

# Imperial protection and strategic trade policy in the interwar period

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## ABSTRACT

International relations theorists attribute the post-1930 collapse of the world economy into protectionism and rival trading blocs to global causes such as hegemonic decline, problems of collective action and free riding, or the macroeconomic disturbance of the Great Depression. This article links protectionism and the formation of trading blocs to political pressure from manufacturing firms unable to take advantage of economies of scale due to the limited size of national markets. A comparative analysis of trade policy in this period demonstrates that small-scale producers with small domestic markets in Japan, the UK and Germany vigorously advocated the formation of protectionist trading blocs. However, large-scale firms in the US, with a vast continental market at their disposal, sought trade liberalization; instead of seeking a trading bloc of their own, these firms also pushed to eliminate commercial discrimination in foreign empires. The analysis concludes that while technological changes requiring access to larger than national markets help to explain political pressure for trading blocs today, the incentives for trade protection are weaker in contemporary regional arrangements.

## KEYWORDS

Trading blocs; protectionism; economies of scale; strategic trade policy; international competition.

## INTRODUCTION

The collapse of the world economy into protectionism and trading blocs during the 1930s remains a mystery. Realists emphasize the UK's hegemonic decline and the failure of the US to act as a stabilizer (Kindleberger, 1973; Krasner, 1976). Others point to the macroeconomic turmoil of the Great Depression (Gourevitch, 1986; Eichengreen, 1992). Systemic theories, however, cannot explain why some states were more inclined than others to close their economies and form trading blocs. Institutional

approaches illuminate domestic factors in protectionist policies such as party politics and regime change (Simmons, 1994; Verdier, 1998). But these studies miss the common underlying sources of global trends. A complete explanation of the economic ruin of the 1930s must capture the systemic causes and at the same time account for different national responses.

This article emphasizes a causal factor that has received little attention to date: the importance of economies of scale in manufacturing. I argue that domestic pressure for protection and the formation of trading blocs in the 1930s responded to technological changes after the turn of the century that increased the optimal scale of manufacturing. By the 1920s, many products of the second Industrial Revolution were most efficiently manufactured in large factories. The effects of this systemic shift in the world economy on different societies varied, however, in two important ways.

First, firms with geographically limited markets could not take advantage of new technologies while producing for national consumption alone. This aroused domestic pressure on governments to secure external markets to allow mass production, which stimulated the push for the formation trading blocs. The need for a wider market to exploit economies of scale was less urgent for producers with large domestic markets. As a result, these firms were less interested in trading blocs.

Second, firms manufacturing goods with large returns to scale in short production runs began to encounter competition from larger rivals – usually companies in the US, which launched an export invasion after World War I. Small-scale producers reacted by lobbying for trade protection to regain market shares and catch up to their competitors abroad. Large-scale firms, on the other hand, renounced protectionism and pushed for trade liberalization.

In short, protectionism and the formation of trading blocs in the interwar period represented policy responses to the inability to assimilate the technological changes of the prewar era. A comparative analysis of trade policy in Japan, the UK and the US substantiates this claim. Manufacturing data shows that these three countries differed in terms of the scale of production and the size of domestic markets in the industries where economies of scale had become significant. Case studies establish that the formation of protectionist trading blocs coincided with political pressure from small-scale producers confined to small national markets in Japan and the UK. In the US, in contrast, mass production industries with an enormous domestic consumer base sought to liberalize trade and dismantle foreign trading blocs.

This article is one of the first attempts to develop and test the political implications of ‘new’ trade models with imperfect competition. In the last 20 years, economists have established that increasing returns to scale *could* create incentives for states to pursue strategic trade policy. My explanatory

framework extends this body of work to domestic politics. In doing so, it presents an approach to the formation of trade preferences based on motives for industries with economies of scale to seek protection, and provides evidence that these considerations were important in the lobbying activities of firms. Second, this article adds to the growing research agenda on globalization and domestic politics (Frieden and Rogowski, 1996; Alt *et al.*, 1996). My central claim is that in the 1930s just as today, the political consequences of globalization cannot be understood without evaluating how economic integration and market competition affect interests and behaviour at the microeconomic level, and how shifting preferences and domestic coalitions shape policy responses in different countries. Systemic theories fail to illuminate these internal political struggles because they focus on the interests and actions of nation states. As a result, they provide limited analytical leverage to explain important developments in international political economy.

## I. EXPLAINING THE BREAKDOWN OF THE 1930S

The ‘regressive spiral’ (Kindleberger, 1973: 305) of beggar-thy-neighbour protection in the 1930s is a familiar puzzle to scholars of international relations. The number of countries on the Gold Standard dropped from 48 in 1931 to zero in 1937, as governments suspended gold convertibility to enhance competitiveness through exchange depreciation (Eichengreen, 1996: Ch. 3). These moves coincided with dramatic increases in trade protection and the formation of exclusive trade and currency zones, which together had corrosive effects on the multilateral system.

Popular explanations of these trends emphasize systemic causes: the UK’s hegemonic decline and the failure of the US to provide leadership (Kindleberger, 1973; Krasner, 1976; Lake, 1988), problems of strategic interaction (Conybeare, 1987; Oye, 1992), and macroeconomic instability (Gourevitch, 1986; Eichengreen, 1992). However, systemic theories provide limited analytical leverage over the varied responses of nation states to a common external environment.<sup>1</sup> The downturn in the business cycle also cannot explain the trading system’s collapse: macroeconomic conditions everywhere were unfavourable to free trade, yet policies varied across countries and across industries in each country.<sup>2</sup> Moreover, while the breakdown of the trading system in this era clearly represents a historical aberration, declining hegemony, business cycle contraction, and the decline of an international monetary standard are not unique to the 1930s.

Stated simply, systemic outcomes are composed of varied national responses that require explanation. The trading *system* collapsed because its individual *units* adopted protectionist measures and formed trading blocs. However, bilateral and regional arrangements were not equally restrictive in the interwar period,<sup>3</sup> and policy changes at the national level

did not occur at the same time or move in the same direction. Japan was the first to embrace protectionism, beginning with tariff increases in 1924, and its empire was the world's most exclusive. The UK maintained free trade until 1931, when it instituted a General Tariff and Imperial Preference. Germany abandoned open trade late in the Weimar period, and then the Nazi regime adopted exchange controls, which culminated in the New Plan of 1934. The US moved the opposite way, raising duties in the Smoot-Hawley Tariff and then reversing course with the Reciprocal Trade Agreements Act (RTAA) in 1934.

It is therefore necessary to examine the internal causes of these policy shifts. Domestic approaches to US trade policy in this era focus on protectionist logrolling (Schattschneider, 1935), competition between 'isolationist' and 'internationalist' social groups (Frieden, 1988), and the partisan realignment of 1932, which facilitated a transfer of authority from Congress to the president to break the power of protectionist logrolls (Haggard, 1988). Studies of the UK's trade policy find that protectionist pressure from businesses (Rooth, 1992; Marrison, 1996), the electoral victory of the Conservative Party in 1929 (Self, 1986), and the 'desperate crisis conditions' of the Great Depression (Eichengreen, 1992: 166) caused policymakers to abandon free trade. Historians of Japanese and German foreign economic policy emphasize the rise of militarism and fascism, which motivated military officials to reduce external dependence in strategic materials (Milward, 1977; Crowley, 1966; Barnhart, 1987) and encouraged civilian authorities to coerce neighbouring countries by manipulating the terms of trade (Hirschman, 1945; Ellis, 1941).

These studies illuminate country-level factors in the move toward protection and trading blocs, but they overlook important systemic trends. Imperial expansion was not unique to fascism, even if it had its most virulent (and violent) manifestations in fascist societies. Factors that apparently facilitated freer trade in the US promoted protectionism in the UK. Thus, it is difficult to understand general trends and differences in national responses within a common analytical framework.

## II. TECHNOLOGICAL CHANGE AND ECONOMIES OF SCALE

After World War I, countries experienced a system-wide shift in global markets: the emergence of new manufacturing technologies that required mass production. Though many of the innovations that facilitated more intensive application of energy and greater use of machinery occurred during the second Industrial Revolution of the late nineteenth century, these new technologies were not widely disseminated until the 1920s. Before World War I, firms in most countries manufactured 'advanced' products using primitive techniques. After the war, however, producers of

automobiles and machinery introduced assembly lines and mass production techniques; steelmakers built continuous strip mills; innovations in high-pressure chemical synthesis and larger tanks for refining liquids were used in dyes, fibres, and fertilizers; and research, development, and learning became more important in the electrical and electronic industries (Chandler, 1990). In response, factories increased dramatically in size. In the US in 1914–29, output per plant jumped from 1,897 automobiles to nearly 25,000; from 210,000 tire casings to 1.6 million; from 100,000 pounds of rayon to 4 million pounds; from 60,000 tons of steel to more than 200,000 tons; and so on for many other capital goods and consumer durables.<sup>4</sup> Similar changes occurred in other countries, albeit later in time and from a smaller base in most cases.

Why would technological changes leading to a larger scale of production affect trade relations in the world economy? A large body of work on strategic trade policy suggests that when economies of scale are present and markets are imperfectly competitive, government policy can capture economy-wide externalities or transfer profits from foreign to domestic firms.<sup>5</sup> In profit-shifting models, subsidies can deter foreign market entry or limit the output of foreign firms, enabling domestic firms to expand and earn supernormal profits (Brander and Spencer, 1985). In import protection as export promotion models, trade barriers encourage domestic firms to increase their production of goods with economies of scale, reducing their marginal costs until they can profitably export (Krugman, 1992).<sup>6</sup> Empirical tests of these models find that while strategic trade policy does generate excess profits, these are small compared to the welfare costs to consumers (Grossman, 1992; Krugman and Smith, 1994). Economists have therefore concluded that government intervention under imperfect competition is no better for national welfare than when markets are perfect.

However, economies of scale and imperfect competition also create incentives at the domestic level for various forms of rent-seeking behaviour that welfare-based trade models disregard. In general, producers are likely to demand government support when strategic trade policy will enable them to earn excess profits, even if this would attract resources from more productive activities or impose welfare costs on consumers and taxpayers. As a result, it is widely argued that economies of scale are an important influence on the trade preferences of domestic groups (Alt *et al.*, 1996: 693–5; Frieden and Rogowski, 1996: 38–41). Yet empirical work to date has not systematically examined this proposition.<sup>7</sup>

Strategic trade models provide a useful foundation for understanding the political economy of trade. In particular, this study generalizes from export promotion or infant industry models. The potential gains for producers that engage in organized political activity are greatest when the conditions of these models apply, for two reasons. First, economies of scale

are internal to firms, so the benefits of export promotion policies accrue to producers in that industry and are not externalized to the economy as a whole. Second, internal economies of scale coincide with entry barriers, so established producers can more easily appropriate any increase in excess profits because it is difficult for new entrants to begin production. Since the potential benefits are large and concentrated, the incentives for collective action to influence policy are high.

One set of analytical principles drawn from these approaches helps to explain industry group pressure for trade protection. When there are economies of scale, a firm's average costs (hence its profits) depend on the volume of its output. As a result, firms that produce on a small scale endure high production costs and have few opportunities to earn excess profits; firms that produce on a large scale have low costs and can earn substantial profits. In addition, the larger the returns to scale,<sup>8</sup> the greater the penalty in terms of higher unit costs associated with small-scale production and the greater the advantage of large-scale over small-scale producers. This suggests that small-scale producers in sectors with large economies of scale are most likely to support trade protection to help them ride down their cost curves (cf. Krugman, 1992). The smaller the scale of production, the stronger the motives for firms to push for trade restrictions that will limit competition from larger rivals abroad and thereby reduce unit costs.<sup>9</sup> These protectionist incentives also are magnified the larger the returns to scale.

A second set of analytical principles illuminates motives for producer groups to seek trading blocs. In general, the greater the level of domestic consumption of products with economies of scale, the easier it is for firms to introduce new technologies requiring a large scale of production. Firms with large national markets can achieve mass production serving domestic consumers alone. If the extent of the market is limited, however, firms need a larger market to take advantage of scale economies that otherwise cannot be fully exploited. This suggests that firms with geographically limited markets need more than import protection – they cannot expand enough to become internationally competitive without additional markets, but they will not be able to profitably export if scale is small because of high unit costs. This makes the formation of trading blocs attractive as a means to reduce unit costs through trade diversion.<sup>10</sup> Thus, firms with small national markets are most likely to push for trading blocs to gain access to the additional demand necessary to expand production runs.

This framework provides a new interpretation of the coincidence of protectionism and trading blocs in the interwar period. The key factor is the asymmetry between the US and other countries in the scale of production. Producers in the US were so far ahead in the use of mass production techniques that their presence in foreign markets threatened to stunt the

growth of the same industries in the rest of the world. Because producers in lagging nations could not compete in an open world market, they embraced protectionism. Yet they also could not flourish inside national markets that were small compared to the optimal scale of production. Only through captive export outlets sheltered from US competition could firms in these industries increase market shares enough to reach internationally viable scales of production.

### III. SCALE VARIATIONS AND EFFECTS ON POLICY: JAPAN, THE UK AND US

The growing significance of economies of scale after World War I was a major development that influenced trade politics throughout the world. Because of technological changes, the scale of production and the size of domestic markets began to have profound effects on industrial competition and trade. Both scale and market sizes vary across *industries* within a country. But more important for international trade in this period, these two factors also varied widely across *countries* within each industry.

Table 1 presents market sizes in 1929 for sixteen products with significant economies of scale. Column 2 shows the minimum efficient scale<sup>11</sup> (MES) for each product. Columns 3–6 report a country's total consumption of that product in the upper row; the lower row (in bold) divides consumption by the minimum efficient scale.<sup>12</sup> For example, US consumers purchased 4 million cars with an MES of 500,000 autos, so the market could support eight plants of optimal size. By comparison, the UK, Japan and Germany together consumed 307,000 autos, less than two-thirds of one MES plant.

The data show that in almost all cases, market sizes were smallest in Japan and the UK, a bit larger in Germany, and significantly larger in the US. In Japan and the UK, domestic consumption could sustain a single MES plant in only one or two industries, even with no import penetration. In comparison, the US market was several times larger, allowing room for more plants with long production runs; the market was too small to support an MES plant in only three sectors. Consumption also was more than twice as great in the US as in the next largest foreign market in all cases except motorcycles, synthetic ammonia, and dyestuffs.

Small domestic markets are not a crippling disadvantage if firms can export. However, breaking into the world market requires low-cost production, which in turn depends on the scale of output when economies of scale are important. Chandler (1990: 52–3) notes:

th[e] rapid, continuing rate of growth of consumer demand, like the geographical extent of the market, provided American entrepreneurs with more opportunities – in more industries – to exploit the

Table 1 Minimum Efficient Scales and domestic consumption

<i>Product</i>	<i>Minimum Efficient Scale</i>	<i>US</i>	<i>Germany</i>	<i>UK</i>	<i>Japan</i>
Cement	2 million tons	24.5	6.1	4.2	3.7
		<b>12.2</b>	<b>3.1</b>	<b>2.1</b>	<b>1.8</b>
Steel (million tons)	12 million tons	133.8	29.6	25.2	2.6
		<b>11.1</b>	<b>2.5</b>	<b>2.1</b>	<b>0.2</b>
Automobiles (thousand)	500,000 units	4,023.5	121.4	158.7	27.2
		<b>8.0</b>	<b>0.2</b>	<b>0.3</b>	<b>0.1</b>
Tyres (million)	9 million casings	67.0	13.7	10.1	0.5
		<b>7.4</b>	<b>1.5</b>	<b>1.1</b>	<b>0.1</b>
Oil Engines (thousand)	100,000 units	724.6	n.d.	108.1	44.2
		<b>7.2</b>		<b>1.1</b>	<b>0.4</b>
Radios (thousand)	1.2 million sets	4,696	1,696	1,631	470
		<b>3.9</b>	<b>1.4</b>	<b>1.4</b>	<b>0.4</b>
Trucks (thousand)	250,000 units	622.1	37.8	66.8	0.5
		<b>2.5</b>	<b>0.2</b>	<b>0.3</b>	<b>0.0</b>
Dyestuffs (million lbs)	40 million lbs	84.9	79.5	34.9	25.3
		<b>2.1</b>	<b>2.0</b>	<b>0.9</b>	<b>0.6</b>
Rayon (million lbs)	70 million lbs	133.3	50.8	45.1	42.5
		<b>1.9</b>	<b>0.7</b>	<b>0.6</b>	<b>0.6</b>
Electric Motors (thousand)	360,000 units	688.6	n.d.	107.5	54.7
		<b>1.9</b>		<b>0.3</b>	<b>0.2</b>

Table 1 (continued)

<i>Product</i>	<i>Minimum Efficient Scale</i>	<i>US</i>	<i>Germany</i>	<i>UK</i>	<i>Japan</i>
Tractors (thousand)	90,000 units	167.9 <b>1.9</b>	17.3 <b>0.2</b>	3.3 <b>0.0</b>	0.8 <b>0.0</b>
Typewriters (thousand)	500,000 units	548.1 <b>1.1</b>	161.4 <b>0.3</b>	60.7 <b>0.1</b>	6.3 <b>0.0</b>
Sewing Machines (thousand)	500,000 units	538.0 <b>1.1</b>	n.d.	160.4 <b>0.3</b>	3.1 <b>0.0</b>
Synthetic Ammonia (thousand tons)	300,000 tons	217.0 <b>0.7</b>	452.1 <b>1.5</b>	52.0 <b>0.2</b>	91.7 <b>0.3</b>
Aircraft (number)	10,000 units	5,613 <b>0.6</b>	959 <b>0.1</b>	1,170 <b>0.1</b>	436 <b>0.0</b>
Motorcycles (thousand)	200,000 units	24.7 <b>0.1</b>	201.3 <b>1.0</b>	82.6 <b>0.4</b>	3.2 <b>0.0</b>

*Notes:* Figures in the first row are the units of output of the product, plus imports minus exports. Figures in the second row are domestic consumption divided by MES (shown in Column 2). The data are presented in descending order of US market size relative to MES. Cases where data are unavailable are marked 'n.d.'

*Data and Sources:* Minimum Efficient Scale is an estimate of the cost-minimizing scale of output based on engineering production functions. Pratten (1988) collects the results of several studies. Most of these estimates were made between 1950 and 1970. Because of technological changes, they probably reflect MES levels that are larger than those prevailing in the 1930s.

Domestic Consumption is the total amount of the product manufactured in the country, plus imports minus exports. Dates are as follows: US, 1929; UK, 1930; Germany, 1929 or the year closest to 1929 (depending on data availability); Japan, average of 1929–32 (due to variability in yearly figures). Output data is from the industrial censuses cited in Table 2. Trade figures are from US Department of Commerce, Bureau of Foreign and Domestic Commerce (1930); Great Britain Customs and Excise Department (1932); League of Nations (1928–35); and Oriental Economist (1935).

economies of scale and scope than existed anywhere else in the world. . . . Because they had the world's largest and fastest growing domestic market, American manufacturers were much less dependent on foreign trade than were those of Britain and Germany.

In fact, differences in the scale of production across countries mirrored differences in the size of national markets. Table 2 shows the scale of production in 1929 in 17 sectors with economies of scale. For each product, the upper row reports the total amount of output per plant in that country. The lower row (in bold) indexes this figure, with the largest scale attained in the four countries set at 100. A small relative scale implies high production costs compared to firms in countries in which scale is large. In 13 of the 17 sectors, the US was the largest-scale producer. Germany typically occupied an intermediate position, while the UK and Japan were small-scale producers of most heavy capital goods and consumer durables.

The US was especially dominant in consumer goods: output per plant in automobiles, typewriters, tractors and sewing machines was more than four times greater than in any other country. The only exceptions to US dominance were synthetic ammonia, dyestuffs, industrial chemicals, and rayon. In Japan, output per plant was very low, less than one-third the size of the largest-scale producer in every sector except rayon and cement. The UK also produced on a small scale, exceeding one-half of the largest scale only in motorcycles and rayon. In Germany, producers of dyestuffs and other chemicals were the largest of their kind, but consumer goods such as automobiles were manufactured in small plants.

The data available for the pre-war era do not permit refined comparisons across countries at different points in time. As a result, it is difficult to prove that competitive positions in the global market were shifting to favour the largest-scale producer in each industry. Nonetheless, the tables provide strong evidence that small-scale production and limited domestic markets were most prevalent in Japan, the UK and Germany – the countries that embraced protectionism and the formation of trading blocs.

The following case studies show that small-scale producers were in fact facing increased foreign competition and losing market shares. The empirical analysis then traces how trade policy changes occurred through the mechanism of political pressure from industry groups that were disadvantaged in global competition due to small-scale production and geographically limited national markets. In Japan and the UK, firms with small plants sought to exploit economies of mass production in trading blocs sheltered by high tariff walls.<sup>13</sup> In the US, where most producers had reached a high rate of output in an enormous national market, firms with a strong position in global competition supported tariff reduction and MFN-based liberalization in the RTAA.

### Imperial protection in Japan

Firms that manufactured mass produced goods in interwar Japan owed their existence to World War I, as the decline in trade with the combatant powers elevated domestic prices and made import substitution profitable. Heavy industry continued to expand after the war's end: contemporaries such as Allen (1940: 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'. Despite the growing scale of manufacturing, however, plants remained small compared to the advanced industrial economies. One official report observed, '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' (Great Britain Board of Trade, 1933: 31). Allen (1940: 29–30) similarly concluded: 'plants in many of the large-scale industries are still either smaller or less highly specialized than are those of corresponding Western industries . . . and so [Japan] is unable to achieve all the technical economies open to her competitors.'

Short production runs were especially debilitating in sectors with large economies of scale and steep cost curves. As late as 1932, not one Japanese firm manufactured even 50 motor vehicles per month. Steel tonnage per plant was just one-fifth of the US level and one-quarter that of Germany. Factories in the electrical, electronic and machinery industries also produced less than in other industrialized nations. Firms producing dyestuffs, inorganic chemicals, and fertilizers reduced unit costs by expanding output during the 1920s, but their plants remained smaller and their costs higher than in Germany, the UK and the US.

Moreover, the limited range of the home market for advanced industrial goods trapped Japanese firms in a vicious cycle: their inability to find a larger consumer base raised unit costs relative to foreign firms, yet they could not expand unless assured of profitably selling more goods. According to Lockwood (1955: 372, 378), '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 . . . [due to] the small size of the Japanese market to which they were largely confined'. Weak consumer demand ruled out mass production in automobiles, so most firms produced replacement parts or subcontracted light trucks for the military. Only producers of synthetic fibres enjoyed a domestic market comparable in size to other industrial nations, because of strong demand from the textile industry. As a result, the resumption of trade at war's end caused painful retrenchment for companies that had expanded capacity to serve excess demand in East Asia. Once European and US factories returned to civilian production, Japanese firms were pushed out of markets they had dominated when external competition

Table 2 Output per plant in the US, Germany, UK and Japan

<i>Product</i>	<i>US</i>	<i>Germany</i>	<i>UK</i>	<i>Japan</i>
<i>Consumer Goods</i>				
Automobiles (number)	39,534 <b>100.0</b>	6,008 <b>15.2</b>	4,199 <b>10.6</b>	282 <b>0.7</b>
Typewriters (number)	36,909 <b>100.0</b>	7,439 <b>20.2</b>	2,010 <b>5.4</b>	<1,000 <b>&lt;2.7</b>
Tractors (number)	8,658 <b>100.0</b>	1,774 <b>20.5</b>	1,682 <b>19.4</b>	<1,000 <b>&lt;11.6</b>
Sewing Machines (number)	34,511 <b>100.0</b>	n.d. <b>23.5</b>	8,116 <b>23.5</b>	n.d. <b>13.5</b>
Light Bulbs (thousand)	12,562 <b>100.0</b>	7,513 <b>59.8</b>	3,272 <b>26.0</b>	1,696 <b>13.5</b>
Radios (number)	28,802 <b>100.0</b>	9,761 <b>33.9</b>	18,258 <b>63.4</b>	n.d. <b>13.7</b>
Tyres (number)	820,765 <b>100.0</b>	560,404 <b>68.3</b>	347,514 <b>42.3</b>	112,500 <b>13.7</b>
Motorcycles (number)	4,058 <b>100.0</b>	3,336 <b>82.2</b>	3,206 <b>79.0</b>	<600 <b>&lt;15.0</b>
<i>Producer Goods</i>				
Explosives (thousand lbs)	5,578 <b>100.0</b>	n.d. <b>51.3</b>	2,862 <b>51.3</b>	598 <b>10.7</b>
Aircraft (number)	63.2 <b>100.0</b>	33.2 <b>52.6</b>	31.0 <b>49.1</b>	23.3 <b>36.9</b>
Cement (metric tons)	172,400 <b>100.0</b>	70,200 <b>40.7</b>	63,888 <b>37.1</b>	116,600 <b>67.6</b>

Table 2 (Continued)

<i>Product</i>	<i>US</i>	<i>Germany</i>	<i>UK</i>	<i>Japan</i>
Steel	196,421	135,013	71,399	43,277
(metric tons)	<b>100.0</b>	<b>68.7</b>	<b>36.3</b>	<b>22.0</b>
Locomotives	105.9	85.7	36.5	12.0
(number)	<b>100.0</b>	<b>80.9</b>	<b>34.5</b>	<b>11.3</b>
Rayon	6,279	2,940	4,127	7,021
(thousand lbs)	<b>89.4</b>	<b>41.9</b>	<b>58.8</b>	<b>100.0</b>
Chemical Alkalis	36,309	41,188	21,156	14,973
& Sodas (metric tons)	<b>88.2</b>	<b>100.0</b>	<b>51.4</b>	<b>36.4</b>
Dyestuffs	2,063	4,583	1,374	687
(thousand lbs)	<b>45.0</b>	<b>100.0</b>	<b>30.0</b>	<b>15.0</b>
Synthetic Ammonia	15,100	47,379	23,600	5,886
(metric tons)	<b>31.9</b>	<b>100.0</b>	<b>49.8</b>	<b>12.4</b>

*Notes:* Figures in the first row are units of output divided by the number of factories manufacturing that product. Figures in the second row are the amount of output relative to the output of the largest-scale country, which is scaled to 100. The data are presented in descending order of US scale. Cases where data is unavailable are marked 'n.d.'

*Data and sources:* Output per plant is the amount of the product manufactured in the country divided by the number of plants in that industry. Dates are as follows: US, 1929; UK, 1930; Germany, 1925 for number of plants, 1929 or nearest preceding year (depending on data availability) for output; Japan, 1932 or nearest preceding year (depending on data availability). I use different years for Germany because industrial censuses are available only for 1925 and 1933, and the 1925 census more closely approximates Germany's industrial structure in 1929 because of the depression after 1931. Data is from US Department of Commerce, Bureau of the Census (1930); UK Board of Trade (1932); Statistisches Reichsamts Germany (1929); and Ministry of Commerce and Industry (1932). In some cases data on the number of plants are at different levels of aggregation for different countries. In these cases, I have used the detail in the US census to calculate a country's output per plant ratio to the US at the higher level of aggregation, and then used this ratio to estimate output per plant in that country at the lower level of aggregation.

was absent. In Korea and Formosa (both already inside Japan's formal empire), Japanese market shares for motor vehicles, machinery, and steel products immediately declined before rebounding after measures favouring colonial goods were instituted in 1923. In Manchuria, market shares bottomed out in 1930, and then bounced back after Japan seized control of the area and revised its tariff structure.<sup>14</sup>

Since low volume raised unit costs and undermined market shares in sectors with large economies of scale, Japanese firms had strong incentives to seek trade protection. But sheltering the domestic market from external competition would not by itself enable firms to transition to mass production: consumption was too low to permit even a handful of factories approaching 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.

These considerations motivated the surge in domestic support for trade protection and imperial expansion that occurred in the mid-1920s. Steel-makers lobbied vigorously for tariffs and subsidies to enable them to expand capacity and output. Automakers petitioned to raise duties on engines, chassis, and parts to restrict imports of 'knocked-down' vehicles by Ford and General Motors. Electrical manufacturers advocated increased protection of motors, generators and radios, and mechanical engineers demanded higher tariffs on machine tools and industrial engines. The chemical industry pushed for increased protection of dyestuffs and inorganic chemicals, and antidumping duties on nitrogenous fertilizers (Yonekura, 1994: 109–14; Molony, 1989: 244–5; Uyeda, 1933; Mason, 1992: 73–4). Tariff reductions occurred only for rayon and cement, the two industries with the highest scale indices in Table 1.

Industry groups that pushed for trade protection also advocated a wider trading bloc. Historical studies find the strongest domestic support for imperial protection in heavy industry (Tiedemann, 1971: 269–72). Toshiyuki (1989: 24) explains: 'Because Japan's new large-scale industries still had high unit costs of production, 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.' For example, the Industrial Club (which represented producers of capital goods) insisted, 'Manchurian tariffs should be kept as low as possible to encourage the import of Japanese products' (Young, 1998: 204). Steel-makers advocated an exclusive trading zone to promote vertical integration with iron mills in the region and a common external tariff to block imports into Japan via dependent territories (Yonekura, 1994: 113, 122). Producers of organic chemicals and fertilizers also pushed for colonial expansion to facilitate their 'export drive' (Molony, 1989: 243, 263). In

contrast, labour-intensive industries with few economies of scale, such as textiles, apparel, and footwear, saw few economic benefits in imperial integration and worried about losing markets abroad (Ishii, 1981).

My point is not that business interests *caused* Japan's aggressive bid for territorial expansion, but rather that industrial conditions *predisposed* Japan to seek secure access to markets in the region. The *Zaibatsu*<sup>15</sup> 'gave wholehearted support to the policy of militaristic expansion' (Jones, 1954: 148) because trading privileges were easily established in areas under Japanese rule. As Japan extended control over Manchuria and continued its advance into North China, tariff changes were 'devised to encourage the inflow of capital equipment for the mining, metallic, and heavy manufacturing industries' (Jones, 1954: 192). From 1931–35, steel exports jumped 900 percent, machinery 600 percent, and motor vehicles 540 percent, with sales to Manchuria, North China, and the colonies accounting for more than nine-tenths of this increase. At the same time, exports of textiles, apparel, pottery, and glassware to these markets declined.<sup>16</sup>

Imperial protection thereby enhanced domestic market shares and provided a vital export outlet for firms that could not compete with producers outside of Asia. Yamazawa (1975: 59) notes, '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'. Simply stated, the inability of Japanese firms to exploit economies of scale while constrained by their national boundaries expanded the size of the desired protected market from the national to the regional level. Since Japan's growing heavy industry quickly saturated additional markets in the colonies and Manchuria, these areas provided only a temporary palliative – making further expansion into China and elsewhere in East Asia increasingly attractive.

### **The UK's shift from free trade to imperial preference**

UK firms entered the mass production industries earlier than firms in Japan, as many of the technical advances of the second Industrial Revolution originated in the UK. However, producers with economies of scale generally failed to keep pace with their competitors in the US and Germany. By 1914, even the largest UK companies produced on a smaller scale and captured smaller shares of their home market than foreign rivals. Though UK plants employed almost as many workers as US factories, intensive use of skilled labour could not fully compensate for low volume. Moreover, UK firms were weakest in the sectors with the steepest scale economies.<sup>17</sup>

For example, Britain's largest automobile factories produced less than one-quarter the number of vehicles of the average US plant. The combined

output of the 20 largest steel mills totalled one-third of the US Steel Corporation's and barely equalled that of Germany's Vereinigte Stahlwerke (Hannah, 1976: 121). In dyestuffs, 'the largest British firms ... were pygmies in comparison ... [to] the large-scale operations of [German] coal tar firms' (Richardson, 1968: 286-7). The productive capacity of the leading synthetic nitrogen producer, Imperial Chemical Industries (ICI), was one-quarter of I. G. Farben's (Reader, 1975: 39). In electrical machinery, contemporaries lamented, 'even the best of the British factories are hardly equal in their size and equipment to the leading works in Germany' (Saul, 1960: 38). The scale of production also was very small in electric motors and home appliances such as radios and refrigerators (Jackson, 1954).

A series of public inquiries after the war blamed Britain's small market. One study (Board of Trade, 1928: 161-2) concluded, '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'. Lacking a wider market for their products, firms were reluctant to demolish outmoded plant, replace equipment, and expand capacity. With such a low level of domestic steel consumption, Chandler (1990: 284) observes, '[o]nly 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'. Indeed, efforts to increase volume often outpaced the absorptive capacity of domestic consumption and led to painful, industry-wide adjustments; Ford's Dagenham factory and ICI's synthetic nitrogen facility at Billingham are cases in point.

Since firms could not expand production runs producing solely for domestic demand, they could capture unexploited economies of scale only by exporting. In the first few years after the war, the UK regained many of its export markets in the empire. But as US and German factories expanded production to serve foreign consumers, UK firms were pushed back first in neutral markets and then inside the empire. With the burden of high unit costs, these firms increasingly 'found it difficult to secure the requisite market outlets to justify mass production' (Elbaum and Lazonick, 1986: 15-16). Of the industries producing on the smallest scales relative to foreign competition, all except office machinery experienced a decline in market shares in the Commonwealth during the 1920s. Only producers of motorcycles and tires had greater shares of the imperial market in 1929 than in the early postwar years.<sup>18</sup>

Faced with growing international competition, heavy industry sought to retreat within the domestic market and the empire. Firms in high-throughput activities were among the first to petition for safeguarding duties after the war. Steelmakers actively lobbied for tariffs, asserting that they could not begin rationalization 'unless assured of the home market'

because 'the small orders which are economically transferable to the big plants are not nearly enough. . . . [I]t is the orders for imported steel that can alone give the big plants what they need' (Marrison, 1996: 280). All of the leading producers of automobiles and tires 'actively supported the protectionist cause' (Snyder, 1944: 152–4). The largest rayon manufacturer, Courtaulds, supported import duties, and small firms were more emphatic about the need for high tariffs (Coleman, 1969: 260–3). The dye industry advocated import licensing to complement high tariffs. Firms manufacturing electrical machinery, radios, light bulbs and farm machinery also pushed for import duties to allow them to capture market shares drained away by imports. Within heavy industry, only producers of motorcycles and insulated wire and cable showed no interest in tariffs (Marrison, 1996; Rooth, 1992).

These same industries spearheaded the movement for a trading bloc with the Commonwealth. Sixteen prominent leaders of heavy industry joined together to publish an advertisement favoring Imperial Preference in the *London Times* in November 1929. The Society of Motor Manufacturers and Traders advocated a preferential imperial tariff and pushed for empire content rules in the Ottawa Agreement to deny trade preferences for US affiliates in Canada (Lowe, 1942: 93; Marrison, 1996: 415). Dunlop favoured imperial free trade with a common tariff, even if this meant closing off from the world economy, because mass production required a 'secure market of sufficient volume'.<sup>19</sup> Steelmakers also backed Imperial Preference and complained that adherence to MFN inhibited commercial discrimination in the empire (Wurm, 1993: 38, 81, 176). Executives at ICI sought 'a self-sufficient economic system' in the empire, which would serve as 'an exclusively British trading area' (Reader, 1975: 9, 229). This pressure from heavy industry for Imperial Preference contrasts with the views of export-oriented light manufacturers, such as textiles and apparel. These industries denounced imperial schemes as a threat to exports; they sent no official representative to the Ottawa Conference; and after the Ottawa Agreement they continued to urge the government to pursue MFN trade treaties with countries willing to reduce their tariffs on UK goods.<sup>20</sup>

In sum, UK firms operated factories of inefficient size in the products in which scale creates significant cost advantages. As competitors in the US and Germany pushed UK goods out of neutral markets, the empire, and the domestic market, the industrial backbone of the free trade movement weakened. With too many firms vying for too little domestic demand, producers needed tariff protection at home and a wider market abroad to sell more goods, expand in size, and reorganize operations. Eventually, the UK imposed a General Tariff and established Imperial Preference to provide protection with significant margins of tariff preference for heavy industry. Even so, the Ottawa system never evolved into the self-contained trading unit that existed in East Asia. Most sectors with economies of scale

produced closer to world standards in Britain than in Japan – and in any event, the Dominions refused to establish total free trade in the empire or to exclude outside trade entirely.

### US trade policy: from Smoot-Hawley to the RTAA

Almost all of the mass production industries in the US enjoyed extraordinary advantages of large scale. The automobile industry provides a familiar example: with the introduction of the moving assembly line in 1911, Ford's output of passenger cars tripled in three years. By 1929, both Ford and General Motors produced 1.5 million autos, while no European or Asian firm made as many as 80,000 (Wilkins and Hill, 1964: 52–3). US output *per plant* of tractors, typewriters and refrigerators exceeded the entire production of British and Japanese industry. The world's 12 largest automobile firms, nine farm machinery producers, and five office machinery firms were all American.

Only in chemicals did the US produce at a size disadvantage. Dye makers operated 'little more than assembly plants . . . entirely dependent on intermediates imported from Germany' (Haynes, 1945: 309–13). In synthetic fibres, firms failed to keep pace with technological changes that increased the optimal scale of production to 70 million pounds per plant (Markham, 1952: 49–53). The combined output of the largest synthetic nitrogen producers, Allied Chemical and Du Pont, was less than one-fifth of I. G. Farben's capacity (Markham, 1958: 102–3). In inorganic chemicals, efforts to implement mass production resulted in excess capacity and damaging price wars (Haber, 1971: 174–7).

Where US firms achieved a larger scale than foreign rivals, an enormous internal market complemented first-mover advantages. Again, automobiles are the prototypical case: Americans bought 25 times more cars in 1929 than consumers in any other country. Similarly, firms producing electrical appliances could achieve 'unequaled levels of output' in the 'huge domestic market' (Backman, 1962: 283, 291). Domestic steel consumption supported 44 steelworks with more than half a million tons capacity and 18 others of more than a million tons; Germany had only eight with more than a million tons capacity, and Britain just three of more than half a million tons. In addition to the massive consumer market, high wages increased the demand for labour-saving industrial machinery and home appliances; long distances created a market for transportation and communications equipment; and abundant arable land enhanced the need for tractors and other farm machinery.

With these scale advantages, US firms in mass production industries had no reason to seek trade protection. Most of these industries abstained from requesting tariff increases in the 1920s. The Automobile Manufacturers' Association even asked Congress to reduce its tariff from 25 percent to 10

percent, and Ford 'vigorously opposed' the Smoot-Hawley Act (Wilkins and Hill, 1964: 205–6; US Senate, 1929, vol. III: 821–47). Large-scale producers also exerted the earliest and most forceful pressure to liberalize tariffs after 1930. The auto industry began a public campaign for trade liberalization in early 1932, two years before the RTAA. The Office Equipment Manufacturers' Institute supported reciprocal tariff concessions 'earnestly and unanimately', as did producers of farm equipment such as International Harvester and Caterpillar (US House of Representatives, 1940: 2240–61). General Electric and Westinghouse supported trade liberalization in all of their products except light bulbs. Even steelmakers, despite concerns about dumping, supported reductions in duties (Bidwell, 1956: 162–4, 238–9).

Within heavy industry, only the chemical industry opposed trade liberalization. Producers of dyes and organic chemicals challenged the constitutionality of the RTAA and argued that Congress should retain control over trade. Their objections gained intensity when trade negotiators recommended a 50 percent cut in duties on organic chemicals (Bidwell, 1956: 159–61, 177–8; US House of Representatives, 1940: 2718–20). Producers of synthetic fibres also complained that existing tariff rates were 'inadequate' (US Senate, 1929, vol. XIII: 55–72).

Because the leading firms outside the chemical industry had no interest in a trading bloc, they sought trade liberalization on a nondiscriminatory basis. Until 1923, the US adhered to a conditional interpretation of MFN that denied third countries the concessions negotiated in trade agreements. However, large firms believed that conditional MFN encouraged discrimination against the US. Since these firms looked to the world market rather than a regional sphere, they supported trade liberalization multilaterally to pry open foreign markets and dissolve discriminatory arrangements (Parrini, 1969: 20–2, 214–20; Wilson, 1971: 67–75).

In short, US heavy industry controlled a market of continental proportions. This allowed firms to exploit first-mover advantages to achieve large-scale production earlier than their competitors abroad. Because of their strong scale position and the size of their market, mass production industries had no need for a trading bloc. Instead, they pushed for the liberalization of high US tariffs through trade agreements and unconditional MFN, even as other countries withdrew from the world trading system.

#### IV. THE POLITICS OF TRADE POLICY CHANGES IN THE 1930S

The case studies show that industries with economies of scale in Japan and the UK favoured protection and trading blocs, while mass producers in the US sought multilateral trade liberalization. Establishing that the analytical framework presented here explains trade preferences in these three countries is an important preliminary test of my argument, even if

the theory does not account for the political mechanism by which trade preferences at the industry level were translated into policy outcomes in the 1930s. To understand why the policies advocated by industries with economies of scale ultimately were adopted, it is necessary to consider the mediating effects of collective organization and institutional structures.

While this article offers no new theoretical claims in this area, it is possible to provide descriptive insights into the policymaking process in these three countries. Three factors were particularly important to policy outcomes. First, high levels of industrial concentration facilitated collective organization in industries with economies of scale. Second, these industries effectively logrolled their interests with powerful social groups, particularly landowners. Finally, in democratic systems (the UK and US), where collective action costs were low, domestic coalitions led by industries with economies of scale exerted decisive influence over policy outcomes only after changes in party control of the government.

The Japanese case is straightforward. The beneficiaries of imperial protection were not numerous, but they were concentrated and politically powerful. Interwar Japan's political system systematically favoured the interests of the largest firms and the most concentrated industries: the 14 largest conglomerates controlled one-quarter of all invested capital, monopolized heavy industry and many primary commodities, and dominated both houses of the Imperial Diet. Informal connections with bureaucrats and influence in the political parties enabled these 'money cliques' to secure extensive government support.<sup>21</sup> Moreover, heavy industry enjoyed close ties to the military, which regarded large-scale manufacturing as critical to armament and national security. Export industries simply were not concentrated financially or industrially, and they lacked connections to the state; consumer groups and labour unions were not mobilized. The weakness of pro-trade interests allowed heavy industry to join farmers in an 'iron-rice' coalition, with tariff increases on rice and other primary products the price of rural support for imperial protection.

In the UK, it took longer for tariffs and Imperial Preference to become politically acceptable. But because of shifts in political power after the war, 'new industries dependent on the domestic and imperial market' were becoming '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; by comparison, export industries were highly competitive. As in Japan, higher trade barriers against food from outside the Commonwealth helped to recruit agricultural groups to the protectionist cause. Moreover, the Trade Union Congress and London's financial community, the two bulwarks of the free trade policy, endorsed Imperial Preference in 1930. The return to power of the Conservative Party in 1931 finally completed the overthrow of the free trade system (Self, 1986).<sup>22</sup>

The US case is the most difficult: if assembly-line industries were critical to the RTAA, then how did Smoot-Hawley happen four years earlier? During the 1920s, collective action costs were low because the Congress, which was sensitive to special interests, controlled trade. As a result, labour-intensive small businesses were able to secure significant tariff increases. Mass producers consented to the 1922 tariff in return for unconditional MFN, but these industries 'were much more outspoken in their criticism' of Smoot-Hawley because they 'were no longer willing . . . to accept high duties in return for promises of downward revision through flexibility' (Wilson, 1971: 94). Still, labour-intensive industry and border agriculture dominated the legislative process and persuaded Congress to raise duties to unprecedented heights (Schattschneider, 1935). Only after the onset of the Great Depression, when it became clear that Smoot-Hawley had closed foreign markets for US goods, did mass production industries begin to push vigorously for tariff reductions (Wilson, 1971: 95–8; Ferguson, 1984). Though these efforts made some headway late in the Hoover administration, the Democratic victory in 1932 and the institutional changes of the RTAA appear to have been necessary conditions for this liberalization to take place.<sup>23</sup>

## CONCLUSION

The formation of protectionist trading blocs in the 1930s was a political response to the emergence of new technologies that demanded larger markets. Trading blocs were most attractive to firms that could not assimilate the mass production techniques developed in the prewar era because of small national markets. Customs integration with colonies, dependencies, or neighbouring countries provided an opportunity to exploit scale economies by expanding output and increasing market shares through trade diversion. Conversely, firms with sizable domestic markets for their goods already produced on a large scale, and were less interested in exclusive tariff privileges abroad.

This interpretation sheds new light on the collapse of the interwar trading system. Without dismissing factors discussed earlier, such as shifts in the international balance of power, the global macroeconomic crisis, or changes in the political composition of governments, I show that the dramatic increase in the optimal scale of manufacturing during this period played an important role that has been overlooked to date. Stated simply, the protectionism of the 1930s was, at least in part, a reaction to US supremacy in mass production – and this reaction was especially intense in countries such as Japan and the UK with domestic markets large enough to sustain high-volume industries, but too small to permit them to operate at an efficient scale of output. Because firms in these countries were severely constrained by their national boundaries, they sought

protectionist policies in domestic markets and across a larger sphere through the formation of imperial trading blocs.

This argument has contemporary relevance given the present trend toward trading blocs in Western Europe, North and South America, and Pacific Asia. Certainly the formation of these regional arrangements was heavily influenced by the interaction of technological changes with national characteristics, and the desire to gain economies of scale by enlarging existing markets plays a critical role. Contemporary regional arrangements, however, have been oriented toward eliminating 'behind the border' distortions that inhibit the expansion of multinational corporations by harmonizing product standards (as in the Single European Act), eliminating trade-related investment measures and strengthening intellectual property rights (as in the North American Free Trade Agreement), and introducing dispute settlement procedures (Lawrence, 1996). Trade diversion through the manipulation of tariff and non-tariff barriers has been less of a priority than in the 1930s.

Thus, the case of the interwar trading system does not validate conventional views equating regionalism with protectionism. First, the US monopolized the technological progress of the prewar era due to its large mass market; this made the reaction of countries disadvantaged by these trends more protectionist and anticompetitive. International differences in the scale of production narrowed considerably after 1945, as firms in Japan, the UK and continental Europe overcame their great size disadvantages.<sup>24</sup> Second, technological limitations and policy restraints before World War II prevented excluded firms from investing inside trading blocs, a common strategic response today to the threat of regional 'fortresses'. Finally, it was more feasible in the era of coal and iron for firms to take advantage of economies of scale in standardized technologies while confined to an imperial or regional market. In the age of computers, microelectronics, and fibreoptics, companies need a free flow of ideas, products, and capital to develop and profit from the latest technologies. Though international economic competition is no less severe, the strategic benefits of closing off regional markets in an effort to catch or surpass industrial rivals have declined.

## NOTES

- 1 Because of the ambiguous structure of the interwar international system, hegemonic explanations focus on two countries (the UK and the US), but invoke domestic factors in each case to explain national behaviour. US policy is especially confusing for systemic theories: Krasner (1976) points to institutional rigidity to explain why the US did not act as a hegemon; Lake (1988) suggests that US relative power was not yet hegemonic; and Conybeare (1987) and Lake (1988) downplay the extent to which the US pushed to liberalize trade before 1945.

- 2 Gourevitch (1986) and other second-image reversed explanations acknowledge that states often respond differently to common external stimuli.
- 3 Eichengreen and Irwin (1993) show that the British Commonwealth diverted less trade than Germany's bilateral treaty system in Central Europe.
- 4 Calculated from US Department of Commerce, Bureau of the Census (1918, 1930).
- 5 Krugman (1986) and Grossman (1992) survey this literature.
- 6 In both models, the economies of scale are internal to firms. This creates entry barriers and imperfect competition, which causes price to exceed average cost – allowing firms to earn excess profits. In this environment, government policy affects firms' output and pricing strategies, which helps to determine which will capture the largest market shares and the extant excess profits. My focus here is internal economies of scale and imperfect competition, not cases of monopolistic competition (a third class of strategic trade models in which there is perfect competition and no excess profits).
- 7 Exceptions include Milner and Yoffie (1989), Gilligan (1997) and Chase (2003).
- 8 This is the elasticity of unit costs with respect to scale or, less formally, the slope of the curve that relates average costs and scale.
- 9 When firms in a national industry vary widely in scales of production, their trade preferences may differ as well. Without firm-level production data, it is impossible to evaluate the likelihood of intra-industry cleavages. In the cases presented here, however, the evidence suggests even the largest producers outside the US suffered from severe size disadvantages. As a result, it is likely that firms in small-scale national industries during the 1930s shared protectionist preferences, even if large producers could expect more opportunities than small producers to capture market shares once imports were blocked.
- 10 Corden (1972) presents a welfare-based model of how trade diversion can trigger cost reduction, as firms increase output to satisfy demand within the trading bloc previously served by foreign products.
- 11 MES is the scale of output that minimizes unit costs, or the point at which the cost curve ceases to slope downward.
- 12 Scherer *et al.* (1975) contend that economies of scale are significant when national consumption is no more than 15 times MES. Table 1 presents all products that satisfy this condition where data is available for at least three of the countries in this study.
- 13 German heavy industry also supported a trading bloc, or *Grossraumwirtschaft*, in Central Europe. Earlier versions of this article included the German case, but this has been removed due to space considerations.
- 14 Based on author's calculations from data in *Oriental Economist* (1935).
- 15 The 'old' Zaibatsu (e.g. Mitsui, Mitsubishi, Sumitomo, Asano) owned many of the large steelworks, coal-iron mines, and industrial chemical refineries; the 'new' Zaibatsu (e.g. Hitachi, Nissan, Toyota) dominated in machinery, electrical equipment, motor vehicles, and specialty chemicals.
- 16 Calculated from Mitsubishi Economic Research Bureau (1936: 515–17).
- 17 Landes (1969: 239–58) and Chandler (1990: 275–8) discuss Britain's failure to adapt to large-scale production.
- 18 Based on author's calculations from Great Britain Customs and Excise Department (1932).
- 19 Company statement in *The Economist*, 14 May 1932: 1101.
- 20 'The Cotton Trade and Ottawa' and 'Lancashire and Ottawa', *The Economist*, 14 May 1932: 1070 and 25 June 1932: 1401.
- 21 Allen (1940: 626–35); Lockwood (1954: 59–61).

- 22 The Conservatives instituted a programme of industry safeguarding in 1923, but they soon lost to a Liberal government that resisted domestic pressures for trade protection. Snyder (1944: 152) notes that heavy industry groups seeking protection gravitated toward the Conservative Party and 'did everything possible to influence workers to vote Conservative'.
- 23 The tariff increases of 1922 and 1930 occurred in party-line votes during periods of unified Republican government, circumstantial evidence of the importance of party control.
- 24 For data to support this claim see Bain (1966).

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