the dominions to widen preferences for British goods.[33] Producers of tires and aircraft sought Imperial Preference to close em-

32. Booth and Pack (1985, 81–82) write:

> The imperial vision derived from [Mond's] identification of trends toward the formation of trading blocs, both in North America and in Europe. The options for Britain were either to join one of these units or to form its own bloc based on the empire. . . . Within this protected unit, British capital could provide the major stimulus to development and growth with the promise that guaranteed markets would promote continuing efficiency and productivity improvements.

33. Other industries were less enthusiastic about food duties but generally supported them in the interest of Imperial Preference (Marrison 1996, 415–17).

pire markets to U.S. goods.[34] The machinery industry widely agreed on the need for preferences in the empire; producers of agricultural and office machinery were most supportive (Board of Trade, Departmental Committee on the Engineering Trades 1918c, 24, 38; Board of Trade, Committee on Industry and Trade 1928a, 166). Electrical firms also sought a preferential imperial market in which to expand sales (Davenport-Hines 1984, 56–59).

In sum, though it is difficult in some cases to connect demands for Imperial Preference with narrow sector-based interests, the available evidence suggests that producers with large returns to scale and a small home market were strong and consistent advocates of a trading bloc with the empire, as hypotheses 1 and 2 expect. In addition, while several firms and trade associations openly opposed Imperial Preference, none produced in industries with significant scale effects.

Exporting and Import-Competing Industries: Trade Preferences

In evaluating the trade preferences of British industries, it must be noted that no import barriers existed in the domestic market (except for a few products subject to Safeguarding duties). With free trade and an overvalued currency, even some low-cost industries had incentives to seek trade protection. Even so, export industries generally supported the continuation of free trade, and they lacked enthusiasm for proposals to establish Imperial Preference. The coal, shipbuilding, and cotton textile industries all opposed tariffs and preferences because they needed foreign markets and cheap sources of imports (Board of Trade, Committee on Commercial and Industrial Policy 1918a, 67).[35] The Manchester Chamber of Commerce favored the repeal of the Safeguarding of Industries and Dyestuffs Importation acts by more than four to one, as textile producers complained these measures were "injurious to trade."[36] In coal, the Hull Chamber of Commerce condemned the new tariff policy and urged the government to adhere to free trade.[37] Shipbuilders lobbied against tariffs on iron and steel.[38]

34. Dunlop statement in *Economist* 114:1101; Fearon 1978, 76.

35. Marrison (1996, 251) calls this "the most tangible evidence . . . of any industrial commitment to Free Trade."

36. "Manchester and 'Safeguarding of Industries'" 1921, 333; "Manchester and Protection" 1923, 11.

37. "Coal and Tariffs" 1923, 953–54; Marrison 1996, 91–93.

38. Constructional engineers and tinplate producers joined shipbuilders in their efforts to block steel tariffs. Other steel consumers favored steel tariffs to advance their own protectionist agenda. The Society of Motor Manufacturers and the Electrical Industries Council were sympathetic to steel tariffs, while the British Engineers Association dropped its opposition to duties in 1928 (Carr and Taplin 1962, 477–78; Marrison 1996, 278–81).

Even as economic conditions worsened after 1930, shipbuilders and coal mine owners held out hope that devaluation would stifle pressure for a General Tariff (Marrison 1996, 421–22). In cotton textiles, however, antiprotectionism began to weaken. A 1930 poll found three-quarters of Manchester merchants favoring some form of protection, with only one-quarter for free trade. Some also began to favor tariff preferences for the empire. In the crown colonies, Lancashire sought measures to exclude "competition from certain industrial countries with lower standards of life," namely Japan (Redford 1956, 239–40, 251–52). But its principal concern was the Indian market: though cotton merchants did not seek trade preferences against all competitors, they did advocate the abrogation of MFN rules to allow special restrictions on Japanese goods in India and elsewhere in the empire (Marrison 1996, 184–91; Redford 1956, 252–59).

Even so, the cotton textile industry denounced proposals for a self-contained imperial system as an obstacle to the revival of foreign trade; it objected to increased tariffs against foreign countries and trade diversion on the grounds that greater access to imperial markets should not come at the expense of foreign exports. Instead, firms pushed to reduce commonwealth tariffs to ensure trade creation. The Manchester Chamber of Commerce grumbled that the Ottawa Agreements would not result in "any substantially increased volume of trade" (Redford 1956, 270–71). Textile producers later urged the government to extend Imperial Preference to any country outside the empire that would reduce its tariffs on British goods.[39]

While cotton fabric producers became more open to Imperial Preference, the wool textile industry was more favorably inclined to tariff protection than other exporters. After the war some branches of the wool trade, such as long-staple yarns and fabric for women's apparel, sought modest tariffs (Board of Trade, Departmental Committee on the Textile Trades 1918e, 68–70). A 1923 vote in the Bradford Chamber of Commerce, the seat of the wool industry, found a slim majority in favor of tariffs against countries with depreciated exchange rates.[40] Safeguarding petitions soon followed in 1924 and 1929. Bradford, however, was not as interested in Imperial Preference as Manchester, as wool textiles producers pushed the dominions to reduce tariff protection in their domestic markets but did not seek special restrictions on foreign goods.[41]

Import-competing industries were more emphatic about the need to end

39. "The Cotton Trade and Ottawa" 1932, 1070; "Lancashire and Ottawa" 1932, 1401; Redford 1956, 244–47.

40. "Bradford's Cry for Protection" 1923, 394; "Bradford and Protection" 1923, 787.

41. Porter 1979, 43–44; "Canadian Tariff Problems" 1933, 1165.

free trade. After the war, the Silk Manufacturers Association lobbied for 25 percent duties on silk yarn and fabrics, with an exemption for the empire. Other branches of the textile industry, such as embroidery and lace, hosiery, knitted goods, underwear, and fabric gloves, also supported trade protection. Between 1921 and 1923, industry groups petitioned for Safeguarding duties on glass and glassware, cutlery, silk fabrics, and gloves, while rubber manufacturers sought tariffs on footwear from the Far East and Canada (Board of Trade, Departmental Committee on the Textile Trades 1918e, 82, 99, 103–6; Coleman 1969, 262; Lowe 1942, 53–56).

The most intense demands for trade protection came from agriculture, particularly grain growers in southern England and producers of meat and dairy products in the north. After the war, farmers lobbied for duties on wheat and meat, and they complained that measures like the Safeguarding of Industries Act favored the needs of industry.[42] As prices for cereals and other primary products dropped after 1926, the National Farmers Union intensified its agitation for tariffs (Rooth 1992, 43). Though some farmers supported Imperial Preference (which conflicted with their interest in tariffs on all imports) "for the sake of a common front against free trade" (Brown 1943, 19), the National Farmers Union sent no representatives to the Ottawa Conference to protest agriculture's use as a "bargaining chip" to secure tariff advantages for British industry. Its calls to exclude foreign produce became more passionate as Argentine, Scandinavian, and U.S. meat flooded the British market in anticipation of wider margins of preference on food from inside the empire (Cooper 1989, 154–56, 184–85).

The Politics of Trade in Britain

In the fifteen years after World War I, the free trade system so firmly entrenched since 1846 gave way to protectionist pressures from a number of domestic groups. By 1932, the political influence of industries seeking tariffs and Imperial Preference reached critical mass. Several factors helped these industries realize their policy objectives.

First, there was little organized domestic opposition to either trade protection or Imperial Preference by 1930. Producers seeking tariffs rarely lobbied against duties on their inputs because every breach in Britain's commitment to free trade enhanced their chances of securing protection themselves.[43] Historically

42. "Agriculture and Protection" 1923, 827.

43. Shipbuilders' opposition to steel duties was an exception. Also, the National Farmers Union protested duties on agrochemicals but apparently accepted tariffs on steel and agricultural machinery as long as Britain instituted taxes on food (Marrison 1996, 281–84; Hutchinson 1965, 16–17).

the bulwark of free trade was trade union defense of the "cheap loaf" and agitation against "stomach taxes," as workers refused to accept that wage gains from tariffs would not be lost in higher prices for food. But workers in automobiles and the safeguarded industries increasingly backed trade protection in the 1920s. In 1930, the Trade Union Congress abandoned its free trade position and advocated a General Tariff with Imperial Preference in a joint manifesto with the FBI. That same year, London's financial community endorsed tariffs on goods from outside the empire so the dominions could earn sterling on exports to Britain to repay their loans (Boyce 1987, 251–56).

Second, the war and the technological developments of the postwar era shifted political power from exporters and financial interests to capital-intensive industries. Though coal, shipbuilding, and cotton textiles remained the largest branches of the British economy, "new industries dependent on the domestic and imperial market" had become "the dominant sectors in terms of industrial output and employment" (Garside 1998, 51). The heavy and chemical industries had several large companies, concentrated market structures, and substantial financial resources, which enhanced their capacity for collective action. While there were large corporations in coal, shipbuilding, and cotton textiles, industrial structures were more competitive.[44]

Finally, the institutions of British government weighed concentrated interests more heavily after the war. Historically, direct elections reduced collective action costs for the working classes and export-oriented groups. This diluted the organizational and financial advantages of protariff interests, resulting in a more open trade policy than would have been likely if legislators or bureaucrats had set rates of protection (Irwin 1994). With the introduction of wartime tariffs, however, the government established the Import Duties Advisory Committee (IDAC) to hear industry claims. The purpose of the IDAC was to limit the scope for logrolling and vote trading—its mandate was to consider economic efficiency, not political expediency. But in practice the committee was sensitive to the needs of industries seeking help (Wurm 1993, 65–70). Moreover, the private deliberations of the IDAC, which heard testimony only from groups with a direct interest in the product under consideration, were more favorable to protectionist interests than a public hearing or a debate on

44. Export industries were not concentrated industrially, but they were concentrated regionally—cotton textiles in Lancashire and wool textiles in Yorkshire. As a result, the economic distress of lost markets was geographically localized. Capie (1983, 93–94) concludes that British institutions were more sensitive to regional problems than industry lobbying. However, his data are broadly aggregated at the industry level, and others have criticized his measures of effective protection.

the floor of Parliament (Tolliday 1987, 310–11). Once the IDAC decided in favor of tariffs, the government typically accepted its recommendation.

Of course broader political currents were important as well. The Conservative Party's victory in 1924 quickly resulted in protection for automobiles, tires, rayon, and silk. As the Labour government of 1929 to 1931 held the line against pressures for more tariffs, protectionist industry groups gravitated toward the Conservative Party and "did everything possible to influence . . . workers to vote Conservative" (Snyder 1944, 152). The Conservatives' return to power in the midst of financial crisis in 1931 finally completed the overthrow of the free trade system.

Instituting Tariffs, 1915–36

Table 10 presents regression results for British tariffs in 1936.[45] The variables are the same as for Japan in table 7, and all variables have the same signs as before. *Scale* and *concentration* are strongly significant, while *imports* is weakly significant. Due to lower overall tariffs in Britain than in Japan, a one standard deviation increase in *concentration* increases tariffs by 4.9 percentage points, while comparable figures for *scale* and *imports* are 4.8 percentage points and 2.8 percentage points, respectively. As with Japan, *exports* were not statistically significant after controlling for *scale.* Industries with large returns to scale often had high export to sales ratios because national markets were small, yet this did not diminish their enthusiasm for trade protection.

As the results imply, industries with large returns to scale usually received tariffs higher than the 10 percent benchmark rate in the Import Duties Act. The most heavily protected industries included dyestuffs (50 percent tariffs plus import licensing), rayon (tariffs ranging from 43 to 87 percent), and steel, automobiles, tires, motorcycles, and tractors (33 percent). Import-competing industries also received higher-than-average tariffs, though not as high as in industries with large returns to scale. Industries that were export oriented but that did not have large returns to scale (for example, textiles, coal, and shipbuilding) received little trade protection by comparison.

Imperial Preference

Britain's objectives at the Ottawa Conference were to open commonwealth markets and also secure larger margins of preference over third-country

45. British tariff rates are from the National Institute of Economic and Social Research (1943).

TABLE 10. OLS Regression Results for British Tariffs in 1936

Tariff =	−0.32	+ 0.32 (Scale)	+ 0.18 (Imports)	+ 0.05 (Exports)	+ 0.39 (Concentration)
	(0.13)	(0.10)***	(0.10)*	(0.09)	(0.11)***

$F = 10.92^{***}$
Adjusted R-squared = 0.59
$N = 28$

Note: Standard errors are in parentheses below the parameter estimates.
$^{***}p < .01$ $^{**}p < .05$ $^{*}p < .10$

imports.[46] The dominions, however, were committed to industrial development—for its own sake and to allocate the sterling earned on exports to debt repayment instead of imports—and industrial interests were powerful enough to resist deep tariff cuts on British goods. Generally the best offer dominion negotiators would issue was tariffs fashioned to equalize British and colonial costs of production. Instead of lower duties on British goods, the dominions raised tariffs against foreign countries to reconcile preferences for Britain with protection for domestic industry (Rooth 1992, 80–100). At Ottawa and after, external tariffs in the dominions increased on 95 percent of the goods for which Britain received preferences, but tariffs against Britain increased on 60 percent of these goods. Imperial Preference was, therefore, a more protectionist arrangement than Britain desired, as its exports to the empire still faced severe barriers (MacDougall and Hutt 1954, 250–51).

A second source of trade diversion was Britain's desire to protect its farmers in the face of dominion pressures to expand primary exports. The dominions' supply of agricultural exports exceeded Britain's import demand for most goods; thus, even with prohibitive tariffs against countries outside the empire, higher prices for British farmers were incompatible with unrestricted entry for colonial food. Moreover, Britain wished to limit price increases for consumers, so its tariffs on wheat, dairy products, and fruit fell short of what the dominions wanted, and in meat products they had to accept quantitative controls instead of large preferential margins that would have allowed empire producers to raise prices and earn rents. Finally, price supports for British farmers main-

46. The political influence of industry groups over British diplomats at the Ottawa Conference is difficult to evaluate. Before the conference, the Board of Trade, with the assistance of the FBI and chambers of commerce, created lists of concessions for negotiators to request from the dominions. At Ottawa, representatives of the NFISM, the British Engineers Association, the Association of British Chemical Manufacturers, and the Society of Motor Manufacturers consulted with British and Canadian officials on a daily basis.

tained or increased domestic output, which reduced the demand for imports from the dominions (Drummond 1974, 185–86, 270–73).[47]

Corporate executives in automobiles, chemicals, steel, and other industries with large returns to scale cheered the Ottawa Agreements, even when Imperial Preference fell short of their goals. There is evidence that tariffs and preferences stimulated production in these industries. Steel output increased 70 percent between 1931 and 1934, while imports were cut in half. Colonial market shares in automobiles increased from 21 percent to 41 percent, as exports more than doubled. The tariff wall also helped firms reap economies of mass production in dyestuffs, rayon, and tires (Richardson 1967, 83–85, 238–39).

Yet the program of tariffs and preferences had unintended—and undesirable—consequences for British industry. Preferential trade induced foreign firms to set up factories in Britain or the empire to share in the benefits. After the McKenna tariff, U.S. automakers established Canadian assembly plants to reduce duties on exports to Britain. Tariffs also stimulated U.S. and German FDI in the United Kingdom in automobiles, tires, and electrical items such as lamps, vacuum cleaners, and generating machinery. At the opening of a Firestone plant in 1928, a British official commented, "by imposing a 33 percent tariff on tires the Government had extended an invitation to Mr. Firestone to manufacture tires in England rather than pay $1,000 per day in import duties" (Dunning 1956, 259). Soon after Ottawa, Ford and GM established affiliates in Australia, New Zealand, and South Africa to assemble imported bodies and chassis into complete vehicles.

Production in the commonwealth by U.S. multinationals limited the potential market for British firms. Even with Imperial Preference, British firms occasionally paid *higher* tariffs than U.S. firms because the dominions taxed unassembled parts at lower rates than finished products. Though British firms pushed for strict rules of origin to block tariff preferences for foreign products,[48] the dominions would not curtail inward FDI, nor did British officials consider emulating the restrictions that existed in Japan and Germany. Thus, the commonwealth maintained a tolerant attitude toward foreign multinationals, even though allowing outsiders to share in the benefits of Imperial Preference reduced the profits that British firms could earn.

In some cases, British firms could scale dominion tariff walls only by

47. Agricultural imports into Britain increased 12 percent between 1931 and 1935, with imports from the dominions up 42 percent and imports from foreign countries down 32 percent (Rooth 1985, 189–90).

48. For example, the British Society of Motor Manufacturers sought a 75 percent empire content rule. "Products Affected by Change," *New York Times,* February 1, 1933, 29.

beginning production in the empire themselves. A few large steel firms, disgruntled with the rapid pace of import substitution, opened mills in the dominions (Wurm 1993, 100–102). ICI moved a portion of its fertilizer, alkali, and explosives capacity to the empire (Reader 1975, 198–211). But local production subtracted from exports from the United Kingdom, which made it more difficult to employ unused capacity and exploit additional scale economies.

In short, once Imperial Preference was established British firms still were not able to move down their cost curves far enough to effectively compete with their foreign rivals. Faced with these problems, many firms that applauded the Ottawa Agreements grew dissatisfied with their market position in the empire. A 1936 FBI memo grumbled that commonwealth tariffs were too high and wages and currency values too low for British producers to reap the benefits they desired.[49] Even so, industries that had sought Imperial Preference saw no alternative to dependence on the empire, however inadequate, and they resisted the use of these hard-earned privileges as concessions in MFN treaties with other countries (Rooth 1992, 101–9, 157–58). Enduring political support in turn made the Ottawa system a difficult sinecure for the British government to discard before World War II and after.

Autarky and Grossraumwirtschaft in Germany

Germany's interwar political position was unique in two respects. First, Germany did not regain customs autonomy under the Versailles Treaty until 1925. From that year to 1933, tariff policy was in a constant state of flux. Significant increases in industrial protection nevertheless were rare during the Weimar period. Though tariffs on manufactures were slightly higher in 1929 than in 1913, most duties were less than 20 percent of import prices. Agricultural protection moved steadily upward, however, as transitional duties gave way to major tariff hikes between 1929 and 1933.

Second, Germany enjoyed neither a geographically contiguous empire like Japan nor a commonwealth of former colonies like Britain. When the Weimar government launched efforts to expand markets for German goods, it had to deal with neighboring states with de facto political and economic independence. In 1931, the Foreign Ministry negotiated a customs union with Austria and preferential agreements with Hungary and Romania. But French and British objections led to the customs union's abandonment, while farmers

49. "Looking Askance at Ottawa" 1936, 355.

scuttled the reciprocity treaties after the Brüning regime's fall (Spaulding 1989, 317–19).

Nazi finance minister Hjalmar Schacht perfected the scheme for preferential trade treaties launched under Brüning. Agricultural protectionism limited the scope for trade treaties in the Weimar period, since Germany had to accept more food from abroad to receive greater market access for its manufactures. But exchange controls in the New Plan allowed the Finance Ministry to redirect trade toward the agrarian nations of central Europe without undermining domestic agricultural prices. These measures also provided a means to discriminate against hard currency nations without openly violating MFN.

Between 1933 and 1936, Germany reached trade treaties with Hungary, Romania, Yugoslavia, and Bulgaria. Under a complex system of controls and barter arrangements, countries exporting to Germany had to buy German goods to liquidate clearing surpluses. Preferential exchange allocations and purchasing agreements allowed foreign producers to sell at domestic German prices while bypassing the trade barriers that supported such high returns. At the same time, the system required central European governments to manipulate tariffs, quotas, and exchange policies to make German goods attractive in their markets. As a result, these commercial treaties caused trade diversion from hard currency countries to balance the trade of clearing nations (League of Nations 1938, 33–35).

Foreign exchange regulations also provided generous protection for German producers, at the expense of high prices for consumers. The New Plan squashed hard currency imports to one-twentieth of their 1930 levels. Moreover, German authorities discharged foreign exchange and permitted barter imports only for items that did not compete with domestically produced goods. The USTC (1943, 10) observed:

> Under the New Plan . . . the official control of foreign trade transactions was practically complete and was applied in a highly discriminatory manner—the term discriminatory being used both in the sense that meticulous judgment was exercised with respect to every detail and in the sense that actions taken often involved discrimination against individual commodities, concerns, industries, or countries in favor of others.

These measures coincided with an extensive domestic program of public works and military procurement. Thus, the Nazi economic system blocked hard currency imports; pushed industrial exports to agrarian countries; and accelerated rearmament to stimulate manufacturing, substitute for lost markets abroad, and prepare for territorial conquest.

The Scale of German Industry

In 1914, Germany dominated the world chemical industry and challenged the United States for leadership in steel and electrical equipment. But defeat in World War I severely weakened these industries. Territory lost in the Versailles Treaty contained 72 percent of Germany's iron ore deposits, 43 percent of pig iron output, 36 percent of crude steel, 30 percent of rolling mill capacity, and mines producing fifty million tons of coal per year (Chandler 1990, 550). Chemical and electrical companies had overseas affiliates expropriated and patent protection nullified. In areas of German superiority, such as dyestuffs and synthetic nitrogen, the Allied countries promoted import substitution. And grave financial problems made it difficult for firms to acquire the capital they needed to rebuild demolished factories after the war.

The chemical, electrical, and metal industries nevertheless retained their technical expertise, and German firms enjoyed a bigger domestic market than those in Britain or Japan. "The dominance of large establishments," the National Industrial Conference Board (1931, 29) noted, "is particularly marked in the important exporting industries . . . [the] heavy metallurgy, electro-technical, and chemical industries." The leading chemical firms joined in 1924 to form IG Farben, the world's largest chemical combine. Because of its modern factories, high outlays for R&D, and technology and expertise in high-pressure chemical processes, the company excelled in organic chemicals, artificial fertilizers, and pharmaceuticals (Schröter 1996, 38–39). IG Farben sold more dyes than the United States, Britain, and Japan combined, and it also produced the majority of the world's synthetic nitrogen in an enormous factory at Merseburg. In metals, the Vereinigte Stahlwerke was the world's second-largest steel conglomerate. In electrical engineering, Siemens and AEG were major producers of industrial machinery, Osram was Europe's largest manufacturer of lightbulbs, and Bosch was a leader in ignition equipment.

However, German firms were weak in mass-produced consumer durables. The United States dominated this area due to its highly developed consumer market—workers earned high wages, so they could afford the latest amenities. In Germany, wages were too low for long product runs for automobiles, home appliances, electric lamps, telephones, radios, and the like. German companies making consumer goods used more labor than U.S. firms, yet they were less productive due to low volume. "American enterprises assumed technological leadership," Dornseifer (1995, 204) argues, "as soon as their volume of production surpassed German output."

German output per plant in industries with large returns to scale, shown in

table 11, is consistent with these observations. Producers of dyestuffs and chemicals (other than rayon) were the largest of their kind. German steel mills averaged 70 percent of U.S. output per plant, even though some of the largest steelworks had been lost to France. Volume also approached U.S. standards in locomotives, tires, and lightbulbs. However, automakers manufactured only one-seventh as many cars as the typical plant in the United States. Daimler-Benz and BMW produced high-cost specialty vehicles (and aircraft engines) in small volumes, and they relied on public contracts plus periodic injections of capital from Deutsche Bank to remain solvent (Heuss 1994, 403–4). Small-scale production also prevailed in office machinery, farm equipment, sewing machines, and rayon.

While Germany's market generally was larger than Britain's, table 12 suggests that it was much smaller than the U.S. market (except for motorcycles and most chemicals). This was a major constraint for producers of mass-marketed

TABLE 11. Scale of Production in Germany, 1929

Industry/Product	Units	Output per Plant	Percentage of U.S. Production
Chemicals and fibers			
Dyestuffs[a]	Thousand lb.	13,167	638.3
Synthetic ammonia[b]	Tons	94,757	488.1
Alkalies and sodas	Tons	41,188	113.4
Rayon	Thousand lb.	1,888	46.9
Transportation equipment			
Motorcycles	No.	3,336	82.2
Locomotives	No.	86	80.9
Tires	No.	560,404	65.1
Aircraft	No.	33	52.6
Automobiles	No.	6,008	15.2
Basic materials			
Pig iron[c]	Tons	294,222	72.7
Steel[c]	Tons	135,013	68.7
Machinery and electrical			
Lightbulbs	Thousand	7,513	59.8
Radios	No.	9,761	33.9
Tractors	No.	1,774	20.5
Typewriters	No.	7,439	20.2

Source: Data for number of plants: Statistisches Reichsamt 1929; data for output: League of Nations (various years); Board of Trade, Department of Overseas Trade (1928–33).

Note: No. = number of individual units.

[a]U.S. Bureau of Foreign and Domestic Commerce 1924. Data are for 1923.

[b]USTC 1937.

[c]National Industrial Conference Board 1931, 174. Data are for 1927.

consumer goods. In 1929, Americans bought 4 million automobiles, Germans only 120,000; 12 million U.S. households owned radios, compared to 3.2 million in Germany; the U.S. market absorbed nearly fifty million electronic tubes, Germany less than six million (Dornseifer 1995, 203–4). When firms enjoyed a strong competitive position, they usually depended on foreign markets. For example, just sixty thousand ignition systems were sold in Germany each year compared to two million in the United States, so Bosch and other auto parts producers exported widely within Europe (Heuss 1994, 363–64). In the late 1920s, IG Farben exported 55 percent of its output and two-thirds of its dyes; Siemens and AEG exported 42 percent and 38 percent of their production, respectively; half of German steel was sold abroad, 30 percent directly, and 20 percent through finished goods industries (James 1986, 122–23; National Industrial Conference Board 1931, 101–2). As industries began to face difficulty mass producing standardized articles for the domestic market, they specialized in "low-volume, high-value-added market segments and niches of the capital goods sector" to take advantage of low wages for skilled labor (Dornseifer 1995, 206).

This discussion suggests that German heavy industry was bifurcated. Small-scale firms, particularly those manufacturing for consumers or acting as suppliers to consumer industries, could gain from trade protection and exclusive markets abroad. However, the chemicals, electrical capital goods, and steel industries were dominant (in the case of chemicals) or at least competitive with the United States on world markets. Thus, the theory predicts that these industries should favor multilateral free trade because large-scale firms would be expected to seek as wide a market as possible.

TABLE 12. MES Production and the German Market

Product	Lowest MES Estimate	MES Divided by National Consumption
Trucks	250,000 units	6.61
Tractors	90,000 units	5.20
Automobiles	500,000 units	4.12
Typewriters	500,000 units	3.10
Motorcycles	200,000 units	0.99
Rayon	40 million lb.	0.79
Radios	1 million sets	0.59
Synthetic ammonia	200,000 tons	0.44
Tires	5 million casings	0.37
Dyestuffs	20 million lb.	0.25
Steel	6 million tons	0.20

Source: Data for number of plants: Statistisches Reichsamt 1929; data for output: League of Nations (various years); Board of Trade, Department of Overseas Trade (1928–33).

But for large-scale, competitive German industries, reliance on foreign markets was a severe liability once worldwide depression and protectionism surfaced. Steel mills operated at 25 percent of capacity in 1931, as domestic demand fell to 22 percent of 1929 levels; capacity use in the electrical industry dropped from 78 percent in 1929 to 42 percent in 1932 (Abraham 1981, 155; Feldenkirchen 1999, 97). The shriveling domestic market forced German producers to shift to activities less exposed to global trends because they could not find new export outlets. Companies moved away from core products lines and entered areas in which low volume was less of a handicap or where first-mover advantages could be gained. As IG Farben lost its technological edge in dyes, pharmaceuticals, and photographic chemicals, the firm diversified into synthetic rubber, plastics, and fibers, and it even embarked on a costly effort to synthesize fuel from coal. This made the syndicate dependent on domestic sales and government procurement to maintain throughput for these new products (Hayes 1996, 55–58). Siemens and AEG began to rely on government contracts for electrification, power plants, and railways (Schröter 1996, 39–40). Steelmakers tightened cartel restrictions to maintain prices and intensified their dumping of surplus steel abroad.

In this environment, neighboring markets in central Europe offered attractive prospects for expanded sales to employ idle factories. The successor states of the Austro-Hungarian Empire were IG Farben's third-largest market (after the United States, which was becoming impenetrable, and the Netherlands), and though incomes were low, sales growth had been rapid (Schröter 1983, 148–54). Central Europe also became a greater focus of business for Siemens and AEG (Schröter 1996, 45–47). As steel producers sought to increase sales in the region, they faced growing competition from Czechoslovakia. In each of these industries, firms suffered from substantial unused capacity, and they needed new markets in the east to compensate for closing markets in the west and lost sales at home.

Exporting and Import-Competing Industries

Germany's leading exporters in the interwar period were the chemical, electrical, and primary metal industries. Other producers dependent on sales abroad specialized in craft-based, skill-intensive activities: ships and sailing vessels; railway equipment; musical and photographic instruments; machines for working textiles, footwear, and paper; and metal goods such as instruments, tools, and cutlery. In these industries, products were manufactured to detailed specifications, and factories were smaller than for mass-produced items (Brady

1933, 142–43). In addition, Germany exported basic materials such as coal, cement, and glass, and its textile industry also was oriented toward foreign markets, though its productivity was not as high as in Britain.

Import penetration was almost nonexistent in manufacturing. As in Japan and Britain, agriculture faced the most severe foreign competition. The large grain plantations to the east had been under intense price pressure from American wheat, rye, and corn since the advent of the railroad in the late nineteenth century. Imports of Scandinavian and South American meat and dairy products also harmed small peasants in central and western Germany. Thus, German farms depended on long distances, poor transportation, and trade protection to compensate for very high costs.

Before the war, the countries of central Europe specialized in primary goods not produced in large quantities in Germany: soybeans, sunflowers, rapeseeds, tobacco, and cotton. But after the war, farmers in the region competed more and more with German production, particularly in cereals, meat, and dairy products. These countries found it difficult to sell abroad as prices declined in the 1920s because, though their land was more productive than Germany's, they too were high-cost producers by world standards (Basch 1943, 187–91). As a result, mutual trade involved German sales of manufactured goods in return for the primary products of developing Europe. Preferential tariff reductions therefore would increase price competition for German farmers and would be likely to arouse intense rural opposition.

Industries with Economies of Scale: Trade Preferences

Trade divided German heavy industry from the end of the war to the return of tariff autonomy in 1925, as firms in iron and steel, electrical equipment, and machinery held "widely divergent views" (Spaulding 1989, 197). The auto industry, which was "obsessed by a great fear of foreign competition . . . [from] the cheap American car" mobilized intense pressure for trade protection (Board of Trade, Department of Overseas Trade 1925, 119). The steel barons of the Ruhr valley also advocated tariffs to sustain cartel prices. But other industries with large returns to scale favored open trade. Siemens, AEG, and Bosch wanted low tariffs to promote exports. IG Farben sought gasoline duties to assist its synthetic fuel program, but otherwise it too supported low tariffs (Ropke 1934, 33–37; Schröter 1996, 42–44).

Abraham (1981, 23–24, 195–202) suggests that cleavages in German manufacturing during the Weimar period split domestic-market-oriented, antilabor basic industries (coal, iron, and steel) and export-oriented, labor-neutral finish-

ing industries (chemicals, electrical equipment, and machinery). The former group wanted macroeconomic expansion, tariffs, and cartel restrictions to push up domestic prices, while the latter sought low input prices and MFN trade treaties to promote exports. Domestic-market industries also were more tolerant of high agricultural tariffs than finishing industries: to the basic industries, rural prosperity would stimulate demand for manufactures; to the finishing industries, tariffs would incite retaliation and block access to markets abroad.

Adverse international conditions—the loss of export markets and the evaporation of foreign loans—broke the stalemate over agricultural tariffs and trade treaties. After 1930, large firms in the Reichsverband der Deutschen Industrie (RDI) aggressively pushed for regional trade agreements, as "[i]ndustrial circles began to plan a trade strategy that abandoned the pacific market of northern and western Europe and overseas in favor of the 'imperial' market of eastern and southern Europe" (Abraham 1981, 24). At first big business continued to support MFN to safeguard trade with industrial countries (Grenzebach 1988, 15–16). But more radical measures to expand exports gained popularity as declining foreign sales pushed heavy industry into a contracting domestic market.[50] By 1931, the Mitteleuropäische Wirtschaftstag, an association of heavy industries and exporters, advocated a customs union with Austria and economic expansion to the east (Abraham 1981, 227–28). The chemical, electrical, and metal industries were among the first converts in the push for markets in the region (Strandmann 1986, 91–92, 108–11).

While few large businesses questioned the need for Grossraumwirtschaft (literally, "large-area economy") in the economic environment of the depression, there were competing visions of this regional unit (open or closed, formal or informal) and Germany's role in it. In one vision, central European satellites would be agricultural appendages to supply food and raw materials, while rearmament and public works would stimulate domestic demand for manufactures (Berghahn 1996, 15–18). Steelmakers backed this option to sustain cartel prices and ensure direct control over raw material supplies. For example, Thyssen and other large steel firms embraced programs for economic self-sufficiency and supported the Nazi Party politically and financially (Hallgarten 1952). Automakers and aircraft manufacturers also supported autarky and

50. Large businesses were slow to back Grossraumwirtschaft because "[t]heir traditional export orientation was too deeply rooted to be dropped on a whim." As the Great Depression deepened, however, firms no longer able to sell profitably abroad "became increasingly attracted to . . . an alternative to a world market-oriented export policy [which] would be implemented through an enlargement of the market, to be forcibly achieved by political and, if necessary, military means" (Volkmann 1990, 185–89).

rearmament due to their dependence on government contracts and their inability to compete with imports (Reich 1996, 81–87; Homze 1976, 63).

Other sectors of heavy industry "favored a more open arrangement that would allow at least some trade with other countries in the West" (Berghahn 1996, 18). Export-dependent firms were not prepared to retreat within the regional market, and they initially regarded Nazi plans for autarky with suspicion. Siemens and AEG, for example, sought to increase exports to the east to relieve overcapacity, but neither was "prepared to abandon external markets" because industrial Europe provided the greatest demand for their products (Schröter 1996, 47–48). Bosch also wanted to preserve global trade ties because developing countries consumed few automobile components (Heuss 1994, 405–14). Krupp, a diversified producer of basic metals and finished goods such as machinery and railway equipment, supported bilateral trade treaties as a temporary expedient until "the return of normal trading conditions," but the firm criticized proposals to establish "an isolated, autarkist state" (quoted in Overy 1994, 136).

IG Farben eventually moved away from the liberal trade preferences of the electrical and machinery industries and backed the isolationist, autarkic views of the automakers and steel barons. At first corporate leaders regarded autarky in a German-led bloc as undesirable, but they gradually accommodated their policy interests to the Nazi program (Hayes 1987, 43–45, 268–70; Turner 1985, 246–49). As early as 1933, the firm expanded its coal-based fuel and synthetic rubber programs in return for state subsidies (Borkin 1978, 60–63). In external policy, "IG Farben tried to uphold free trade," but it also "somewhat incongruously" advocated forming a trading bloc through a customs union with Austria and bilateral trade agreements in central Europe (Schröter 1996, 50).[51] The firm also initiated barter exchanges with central European countries and established long-term contracts to stimulate exports and promote raw materials production abroad (Kaiser 1980, 70–72).

IG Farben's conversion to imperial protection was complete by the end of the first New Plan. A 237-page memo to the Nazi Ministry of Economics, titled "IG Farben's Neu-Ordnung" (New Order), presented the firm's vision of dominance in the German Grossraumwirtschaft. The memo included proposals for administering the chemical industries of conquered territories to IG Farben's benefit through trade preferences favoring German goods; detailed tables laid out the

51. Company chairman Karl Duisberg asserted in 1931: "Out of the small national economic space, the strong industrial states . . . looking for markets push toward greater international economic spaces. . . . This tendency was started by the United States . . . [and] also in Europe this aim of the regional economic space seems to be gradually taking shape" (Berghahn 1996, 17).

firm's desired tariffs on external trade in each market. "Imports from North America," the memo concluded, "shall be eliminated or controlled" so that the U.S. chemical industry could never expand beyond its national market.[52]

In sum, in the early postwar years the heavy and chemical industries (other than automakers and steel) pushed for open trade. But once other states closed their markets and established imperial blocs, this alternative was no longer available to Germany. As foreign trade disintegrated and the Great Depression deepened, firms began to advocate a trading bloc in central Europe. Out of necessity more than choice, Germany's chemical and electrical industries adapted their interest in markets abroad to the Nazi Party's goal of a self-sufficient regional economic zone—not because this served the interests that the book's theory adduces but as a second-best outcome brought about by the intervening effects of worldwide depression and protectionism abroad.

Exporting and Import-Competing Industries: Trade Preferences

Finished goods manufacturers in Germany tended to be export oriented, and unlike iron and steel, they were not ruled by cartel arrangements. These industries generally opposed tariffs at home and supported trade agreements to both the east and west. In particular, the Association of German Machine-Building Firms and small producers of ironware such as cutlery and hand tools opposed tariffs on iron and steel, which raised their input costs and made the negotiation of trade treaties more difficult.[53]

Farmers, on the other hand, consistently sought greater trade protection. Once Germany regained tariff autonomy, they insisted on the reinstitution of the 1902 tariff rates. Thereafter, farmers continued to push for tariff hikes, import licenses, and price controls to inflate domestic food prices. This pressure peaked in 1930, as Agriculture Minister Walter Schiele acknowledged that agricultural pressure groups wished that "the price level for all agricultural products be uncoupled from the world market" through "a closed system of tariffs" (Spaulding 1989, 203–4, 321–26).

Agricultural protectionism limited the potential scope for trade treaties, since Germany could not grant preferential access in food and raw materials without inciting protests from plantation owners and peasants. Expanded trade with central Europe particularly threatened peasants who produced

52. "IG Farben's Neu-Ordnung," Correspondence and Reports relating to German Cartels, Monopolies, and Industrial Firms, 1943–46, Box 10, RG 151.

53. To mute this opposition, steelmakers offered rebates to finished goods producers for metal incorporated in exports (Ropke 1934, 33–35).

meat, dairy products, vegetables, and fruits. Moreover, the Junkers would not accept duty concessions, even though most competition in grains and cereals came from the Americas. As the German market grew increasingly impenetrable, agrarian states sought commercial agreements to secure customs preferences, or at least place a ceiling on German tariffs. The Reichslandbund (German Agrarian League), however, lobbied against trade treaties with Romania and Hungary in 1931. This group also protested the proposed customs union with Austria, even though Austria's more-industrialized economy posed less competition for German farmers (Ránki 1983, 54–56; Kaiser 1980, 21–30).

With Hitler's accession to power, farmers pushed for even higher tariffs. Soon the German market was so tightly sealed that the Nazi regime could grant preferential treatment without disrupting domestic agriculture: import controls and monopoly marketing arrangements allocated quotas to favor specific countries; the government could purchase large quantities at negotiated prices, with little effect on domestic producers (Ránki 1983, 125–26). As one memo explained, "controlled foreign imports" produced "fewer disadvantageous consequences for German agriculture." This made it easier to preserve "the secure organization of domestic production and market relations" (Grenzebach 1988, 36). Schacht was then free to pursue bilateral trade agreements in the region with little dissent from large farmers or peasants.

The Politics of Trade in Germany

Industrial politics in interwar Germany favored two groups: large agriculture and heavy industry. The ascendance of these two blocs dates to the historic iron-rye alliance in the 1879 tariff. For the Junkers, political power flowed from control over the Ministry of Agriculture and influence in the Reichstag. For steel barons, large size, concentration, and close ties to the Finance Ministry translated into political clout. A postwar alliance between the Reichslandbund and the Union of German Iron and Steel Industrialists reconstituted the iron-rye coalition in the most protectionist political party, the German Nationalist Party. By the late 1920s, however, the Junkers' political importance had declined, while exporters in the chemical, electrical, and machinery industries had grown in stature. These branches of heavy industry backed more liberal, protrade parties, and they wielded influence in the Economics Ministry and the Foreign Office (Spaulding 1989, 188–95). Within the RDI, IG Farben chairman Karl Duisberg served to bridge the basic industries and consumer goods producers, and an uneasy balance prevailed between steel interests and the other manufacturers (Abraham 1981, 125–34). Divisions over trade were thus

institutionalized in the major industrial association and the Weimar cabinet, which stalemated policy-making.

The interests of these competing groups converged as the depression deepened. This convergence coincided with the advent of Hitler's regime in 1933. Under the Nazi government, foreign trade measures did not require the Reichstag's approval; instead, they were implemented by executive order. Yet pressure groups in heavy industry enjoyed several sources of influence in the cabinet and the Economics Ministry.

For one, heavy industry was highly concentrated: a few companies controlled large shares of output in most sectors, and the leading firms dwarfed their rivals. IG Farben was two-thirds of the chemical industry; the number two firm, Wintershall, had less than one-tenth as much invested capital, and the next fifteen largest companies added to one-third of IG Farben's book value (Hayes 1987, 17). In electrical equipment, Siemens and AEG were responsible for two-thirds of all production. Seven steel firms produced 80 percent of output. Even the auto industry, though small by U.S. standards, was composed of a few companies. In each case, large conglomerates had integrated backward into raw materials and diversified into related product lines. As the leaders of industrial cartels and near monopolists in a range of products, these firms enjoyed economic and financial clout.

Moreover, the priority the Nazi regime placed on public works and rearmament provided a means through which economic power was translated into political sway. Hitler's designs required large supplies of basic materials; expanded use of electrical power; increased production of vehicles, munitions, and explosives; and self-sufficiency in raw materials, particularly oil and rubber. As a result, public works and rearmament benefited not only the traditional war industries but also companies that could use state contracts to compensate for lost foreign markets for consumer goods. Though leading private firms later would have to compete with state-run enterprises—particularly after 1936—their influence was less contested in the early years of the Nazi government, when the new course in trade policy was charted. Active participation in rearmament and the rise in public procurement therefore provided a source of political influence for members of heavy industry.

In short, while National Socialist ideology glorified the peasantry and small shopkeepers at the expense of big business, once in power the Nazis were favorable to large firms in heavy industry. Mason (1968, 176) writes:

> From 1933 to 1936 economic policy . . . was left to the propertied classes. . . . This division of labor and the approval given in economic

> circles to the aggressive moves in foreign policy in these years was based on the belief that industry and the [Nazi Party] shared a common imperialist program. This apparent consensus of opinion is . . . evident in the cooperation between heavy industry, the military, the party and the civil service in the question of rearmament.

In particular, the Four-Year Plan of 1936 reflected the political dominance of IG Farben, as Germany's armaments program focused on developing chemical substitutes for raw materials. The industries favored in this plan—chemicals, steel, engineering, and building materials—received preferential treatment in the allocation of foreign exchange and raw materials. "The Four-Year Plan," an Economics Ministry official noted, "was, in fact, an I.G. plan" (Borkin 1978, 71). Even if heavy industry did not bring the Nazi Party to power or finance it to any large degree, it nevertheless grew close to the state and the military in the course of the rearmament program, and through these ties the leading firms enjoyed considerable power in economic policy.

Trade Policy, 1925–36

Trade protection from the return of tariff autonomy to the advent of the Nazi government focused almost exclusively on agriculture. The 1925 tariff included per ton duties of 3.5 RM on wheat and 3 RM on rye. After several tariff revisions, duties reached 18.5 RM for wheat and 20 RM for rye by 1930 (Spaulding 1989, 215–18, 323–27). These rates were nearly three times world prices, while barley tariffs were almost twice as great as world prices. High rates of protection also prevailed for wheat flour (326 percent of import prices), raw sugar (280 percent), hogs (160 percent), fresh and chilled meat (120 percent), butter (93 percent), and tobacco (63 percent) (League of Nations 1935, 18–20; USTC 1943, 40–41).

Due to the farm lobby's strength, a relaxation of food tariffs in return for market access for manufactured exports was infeasible. Trade talks with Poland and Czechoslovakia from 1925 to 1927 went nowhere (Spaulding 1989, 240–71). The Foreign Ministry reached commercial treaties with Romania and Hungary in 1931, but pressure from agrarian groups and the objections of the agriculture and interior ministries scuttled the treaties. A customs union with Austria also was aborted due to complaints from farmers and pressure from foreign governments opposed to Germany's deviation from MFN.

After 1933, however, the Nazi government limited foreign exchange allocations and imposed agricultural quotas to squeeze imports. Under these condi-

tions, imports could be shifted toward neighboring countries without undermining high food prices in Germany (Spaulding 1989, 329–38). The Economics Ministry reached its first bilateral agreement with Bulgaria in 1933; farm lobbies issued few objections, as Bulgaria provided little competition in the German agricultural market. Thereafter, Germany signed commercial arrangements with Hungary, Romania, and Yugoslavia in 1934 and revised its treaties with Bulgaria and Yugoslavia in 1936. In these agreements, Germany contracted to purchase specified amounts of primary goods—grains such as wheat, corn, and barley; meat products such as beef cattle, pork, bacon, and lard; and other items, including flax and hemp, hides and skins, and fruits and vegetables—at fixed prices considerably higher than world markets would bear. The Nazi government also demanded greater supplies of strategic materials—oil from Romania, copper and bauxite from Yugoslavia—as a quid pro quo for paying high prices for cereals and meat.[54]

In return, Germany received tariff preferences of 20–30 percent for a number of industrial goods: steel, machinery, electrical goods, glass and glassware, plastic and rubber products, textiles, apparel, and footwear. Initially, central European governments were reluctant to openly favor German exports; preferences were kept secret or granted in the form of trade credits, quota or exchange allocations, transportation subsidies, and state contracts to disguise violations of MFN (Basch 1943, 161–69). Bulgaria, for instance, imposed 35 percent surtaxes on hard currency imports, which encouraged purchases of industrial goods from Germany instead of its competitors. Hungary granted special licenses for products previously prohibited from entering customs. Yuogoslavia allocated government contracts to German firms such as Krupp, which was selected to build rolling mills and an iron foundry at the Zenica steelworks.

As central European countries accumulated growing clearing balances on their German exports, they adopted more direct measures to favor Germany. Officials routinely manipulated tariffs, import quotas, and exchange allocations to make German exports more attractive and discriminate against competing goods because clearing balances could not be liquidated through the operation of private markets if these goods were too expensive to sell domestically. After 1936, economic expansion in Germany and the reorientation toward armaments production created a shortage of goods at home and made it difficult for industry to fill orders abroad at reasonable prices. Germany's

54. Strategic materials could be sold for hard currency, so countries were reluctant to part with such commodities in purchasing arrangements and barter deals (Ránki 1983, 136–50; Kaiser 1980, 75–79).

short-term solution was to increase arms deliveries to the region. In addition, however, clearing partners were forced to purchase lower-quality items at inflated prices to prevent their standing balances with Germany from ballooning. The USTC (1943, 25) asserts that because Germany paid "premium" prices for food and raw materials, countries in return had to accept deliveries of superfluous goods "such as aspirin, toys, harmonicas, and so forth" to reduce clearing credits.

This impression that Germany flooded central Europe with useless surpluses is exaggerated (Andersen 1946, 58–59). Basch (1943, 181) points out that the share of machinery and capital equipment purchased from Germany totaled 80 percent for Bulgaria, 70 percent for Hungary, 50 percent for Yugoslavia, and 35 percent for Romania; Ellis (1941, 264) adds that the export drive in central Europe was most successful in electrical goods, machinery, and transportation equipment such as motorcycles. The Economics Ministry sought to stimulate exports of capital goods and armaments and limit sales of raw-materials-intensive consumer goods, so bilateral arrangements strongly favored heavy industry at the expense of light industry. Tariff structures and exchange policies in central Europe reflected this bias, resulting in a sharp decline in the export of consumer goods such as textiles. In addition, large firms in heavy industry received preferential exchange allocations from German authorities to serve their import needs.

Overall, bilateral trade agreements contributed to the economic recovery. In the depths of the depression, heavy industry faced insolvency in spring 1934. Subsidies and tax breaks from the Reichswehr Ministry could not keep these companies afloat. Export promotion also was critical to the armaments program because firms refused to enlarge plants or build new ones without guaranteed outlets for surplus production (James 1986, 380–87). With preferential access to Danube markets, heavy industry could dispose of capital goods no longer saleable in western Europe. The 1934 trade agreement with Romania, for instance, amounted to 22 million RM worth of investment goods—40 percent of Germany's yearly exports to that country in a single deal. The 1936 treaty with Yugoslavia doubled German exports from 20 million RM to 40 million RM. "Such barter arrangements," Grenzebach (1988, 176, 231) concludes, "provided German big business with guaranteed orders on a scale unthinkable during the doldrums of the Depression. . . . Without these new markets for German industry . . . the scope of the German economic recovery is scarcely conceivable."

In sum, heavy industry pushed for trade treaties in the region after the decline in foreign sales in 1929. Initially, industry groups showed no favoritism

for markets to the east as opposed to the west, and they supported the MFN clause in German trade. As the situation worsened after 1931, however, large companies in the heavy and chemical industries advocated open discrimination as they sought to expand markets in central Europe. In response, Germany negotiated a series of trade treaties between 1933 and 1936. The trade agreements plan was directed toward countries in which German capital goods would not face direct competition; thus, Czechoslovakia was not included in this economic sphere because the Nazi government could not "count on a domination of the market by German businessmen" (Spaulding 1989, 389). Preferential trade was designed to exclude the exports of other countries: as a Yugoslav official noted, "there could be no question of Yugoslavia granting industrial preferences to another country" (Grenzebach 1988, 143).

Beginning in 1937, securing the requisite raw materials for war became more of a focus of Nazi economic policy than export promotion. With diminished export capacity due to rearmament, Germany could not sell enough abroad to satisfy its need for food and raw materials. Unable to acquire these resources through peaceful trade and unwilling to slow its armaments program to free production for foreign consumers, the Nazi regime instead prepared for conquest to permit "the significant expansion of the living space, that is, the raw material and food product base of our people," as one memo put it (Ránki 1983, 154–56; Grenzebach 1988, 238–40). Whether German heavy industry encouraged or supported this policy shift is debatable. But even if these firms did not favor the "Ludendorffian solution" (Berghahn 1996, 17) of autarky, brutal annexation, and Lebensraum ("living space"), they nonetheless cooperated with the Nazi economic program in its early years to profit from the formation of a protected trading bloc.

Conclusion: Trading Blocs in the Interwar Period

The formation of protectionist trading blocs in the interwar period was a response to the emergence of technologies that demanded larger markets. By the 1920s, many products of the second industrial revolution were most efficiently manufactured in large factories. Difficulties assimilating these new technologies caused firms to advocate two sorts of policy responses. First, firms with short production runs encountered stiff competition from larger rivals—usually more efficient U.S. firms. These producers reacted by lobbying for trade protection to regain the domestic market and catch up to competitors abroad. Second, firms with geographically limited home markets pushed for preferential trade because they could not mass produce for national consumption

alone. Customs integration with colonies, dependencies, or neighboring countries provided opportunities to exploit scale economies by expanding output and gaining market shares through trade diversion.

Imperial protection produced few reasons for producers to push trade policy in a more liberal direction. These trading blocs were not large enough to release firms from the constraints of small national markets, particularly with the breakdown of normal trade across regions and the depressed economic climate of the period. In some cases firms could ride partway down their cost curves, but rarely could they match the volume characteristic of U.S. factories. Moreover, there was little prospect of production sharing to exploit intrabloc differences in factor prices. Production processes were technically difficult to break up, so firms sought to concentrate all stages of manufacturing at one location; with the exception of Japan, which transferred some heavy industry to occupied territories, FDI inside interwar trading blocs was minuscule. Incentives to continue to expand high tariff walls outward therefore persisted up to World War II.

The collapse of the interwar trading system does not validate the conventional view that equates regionalism with protection. Rather, two distinct historical conditions motivated protectionism.[55] First, 1930s protectionism was, in large measure, a reaction to U.S. industrial supremacy. The United States monopolized the industrial progress of the prewar era due to its large consumer market and innovation in mass production methods. For other countries, catching up in international competition was a matter of diverting enough trade in imperial and regional markets for producers to capture scale economies. Second, the power of exclusion was very high in the interwar economy: because of technological limitations and policy restraints, it was difficult for foreign firms to invest inside trading blocs to share in their benefits. Countries therefore could reserve imperial markets for national producers, provided that tariffs were high enough to deny outsiders a price advantage. Thus, protectionism and trading blocs reflected the need to expand the scale of production and the ease of excluding outsiders in an era when capital was not mobile across borders.

55. This is not to dismiss the role of forces such as the absence of hegemonic leadership, shifts in the international balance of power, the global macroeconomic crisis, or changes in the political composition of governments. Clearly the interaction of many factors made the interwar collapse more complete (and more tragic) than it might have been otherwise.