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The Political Economy of the Fordney–McCumber and Smoot–Hawley Tariff Acts*

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Two tariff acts that rank among the most important in the history of the United States are the Fordney–McCumber tariff act of 1922 and the Smoot–Hawley tariff of 1930. Within the historical literature there exist two main hypotheses concerning the passage of these tariff acts. Schattschneider (1935; *Politics, Pressures and the Tariff: A Study of Free Private Enterprise in Pressure Politics, as Shown in the 1929–1930 Revision of the Tariff.* Prentice–Hall: New York) argues that the passage of Smoot–Hawley was due to pressure group politics. Pastor (1980; *Congress and Politics of the United States Foreign Economic Policy 1929–1976.* Univ. of California Press: Berkeley) argues that the two tariff acts were the consequence of party politics. Our paper investigates the extent to which these alternative hypotheses, integrated with the more general empirical literature on the politic economy of commercial policy, can explain the post Fordney–McCumber and post Smoot–Hawley tariff structure and the change in the tariff structure from 1923 to 1930.

1. INTRODUCTION

Two tariff acts that rank among the most important in the history of the United States are the Fordney–McCumber tariff of 1922 and the Smoot–Hawley tariff of 1930. These two tariff acts, taken together, imposed the highest nominal tariff rates in United States history. This paper investigates some economic and political factors which partially explain the tariff structure imposed by the two acts and the change in the tariff structure between 1923 and 1930. By tariff structure we mean the differ-

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ences in tariff rates across industries. Explanations of the change in the tariff structure provide some insight into the political economy of the Smoot–Hawley tariff act.

2. HISTORICAL BACKGROUND

Fordney–McCumber[1]

During World War I, American industry was effectively protected from foreign competition and experienced a boom. European wartime demands and the disruption of agricultural production in Europe also created a boom for American agriculture. With the conclusion of the war in the fall of 1919, the economy experienced a severe contraction that lasted from January 1920 to July 1921. In addition, from 1919 to 1920 real net farm income fell 24%, followed by a decline of 40% from 1920 to 1921.[2] In response to the postwar farm depression, Congress proposed an increase in agricultural tariffs. The proposal for higher tariffs was vetoed by Woodrow Wilson on his last day in office. The legislation, known as the Emergency Tariff Act, was passed again by Congress and signed into law by the newly elected Republical President Warren Harding on May 21, 1921. The passage of the Emergency Tariff Act was followed by a more general increase in tariffs of the Fordney–McCumber Tariff Act of 1922. Data from *Foreign Commerce and Navigation of the United States* (U.S. Department of Commerce, Foreign and Domestic Commerce Bureau, 1923) reveal that the average tariff rate on dutiable imports increased from 16.4 to 36.17% and the average tariff rate on total imports increased from 6.38 to 15.18% from 1920 to 1923. These tariff rate increases reflect both the Emergency Tariff Act of 1921 and the Fordney–McCumber Act of 1922.

Smoot–Hawley

One of the initial acts of Herbert Hoover, who took office in March of 1929, was to call, in June 1929, a special session of Congress to deal primarily with the agricultural depression. For the decade of the 1920s, real net farm income averaged \$11,004 (1967 = 100) compared with \$12,769 for 1910–1914 and \$14,972 for 1914–1918. As a consequence, real net farm income was 14% lower in the 1920s than during the 5 years before World War I and 27% lower than its level during World War I. President Hoover proposed an increase in tariffs on agricultural goods to

[1] The historical background is obtained primarily from Taussig's (1931) classic on the history of United States tariffs. Reading more recent literature on the history of the tariff acts, such as Kelly (1963), Dodson (1976), and Eichengreen (1989) suggests a general agreement with Taussig on the general sequence of events.

[2] All of the agricultural data is from *Historical Statistics of the United States, Colonial Times to 1970.* Washington: U.S. Dept. of Commerce, Bureau of the Census (1975).

help farmers. Hoover also suggested an increase of tariffs on those manufactured goods which would assist depressed industries.

The attempt to enact a tariff revision failed in committee and the special session flowed into the regular session in December 1929. The tariff law, which was enacted in June 1930, went well beyond Hoover's initial recommendations. There was apparently some opposition to the bill from automobile manufacturers and from East Coast manufacturers who feared foreign retaliation. Although Hoover was reportedly "besieged" by "innumerable" letters and telegrams to veto the bill he felt compelled to sign the bill given the year of effort put in by Congress to develop the bill (Taussig, 1931, pp. 499–500).

Data from *Foreign Commerce and Navigation of the United States* (U.S. Department of Commerce, Foreign and Domestic Commerce Bureau, 1931) show that the average tariff rate on dutiable imports increased from 44.6 to 44.87% from the first half of 1930 to the second half of 1930. In the second half of 1930, the average nominal tariff rate, measured as duties over dutiable imports, was the highest in United States history. However, the tariff rate on total imports actually fell from 15.79 to 13.67% from the first to the second half of 1930. This was due in part, to the increase in the number of items admitted free into the United States.[3]

3. ALTERNATIVE EXPLANATIONS

A reading of the historical accounts and subsequent literature suggests two major hypotheses concerning the passage of the Fordney–McCumber and Smoot–Hawley tariff acts. One hypothesis is that the initial catalyst for both acts was a contraction of agricultural output and income. Higher tariffs on agricultural goods were proposed to help the farmer. The proposed higher agricultural tariffs were then, in response to pressure groups, logrolled into higher tariffs for many industries. Taussig (1931) suggests this hypothesis in his classic book on the tariff history of the United States. Schattschneider (1935), in his seminal work on pressure groups, forcefully makes the argument that Smoot–Hawley was the consequence

[3] The *Foreign Commerce and Navigation of the United States, Calendar year 1930* (U.S. Department of Commerce, Foreign and Domestic Commerce Bureau, 1931) splits 1930 in half corresponding exactly to pre- and post-Smoot–Hawley. We use this data to calculate average tariff rates rather than comparing the average tariff rate in 1930 to that of 1931, since we want to capture the changes in tariff rates imposed by Smoot–Hawley while minimizing the effect of the decline in the volume of trade and general deflation on the ratio of duties to dutiable imports or total imports. Since many imported goods faced specific tariffs, the deflation of the 1930s accounts for at least some of the increase in the ratios of duties to dutiable imports and duties to total imports. The change in these measures of average tariff rates from the first and second half of 1930 is small. This does not necessarily imply that Smoot–Hawley is irrelevant for understanding the United States economy in the 1930s. Significant effects on the economy could still be caused by a change in the structure of tariffs.

of pressure group politics. The modern literature on the political economy of tariffs, which emphasizes pressure group politics, can be thought of following Schattschneider's work. Schattschneider argues that the highest level of lobbying activity is from groups that are directly affected by tariffs and support increases in tariff rates. In reference to Smoot–Hawley, Schattschneider (1935) argues that ". . . domestic producers seeking increased duties almost completely dominated the whole process of legislation" (p. 109). Olson (1965) argues that the costs of forming a pressure group is smaller for smaller groups. The benefits of protection are typically to small groups (producers) while the costs are diffused over large groups (consumers). Hence, pressure groups are more likely to represent interests in favor of more protection. This conclusion combined with the increase in the number of lobbying groups from 1915 to 1925 provides an explanation of the passage of Smoot–Hawley.[4] Some of the more recent literature, for example Kelly (1963) and Dobson (1976) follows the analysis of Taussig and Schattschneider. Eichengreen (1989) makes a more refined argument that the pressure group in favor of Smoot–Hawley consisted of a coalition between border agriculture and light industry.

A number of authors have criticized Schattschneider's hypothesis that the passage of Smoot–Hawley was due to pressure group politics. As an alternative hypothesis, Pastor (1980) and Destler (1986) argue that the passage of the two tariff acts was due to party politics. We will refer to this hypothesis as the "party politics argument." Eichengreen (1989, p. 5) states that "It is curious that this straightforward explanation has attracted so little attention." The Republicans favored protectionism and controlled Congress and the Presidency during the passage of both acts. These two facts, combined with the tendency for members of Congress to vote along party lines, provides an alternative explanation for the passage of the tariff acts. The vote for both acts was along party lines. The vote on Smoot–Hawley in the House was 222 to 153 with 14 Democrats voting for and 20 Republicans voting against. In the Senate, the vote was 44 to 42 with 5 Democrats for and 11 Republicans against.

Prior to the passage of Fordney–McCumber and after the passage of Smoot–Hawley the Republicans did not control both the Presidency and Congress. Before Fordney–McCumber there was Democratic resistance to tariff rate increases. Woodrow Wilson, on his last day as President, vetoed legislation that within a few months was passed by a Republican Congress and President as the Emergency Tariff Act. After Smoot–Hawley there was Republican resistance to proposals for tariff cuts. In the election of 1930, Democrats regained control of the Senate and were two votes short of control of the House. In 1932, Congress passed the Collier Tariff Act which would have reduced tariff rates if Hoover had not vetoed

[4] Eichengreen (1989).

it. With the election of Franklin Roosevelt in 1932 and the Democrats regaining control of both houses of Congress, the Reciprocal Trade Agreements Act of 1934 was passed which lowered tariff rates. The vote on the Reciprocal Trade Agreements Act was along party lines. The fact that when the Democrats had more control of the federal government there was resistance to tariff rate increases or proposals for tariff cuts provides further support for the party politics argument.

Our investigation tests these alternative hypotheses from the historical literature integrated with the more general empirical literature on the political economy of commercial policy. The focus of this literature is the political and economic variables that influence the structure of and changes in tariffs or nontariff barriers to trade. A refinement of Schattschneider's (1935) pressure group hypothesis is part of this literature as is Pastor's (1980) party politics argument. Lavergne (1983) and Baldwin (1985) present a detailed survey of the political economy of tariffs literature. Most of the studies focus on the post-World War II era. Pincus (1975 and 1977) and Baack and Ray (1983) have analyzed the United States tariff structure prior to the 1920s. To date, this literature has not dealt with Smoot–Hawley or Fordney–McCumber. Our paper investigates the extent to which regression models from the literature, subject to some data limitations, can explain the tariff levels associated with the post-Fordney–McCumber (1922) and post-Smoot–Hawley (1930) tariff structures and the change in tariff structure from 1923 to 1930. In addition we determine the relative importance of the two historical hypotheses in explaining the tariff structure and the change in tariff rates.

4. THE POLITICAL ECONOMY OF TARIFFS

The political economy of protectionism literature explains the variation of tariff rates across industries with the following argument: Higher import protection is observed for those industries which benefit from protection and which can, in addition, apply the type of political pressure to which Congress responds.

4.1 Benefits from Protection

Industries which benefit from protection are those at a comparative disadvantage relative to the rest of the world. The Heckscher–Ohlin theorem suggests that a country's comparative disadvantage lies in producing goods which are intensive in the country's relatively scarce factor. Industries which produce these types of goods will lose in going from autarky to free trade and hence benefit from import protection.

One way to test this hypothesis is to proxy for the source of comparative disadvantage across industries. For example, in a regression analysis of United States tariff levels in 1970, Ray (1981) finds that tariffs were higher in industries which were low skill and labor intensive. This finding is not

surprising, in light of Heckscher–Ohlin, if the United States was high skill and capital abundant relative to the rest of the world in 1970.

We use the ratio of payroll to value added as a measure of labor intensity, as in Ray (1981). If it is assumed that all of value added is paid out to labor and capital then the ratio of payroll to value added, which we denote as LABINT, is equal to

$$\text{LABINT} = \frac{1}{1 + (\text{rental rate/wage}) * (\text{capital/labor})},$$

where all the variables are for a particular industry. The value of LABINT for an industry is higher the lower its capital–labor ratio. This suggests that LABINT increases with the labor intensity of an industry. However, LABINT can also be low if the capital in the industry is earning high rents or if the industry's labor is relatively low skilled.

To control for skilled labor we use the proxy

$$\text{SKILL} = \frac{\text{wage in industry} - \text{industry sample average wage}}{\text{industry sample average wage}}.$$

A positive value for SKILL indicates that the industry wage is above the average for the sample of industries included in our study and this suggests more highly skilled labor in the industry. Ray (1981) and Baldwin (1985), looking at the post-World War II United States tariff structure, use the percentage of professional and/or research workers in an industry as a measure of skilled labor. However, such data do not exist for the 1920s. Our measure of the level of skill in an industry is the same as used by Baack and Ray (1983). Assuming that the United States economy in the 1920s and 1930s was capital and skill abundant we expect tariff levels to be positively related to LABINT and negatively related to SKILL.

Baack and Ray (1983), analyzing the political economy of the tariff structure for 1870, 1910, and 1914, argue that the United States during these years had a comparative advantage in producing goods with a low ratio of value added to sales. Baack and Ray refer to these types of goods as highly fabricated manufactures and argue that tariffs should be low for these types of goods. Wright (1990) argues that during our sample period the United States had a comparative advantage in natural resource intensive industries. Hence one would expect that tariff rates should be low for natural resource intensive industries. To capture these sources of comparative advantage, we use the variable

$$\text{INTERM} = \frac{\text{sales} - \text{value added}}{\text{sales}},$$

which is equivalent to the ratio of the value of intermediate inputs to sales. Baack and Ray interpret higher values of INTERM as corresponding

to a higher level of fabrication. INTERM will also be positively correlated with natural resource intensity. Following either Baack and Ray (1983) or Wright (1990) there should be a negative relationship between an industry's INTERM and its tariff rate.

Another factor which influences the benefits from import protection is the elasticity of domestic demand and foreign supply of goods. The more inelastic domestic demand and elastic foreign supply is, the higher the profitability of import protection to an industry. Baack and Ray (1983) find higher tariff rates for industries which are agricultural product based. They explain this finding as due to the inelastic demand for such goods conferring higher benefits to producers from tariffs. Following Baack and Ray (1983) we include a dummy variable, AGRI, for agricultural-based products.

Pincus (1975) argues that if most of the effect of tariffs is on prices and not quantities then the benefit to an industry from tariffs is proportional to the industry's free trade level of output. This argument makes the most sense for goods with an inelastic demand. To test if tariff rates positively correlated with industry output levels, Pincus includes OUTPUT, output of an industry divided by one plus the industry's tariff rate, and the square of this variable, SQOUTPUT, in his regressions. Contrary to his hypothesis, Pincus finds for the United States tariff structure in 1824 there exists an inverse relationship between output and tariff rates except for low ranges of output. We also include OUTPUT and SQOUTPUT in our regressions.

4.2 The Ability to Influence Policy

Baldwin (1985) identifies two types of models, the pressure group model and the adding machine model, which attempt to explain the ability of different industries to influence the level of import protection. The pressure group model is a descendent of Schattschneider's (1935) analysis and is further developed by Olson (1965). Caves (1976) develops the adding machine model. Baack and Ray (1983) test a variant of the party politics as an explanation of the tariff structures of 1870, 1910, and 1914.

Pressure group model. The ability of consumers or an industry to apply political pressure depends on the costs of forming pressure groups. For industries, import protection policies have the property of an nonexcludable public good. A tariff imposed on a particular good benefits all firms which produce the good. This creates the free-rider problem of nonexcludable public goods. Pincus (1975), Ray (1981), and Lavergne (1983) argue that for industries with a small number of establishments and/or which are geographically concentrated, the free-rider problem should be less serious, since the costs of forming a pressure group are lower. As a result the pressure group theory suggests that tariffs should be negatively correlated with ESTAB, the number of establishments, and positively

correlated with GEOG, measures of geographical concentration. To measure geographical concentration we calculate for each industry

$$\text{GEOG} = \frac{\Sigma_i \Sigma_k \mid Y_i - Y_k \mid f_i f_k}{2Y},$$

where the subscripts i and k are indexes for states. Y_i is per capita production in state i, f_i is the proportion of the total population in state i, and Y is the average level of per capital production for the United States as a whole. Essentially, GEOG is a Gini coefficient measure and is suggested by Lavergne (1983). Ray (1981) finds that for the 1970 tariff structure, tariff rates are positively and insignificantly related to the geographical concentration of industries. Pincus (1975) looking at the United States tariff act of 1824, finds a positive and significant relationship between the number of establishments and tariff rates. Pincus suggests that this might be explained as due to "political considerations": the higher the number of establishments the more electors in the industry and hence the more votes for higher tariffs. Baack and Ray (1983) find no systematic relationship between the number of establishments and tariff rates.

Another application of the pressure group model concerns consumers. Following Baack and Ray (1983) we include a dummy variable, CONSUM, for consumer goods. Consumers are more geographically dispersed and more numerous than firms within an industry. Hence, consumers have relatively larger costs, compared with industries, of attempting lobbying efforts and therefore are less able to block tariffs on consumer goods. This argument suggests that tariffs are higher on consumer goods.

Adding machine model. Caves' (1976) adding machine model argues, similar to Pincus (1975), that if the benefits to protection are not widely dispersed then there is less political pressure in Congress to pass tariff rate increases due to a bias in Congress against special interests. This argument suggests that geographical concentration should be negatively correlated and ESTAB positively correlated with an industry's tariff rate. We include the ESTAB and GEOG in our regressions to provide a test of the pressure group versus the adding machine models.

Caves (1976) also argues that members of Congress tend to favor industries with the largest number of voters. To allow for this possibility, we include EMPLOY, the number of employees in an industry in our regression analysis. A positive coefficient on EMPLOY would be consistent with the adding machine model.

Another variable which has been used to capture the degree of political influence is SENATE, the number of states that an industry is located in. Presumedly the more states a product is produced in, the more influence the industry has in Congress and hence SENATE should be positively related to tariff rates. Pincus (1975) had some success using SENATE.

The hypothesis concerning SENATE is consistent with the adding machine model.

Party politics model. As discussed above, Pastor (1980) makes a forceful argument that the two tariff acts passed due to Republican control of the federal government. Our analysis focuses on the extent to which party politics can explain the cross industry variation in tariff rates in 1923 and 1930 and the change in the tariff structure from 1923 to 1930. The question of why the competing imports of some industries had higher tariff rates than in other industries, although related to, is distinct from the question of why the tariff acts passed. To test the party politics explanation of the tariff structure we include, REPUB, which equals the share of value added of an industry produced in Republican-dominated states. During the 1920s the Republicans were the party of protectionism. A Republican Congressman was more likely to vote for the passage of the tariff acts. Hence, following Baack and Ray (1983), the party politics argument suggests that tariffs will be higher as higher the value of REPUB increases. A significant and positive value of the coefficient on REPUB would suggest party politics has a significant effect on the tariff structure.

5. EMPIRICAL RESULTS

Our sample consists of 88 manufacturing industries which compete with imports that compose 80% of total manufacturing imports in 1923 and 54% of total manufacturing imports in the second half of 1930.[5] The Standard Industrial Classification, used by the Census Bureau today, did not exist in 1923 or 1930. Hence there is no standard for the aggregation of industries. Baack and Ray (1983) confronted a similar data problem. In order to compare our results, our sample is similar to Baack and Ray (1983). However, we include some industries, notably motor vehicles, which were not important prior to the 1920s. The industries in our sample include most of the major industries of the period. The source of the industry characteristics data is from the *Biennial Census of Manufactures* (U.S. Department of Commerce, Bureau of the Census, 1924, 1926, 1935). For some industries the *Biennial Census of Manufactures* did not have all the needed data for both years in our study. In these cases we dropped the industry from our sample. A complete list of the industries is given in Appendix B. The source of the tariff data is the U.S. Department of Commerce, Foreign and Domestic Commerce Bureau (1924, 1931) *For-*

[5] The total dollar value of manufacturing imports in 1923 is $2047 million and for the second half of 1930 is $793 million. Our sample consists of $1637 million of manufactured imports for 1923 and $428 million of manufactured imports for the second half of 1930. The difference between the 1923 and second half of 1930 percentage of total manufacturing imports is due almost entirely to larger than proportional drops in imports of sugar and oils n.e.c. for the second half of 1930.

eign Commerce and Navigation of the United States for calendar years 1923 and 1930. A list of variables is given in Appendix A. Note that the data for the independent variables are for the years 1921 and 1931 while the tariff rates are for 1923 and 1930. Given the publication dates of the *Biennial Census of Manufacturing,* 1921 and 1931 are the closest years for which data are available for industry characteristics prior to the passage of Fordney–McCumber and Smoot–Hawley.

5.1 Results for Fordney–McCumber

Table 1 gives the results for 1923, the post-Fordney–McCumber tariff structure, for four alternative specifications. Since the number of establishments, ESTAB, and number of employees, EMPLOY, are highly correlated with output, these variables are left out of regressions 3 and 4. The variables GEOG and REPUB are also highly correlated given that the Republicans dominated Congress in 1921. Regressions 3 and 4 are run with GEOG and REPUB appearing separately. The first six variables in column one, excluding the intercept, capture the benefits to an industry from higher tariffs. The last six variables capture the ability of an industry to influence policy.

Table 1 shows that the signs on the variables measuring the benefits from tariffs are consistent with the conclusions of Heckscher–Ohlin if the United States' comparative disadvantage in 1921 lay in producing labor intensive goods and goods with a low ratio of value of intermediate inputs to sales. For all regressions, tariff rates across industries are significantly and positively related to labor intensity, LABINT, and significantly and negatively related to the ratio of intermediate inputs to sales, INTERM. Alternatively, industries which were capital intensive in 1921 and those industries with a high level of fabrication or which were natural resource intensive tended to have lower tariff rates. These industries would benefit from lower tariffs if the United States had a comparative advantage in producing capital intensive and resource intensive goods.

The coefficient on SKILL is positive which is not consistent with the United States being SKILL abundant; however, the coefficient is not significant. Products which are agriculture product based, e.g., tobacco manufactures, alcohol, textiles, and butter, have significantly higher tariff rates than other industries. This finding is consistent with the demand for such goods being inelastic. The coefficient on AGRI may also reflect the fact that tariffs on tobacco and alcohol were traditional sources of tax revenue for the federal government. The relationship between tariff rates and output levels suggests that tariff rates fall as output increases, until the output of an industry equals about $1.5 billion, after which tariff rates rise with output. There are only three industries in our sample with output greater than $1.5 billion in 1921: motor vehicles, printing and publishing, and wearing apparel.

TABLE 1
Results for Fordney–McCumber—Dependent variable: Tariff rate

Independent variables	Regression 1	2	3	4
Constant	−0.13	0.13	0.24	0.02
	(0.36)	(0.59)	(1.71)*	(0.07)
Labint	0.29	0.29	0.29	0.34
	(1.87)*	(1.86)*	(1.94)*	(2.27)**
Skill	0.11	0.13	0.13	0.10
	(0.99)	(1.12)	(1.21)	(0.87)
Interm	−0.48	−0.50	−0.50	−0.50
	(2.97)**	(3.10)***	(3.34)***	(3.33)***
Agri	0.17	0.16	0.16	0.18
	(2.78)**	(2.69)**	(2.70)**	(3.21)***
Output	-3.0×10^{-10}	-3.3×10^{-10}	-2.9×10^{-10}	-2.3×10^{-10}
	(1.80)*	(2.02)*	(2.34)**	(1.68)*
Sqoutput	1.0×10^{-19}	1.4×10^{-19}	1.2×20^{-19}	9.1×10^{-20}
	(1.24)	(2.00)*	(2.02)*	(1.40)
Estab	-8.3×10^{-7}	-4.7×10^{-7}	—	—
	(0.10)	(0.06)		
Geog	0.29	0.36	0.25	—
	(1.23)	(1.64)*	(1.79)*	
Consum	0.12	0.12	0.13	0.13
	(2.72)**	(2.80)**	(3.09)***	(3.22)***
Employ	1.8×10^{-7}	6.2×10^{-8}	—	—
	(0.33)	(0.13)		
Senate	0.002	0.002	—	—
	(0.74)	(0.72)		
Repub	0.31	—	—	0.38
	(0.96)			(1.49)
Obs	88	88	88	88
Rbar 2	0.31	0.31	0.34	0.33
F-Stat	4.29	4.61	6.47	6.27
	(0.00004)	(0.00002)	(0.000002)	(0.000003)

Note. The absolute value of the t statistics are reported in parentheses, except below the F statistics which are the significance level, ***, **, * denote significance at 1, 5, and 10%, respectively, for the two tail t test for the null hypothesis that the coefficient equals zero.

The next five variables, ESTAB, GEOG, CONSUM, EMPLOY, SENATE, and REPUB measure an industry's ability to influence policy. The regression results for Fordney–McCumber give more weight to the pressure group theory than to the adding machine model or the party politics argument as an explanation of the 1923 tariff structure. In order for the evidence to be consistent with the adding machine model, the coefficients on GEOG and CONSUM have to be negative, and for ESTAB, EMPLOY, and SENATE the coefficients have to be positive.

The negative sign of the coefficient on ESTAB, while insignificant, is consistent with the pressure group theory. The sign of the coefficient on EMPLOY switches from regression 1 to 2 and in both cases is insignificant. The coefficient on SENATE while positive is also insignificant. The coefficient on GEOG, our measure of the geographical concentration of an industry, is consistently positive and significant in regressions which exclude the variable REPUB.

The coefficient on the dummy variable for consumer goods is positive and significant in all regressions. This result is consistent with the pressure group theory: consumers being numerous and dispersed are difficult to organize. The cost to any one consumer of lobbying against tariffs far exceeds the benefits. The coefficient on SENATE is insignificantly different from zero.

The sign on REPUB, the fraction of value added in Republican-dominated states, is positive and insignificant in both regressions 1 and 4. This result for REPUB provides weak evidence that party politics influenced the tariff structure in 1923.

Given the signs and significance of CONSUM and GEOG and the lack of significance of ESTAB, EMPLOY, SENATE, and REPUB, the results lend more weight to the pressure group theory than the alternative hypotheses, for explaining the post-Fordney–McCumber tariff structure. In conclusion, smaller, labor intensive, and low intermediate input to sales industries which were geographically concentrated, producing agriculturally product-based consumer goods, tended to have higher tariffs in 1923.

5.2 Results for Smoot–Hawley

Table 2 gives the results for Smoot–Hawley. The results are again consistent with Heckscher–Ohlin if the United States' comparative disadvantage was in producing labor intensive goods. Tariff rates are still higher for goods with a low level of intermediate inputs to sales although the coefficients are less precisely estimated. Agriculture-based products have significantly higher tariff rates after controlling for other factors as was the case with Fordney–McCumber. The results for OUTPUT and SQOUTPUT are also similar, tariff rates fall with an increase in an industry's output for levels of output below about $3.4 billion. Only motor vehicles in 1929 had a level of output above $3.4 billion.

Of the variables that measure an industry's ability to influence policy only CONSUM, the dummy variable for consumer goods, is significantly different from zero at customary significance levels. The positive sign of the coefficient for CONSUM is consistent with the pressure group theory. The signs on ESTAB and GEOG are also consistent with the pressure group theory. The signs on EMPLOY and SENATE are consistent with the adding machine model. However, all these coefficients and the coefficient on REPUB are not precisely estimated. Hence the results for

TABLE 2
Results for Smoot–Hawley—Dependent variable: Tariff rate

Independent variables	Regression 1	2	3	4
Constant	0.04	0.11	0.24	0.29
	(0.19)	(0.51)	(1.86)*	(2.38)**
Labint	0.12	0.11	0.12	0.14
	(1.83)*	(1.71)*	(1.84)*	(2.11)**
Skill	0.07	0.08	0.02	0.03
	(0.62)	(0.69)	(0.20)	(0.23)
Interm	−0.17	−0.16	−0.18	−0.21
	(1.03)	(0.96)	(1.23)	(1.40)
Agri	0.22	0.21	0.22	0.25
	(3.20)***	(3.12)***	(3.33)***	(3.81)***
Output	-2.8×10^{-10}	-2.8×10^{-10}	-1.4×10^{-10}	-1.6×10^{-10}
	(1.76)*	(1.74)*	(1.37)	(1.68)*
Sqoutput	4.1×10^{-20}	4.1×10^{-20}	2.4×10^{-20}	3.0×10^{-20}
	(1.19)	(1.19)	(0.86)	(1.11)
Estab	-3.5×10^{-6}	-4.2×10^{-6}	—	—
	(0.44)	(0.53)		
Geog	0.31	0.33	0.21	—
	(1.28)	(1.36)	(1.29)	
Consum	0.11	0.10	0.11	0.13
	(2.06)*	(1.92)*	(2.18)*	(2.51)**
Employ	4.9×10^{-7}	4.7×10^{-7}	—	—
	(1.28)	(1.25)		
Senate	0.003	0.003	—	—
	(0.92)	(0.97)		
Repub	0.10	—	—	0.12
	(0.80)			(0.94)
Obs	88	88	88	88
Rbar 2	0.22	0.23	0.23	0.22
F-Stat	3.09	3.33	4.26	4.12
	(0.001)	(0.0009)	(0.0003)	(0.0004)

Note. The absolute value of the t statistics are reported in parentheses, except below the F statistics which are the significance levels. ***, **, * denote significance at 1, 5, and 10%, respectively, for the two tail t test for the null hypothesis that the coefficient equals zero.

Smoot–Hawley are less clear cut as to which factors determined the ability to influence policy. The results are most consistent with the pressure group theory. Neither the adding machine model nor party politics seems to explain the cross industry variation of tariffs in 1930.

The results for Fordney–McCumber and Smoot–Hawley are similar in some respects with the empirical findings of other researchers analyzing tariff structures after World War II and prior to World War I. Ray (1981) found that tariff rates in 1970 were positively and significantly related to

labor intensity. Ray also found a positive relationship between the geographical concentration of industries and tariff levels. Baack and Ray (1983) investigated the 1870, 1910, and 1914 tariff structures and found an insignificant relationship between skill levels and tariff rates and positive and significant relationships between CONSUM for 1870 and 1914 and tariff rates. A similar result was found for AGRI for 1910 and 1914. In general, we cannot claim to have found a systematic relationship between the number of establishments and the level of tariffs across industries. This is consistent with what Baack and Ray (1983) found for the tariff structures in 1870, 1910, and 1914. The results for output are also consistent with those found by Pincus (1975).

5.3 Results for the Change in the Tariff Structure

Table 3 reports the results of regressing the 1930 tariff structure on the 1923 tariff structure and changes in the independent variables from 1923 to 1930 (excluding of course the dummy variables). The results give some insight into the marginal contribution of the independent variables in explaining the 1930 tariff structure.

The coefficient on the 1923 tariff rate is positive and highly significant. This result is similar to what Lavergne (1983) found in his analysis of the 1979 United States tariff structure. Lavergne found that the 1979 tariff structure is positively and significantly related to the 1930 tariff levels. A regression of the 1930 tariff structure on 1923 tariffs plus a constant "explains" 50% of the variance in 1930 tariffs. Lavergne interprets his regression results as suggesting a significant amount of inertia in the setting of tariffs. An alternative explanation may be just that the factors explaining the tariff structure change slowly over time.[6] The addition of changes in the independent variables account for a little more of the variance of the 1930 tariff structure.

It is difficult, given the regression results in Table 3, to explain the change in the tariff structure from 1923 to 1930 as a consequence of a change in comparative disadvantage. This is not surprising since it is likely that comparative disadvantage changes slowly over time. The sign on the change in LABINT is negative in all regressions and significant in regressions 1 and 2. This is exactly the opposite of the results of the tariff level regressions. The results suggest that, after controlling for the 1923 tariff structure and other factors, tariff rates fell for industries which became more labor intensive. However, the coefficients are not precisely estimated in regressions 3 and 4. The change in the SKILL level has a negative sign which is different from the results in the level regressions but the coefficients are not precisely estimated.

Controlling for other factors, the greater the increase in the level of

[6] This interpretation was suggested to us by an anonymous referee.

TABLE 3
Change in the Tariff Structure—Fordney–McCumber to Smoot–Hawley: Dependent variable: Change in Tariff Rates from 1923 to 1930

Independent variables	Regression			
	1	2	3	4
Constant	0.17	0.18	0.15	0.14
	(4.13)***	(4.60)***	(3.81)***	(3.21)***
Tariff rate 1923	0.79	0.79	0.81	0.80
	(9.15)***	(9.28)***	(8.82)***	(8.69)***
Change in Labint	−0.13	−0.13	−0.09	−0.10
	(1.88)*	(1.94)*	(1.30)	(1.38)
Change in skill	−0.17	−0.18	−0.18	−0.17
	(1.34)	(1.39)	(1.34)	(1.25)
Change in interm	0.58	0.58	0.44	0.46
	(2.32)**	(2.36)**	(1.79)*	(1.80)*
Change in output	-5.58×10^{-10}	-5.59×10^{-10}	5.2×10^{-11}	4.56×10^{-11}
	(2.74)***	(2.76)***	(0.37)	(0.33)
Change in sqoutput	6.187×10^{-20}	6.19×10^{-20}	-8.39×10^{-21}	-7.22×10^{-21}
	(1.86)*	(1.88)*	(0.29)	(0.25)
Change in estab	-1.62×10^{-5}	-1.61×10^{-5}	—	—
	(1.20)	(1.21)	—	—
Change in geog	0.08	0.08	0.21	—
	(0.36)	(0.37)	(1.02)	—
Change in employ	1.97×10^{-5}	1.97×10^{-6}	—	—
	(3.49)***	(3.51)***	—	—
Change in senate	-4.48×10^{-4}	-4.89×10^{-4}	—	—
	(0.13)	(0.15)	—	—
Change in repub	−0.01	—	—	−0.02
	(0.07)	—	—	(0.21)
Obs	88	88	88	88
Rbar 2	0.57	0.57	0.50	0.49
F-Stat	11.28	12.57	13.41	13.11
	(0.0000)	(0.0000)	(0.0000)	(0.0000)

Note. The absolute value of the t statistics are reported in parentheses, except below the F statistics which are the significance levels. ***, **, * denote significance at 1, 5, and 10%, respectively, for the two tail t test for the null hypothesis that the coefficient equals zero.

intermediate inputs to sales (INTERM) from 1921 to 1930, the higher an industry's tariff rate tended to be in 1930. The coefficient on INTERM is significant for all regressions. These results are exactly the opposite of the results for the tariff level regressions. One interpretation is that those industries which experienced declines in value added relative to sales between 1923 and 1930, which implies an increase in INTERM, were able to obtain increases in tariff rates in 1930.

Neither the pressure group theory nor the party politics are successful in explaining the change in the tariff structure from 1923 to 1930. The

coefficients on the change in ESTAB, GEOG, SENATE, and REPUB are insignificantly different from zero. This result is not that surprising for GEOG, SENATE, and REPUB since the values of these variables change little from 1923 to 1930. The adding machine model seems to fare a little better in explaining the change in the tariff structure. Those industries whose number of employees increased from 1923 to 1930 obtained higher tariff rates in 1930, controlling for tariff levels in 1923. Perhaps with the passage of Smoot–Hawley, Congress was responding more to incentives to maximize votes rather than to special interests in the form of pressure groups. Unfortunately, this interpretation has no support from the historical literature.

The regression model apparently explains the level of the Smoot–Hawley tariffs to the extent that the tariff structure in 1930 was similar to that in 1923. The structure of the level of tariffs in 1930 was still related for the most part to similar variables as in 1923 and in other studies, e.g., Baack and Ray. However, using specifications based on the literature, we cannot provide much of an explanation for the change in tariff rates from 1923 to 1930.

6. CONCLUSIONS

Our results for the post-Fordney–McCumber and post-Smoot–Hawley tariff structure show that tariff rates were higher for industries that were labor intensive. This finding is consistent with the implications of Heckscher–Ohlin if the United States had a comparative disadvantage in producing labor intensive goods in 1923 and 1930. For the post-Fordney–McCumber tariff structure, we find an industry's tariff rate was lower as the ratio of intermediate inputs to sales increased. A similar result, although not significant, was found for Smoot–Hawley. If the United States had a comparative advantage in producing natural resource intensive goods during the 1920s as Wright (1990) argues, then one would expect lower tariff rates for these industries. We also find that in explaining the levels of the tariff structure in 1923 and 1930, the pressure group theory (first suggested by Schattschneider (1935)) seems to work better than the adding machine model (as described by Baldwin (1986)) or an argument based on party politics (Pastor (1980)). However, the tariff structure in 1923 explains most of the variance in tariffs across industries in 1930. While Fordney–McCumber and Smoot–Hawley are unique in corresponding to the highest tariff levels in United States history, the structure of tariff rates across industries are correlated in the same way with many of the same variables as found by other researchers for other periods.

APPENDIX A: VARIABLE DEFINITIONS AND DATA SOURCES

Tariff rate = duties/total imports.
LABINT = payroll/value added.

SKILL = the difference from the industry wage from the industry sample average wage divided by the industry sample average wage.

INTERM = the difference between sales and value added divided by sales.

ESTAB = the number of establishments in the industry.

EMPLOY = the number of employees in the industry.

SENATE = the number of state the industry produces in.

The data for all the above variables are derived from the 1921 and 1931 *Biennial Census of Manufactures* (U.S. Department of Commerce, Bureau of the Census, 1932).

OUTPUT = sales divided by one plus the tariff rate of the industry. The sales data are from the *Biennial Census of Manufactures* and the tariff rates are derived from *Foreign Commerce and Navigation of the United States* (U.S. Department of Commerce, Foreign and Domestic Commerce Bureau, 1931).

SQOUTPUT = the OUTPUT squared.

AGRI = 1 for agriculturally based products, 0 otherwise.

CONSUM = 1 consumer goods, 0 otherwise.

Derivation of GEOG

For the Fordney–McCumber regression, the value added data for each industry the 48 states and the District of Columbia in 1921 are taken from the *1921 Biennial Census of Manufactures* (U.S. Department of Commerce, Bureau of the Census, 1924. These are the last data collected before the passage of the act. For the Smoot–Hawley regression, the value added for the 48 states and the District of Columbia in 1931 is taken from the *1931 Biennial Census of Manufactures* (U.S. Department of Commerce, Bureau of the Census, 1932). These data are used because data are not available for 1929. As a result, the 1931 data are closest to when the Smoot–Hawley act was passed.

There are two special data cases that should be noted. First, in a couple of instances, the *Biennial Census of Manufactures* reports negative value added for an industry in a state. For these cases, we recorded zero value added for the state.

The second special case in the data is more common. In order to avoid disclosure of the operation of individual firms, the data for a number of states are aggregated into a single value added total. The number of states that are aggregated varies among the industries. However, the *Biennial Census of Manufactures* lists the number of establishments for an industry for all states, including those states that are aggregated. This requires that an assumption be made regarding how to disaggregate the value added for the aggregated states into separate value added numbers for each of the aggregated states. We assume that the value added per capita in the aggregated states is the same in all for the aggregated states regardless

of the number of establishments in each state. We use the results of the 1920 census for the population values for the Fordney–McCumber act and the 1930 census for the population values for the Smoot–Hawley act. We then take this ratio and multiply by the number of establishments in each aggregated state. This results in a value added amount for each aggregated state.

We also disaggregated the aggregated states using the assumption that the value added per establishments in the aggregated states is the same in all for the aggregated states. For most states the amount of the value added in the aggregated states tends to be relatively small compared to the size of the industry. As a consequence, for many industries, the GEOG values generated by these two different assumptions are very close.

Derivation of REPUB

The state value added data used in the construction of this variable is identical to that used in the construction of the GEOG parameter. The REPUB variable is the number of states that were producing positive value added for an industry whose state's delegation to the House of Representatives had a Republican majority. We use the 1920 election results for the Fordney–McCumber regressions and the 1928 election results for the Smoot–Hawley regressions. The following states are considered not to have a delegation with a Republican majority: (1) a Democratic majority in the delegation to the House of Representatives, (2) a delegation that equally split between Democrats and Republicans, and (3) Washington D.C.

APPENDIX B: LIST OF INDUSTRIES IN SAMPLE

1. Ammunition
2. Artificial flowers
3. Barrels, boxes, and shooks
4. Baskets, rattan
5. Brushes and brooms
6. Butter cheese, condensed and evaporated milk
7. Buttons
8. Candles
9. Cement
10. Chocolate and cocoa products
11. Clay products (other than pottery) and nonclay refractories
12. Clocks watches and time recording devices
13. Combs and hairpins
14. Cordage, twine, jute and linen goods
15. Cork products
16. Corsets, bras, and other body supporting garments
17. Explosives and fireworks

18. Feathers plumes and manufactures thereof
19. Ferro-alloys
20. Firearms
21. Fur goods
22. Furniture
23. Granite, sandstone, slate, limestone marble onyx and breccia
24. Glass
25. Gloves and mittens, leather
26. Glue and gelatin
27. Gold lead
28. Grease and tallow
29. Haircloth
30. Hairwork
31. Instruments, professional and scientific
32. Liquors, vinous
33. Lime
34. Matches
35. Medicinals, pharmaceuticals, toilet preparations
36. Motor vehicles, not including motorcycles
37. Musical instruments and materials
38. Nonferrous metal alloys, except aluminum
39. Oil not elsewhere classified (fish oil, vegetable oils nonedible other than cottonseed and linseed oil: soybean coconut and palm
40. Oilcloth and linoleum
41. Oil, linseed
42. Optical goods
43. Paints and varnishes
44. Pencils, lead
45. Photographic goods
46. Pipes, tobacco
47. Pottery including porcelain ware
48. Printing, publishing, and lithographing
49. Rubber goods n.e.s.
50. Silk manufactures
51. Soap
52. Sporting and athletic goods
53. Steel-works and rolling mill products
54. Straw or other fiber hats and materials
55. Sugar
56. Toys, games and playground equipment
57. Tobacco manufactures
58. Umbrellas, canes and parts
59. Woolen, worsted and felt goods and hats
60. Inks for printing and writing

61. Jewelry
62. Asbestos products; steam and other packing materials, pipe
63. Beverages
64. Blackings and polishes
65. Bread and other bakery products
66. Carpets and rugs, wools other than rags
67. Cereal preparations
68. Files
69. Macaroni, spaghetti, vermicelli, and noodles
70. Malt
71. Mats, matting grass, and coir
72. Needles, hooks, and eyes clasps snaps
73. Saws
74. Starch
75. Vinegar and cider
76. Wire and manufactures
77. Wood screws
78. Pens, fountain and stylographic
79. Silverware and plateware
80. Textile machinery and parts
81. Sewing machines and attachments
82. Locomotives
83. Wearing apparel
84. Cotton goods
85. Lumber and timber products
86. Paper
87. Rubber tires and inner tubes
88. Canning and preserving

REFERENCES

Baack, B. D., and Ray, E. J. (1983), "The Political Economy of Tariff Policy: A Case Study of the United States." *Explorations in Economic History* **20,** 73–93.

Baldwin, R. (1985), *The Political Economy of U.S. Import Policy.* Cambridge, MA: The MIT Press.

Caves, R. E. (1976), "Economic Models of Political Choice: Canada's Tariff Structure." *Canadian Journal of Economics* **9**(2) May, 278–300.

Destler, I. M. (1986), *American Trade Politics: System Under Stress,* Washington D.C.: Institute for International Economics and New York: The Twentieth Century Fund.

Dobson, J. M. (1976), *Two Centuries of Tariffs* Washington D.C.: United States International Trade Commission, United Printing Office.

Eichengreen, B. (1989), "The Political Economy of the Smoot–Hawley Tariff." In R. L. Ransom, P. H. Lindert, and R. Sutch (Eds.), *Research in Economic History.* Vol. 12, pp. 1–43. Greenwich, CT: JAI Press.

Kelly, W. B., Jr. (1963), "Antecedents of Present Commercial Policy, 1922–1934." In W. B. Kelly, Jr. (Ed.), *Studies in United States Commercial Policy.* Chapel Hill, North Carolina: The University of North Carolina Press.

Lavergne, R. P. (1983), *The Political Economy of U.S. Tariffs: An Empirical Analysis.* Toronto: Academic Press.

Olson, M. (1965), *The Logical of Collective Action: Public Goods and the Theory of Groups.* Cambridge, MA: Harvard Univ. Press.

Pastor, R. A. (1980), *Congress and Politics of United States Foreign Economic Policy 1929–1976.* Berkeley: Univ. of California Press.

Pincus, J. J. (1975), "Pressure Groups and the Patterns of Tariffs." *Journal of Political Economy* **83**(4), 757–778.

Pincus, J. J. (1977), *Pressure Groups and Politics in Antebellum Tariffs.* New York: Columbia Univ. Press.

Ray, E. (1981), "The Determinants of Tariff and Nontariff Trade Restrictions in the United States." *Journal of Political Economy* **81**(1), 105–121.

Schattschneider, E. E. (1935), *Politics, Pressures and the Tariff: A Study of Free Private Enterprise in Pressure Politics, as Shown in the 1929–1930 Revision of the Tariff.* New York: Prentice–Hall.

Taussig, F. W. (1931), *The Tariff History of the United States,* 8th ed. New York: Putnam.

U.S. Department of Commerce, Bureau of the Census (1924), *Biennial Census of Manufactures: 1921.* Washington DC: U.S. GPO.

U.S. Department of Commerce, Bureau of the Census (1926), *Biennial Census of Manufactures: 1923.* Washington DC: U.S. GPO.

U.S. Department of Commerce, Bureau of the Census (1935), *Biennial Census of Manufactures: 1931.* Washington DC: U.S. GPO.

U.S. Department of Commerce, Foreign and Domestic Commerce Bureau (1924), *Foreign Commerce and Navigation of the United States, Calendar Year 1923.* Washington DC: U.S. GPO.

U.S. Department of Commerce, Foreign and Domestic Commerce Bureau (1931), *Foreign Commerce and Navigation of the United States, Calendar Year 1930.* Washington DC: U.S. GPO.

Wright, G. (1990), "The Origins of American Industrial Success, 1879–1940." *American Economic Review,* **80**(4), 651–668.