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INTERESTS IN THE PASSAGE OF
THE SMOOT-HAWLEY TARIFF

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ABSTRACT

We analyze Senate roll-call votes concerning tariffs on specific goods in order to understand the economic and political factors influencing the passage of the Smoot-Hawley Tariff Act of 1930. Contrary to recent studies emphasizing the partisan nature of the Congressional votes, our reading of the debates in the Congressional Record suggests that the final, party-line voting masks a rich vote-trading dynamic. We estimate a logit model of specific tariff votes that permits us to identify (a) important influences of specific producer beneficiaries in each Senator's constituency and (b) log-rolling coalitions among Senators with otherwise unrelated constituency interests which succeeded in raising tariff rates.

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I. Introduction

The Smoot-Hawley Tariff Act of 1930 ranks among the most infamous pieces of Congressional legislation this century. On the eve of the Great Depression, Congress raised U.S. tariffs to what Gottfried Haberler (1976) called "skyscraper" heights. Economists such as Allan Meltzer (1976, p. 469) have argued that this act constituted an important shock "that worked to convert a sizeable recession into a severe depression." In the classic contemporary study of the Smoot-Hawley tariff, E. E. Schattschneider (1935) attributed the act not to party politics or an ideological attachment to protection but rather to an extensive, unprecedented, and essentially unchecked lobbying campaign by agricultural and industrial special interests. Schattschneider (1935, pp. 127-8) described the asymmetry of the forces in favor of higher tariffs and those opposed:

The political agitation concerning the tariff is profoundly influenced by the fact that, in many instances, the benefits of the legislation to an individual producer are obvious while many of the costs are obscure Benefits are concentrated while costs are distributed.

Indeed, Schattschneider's insights into and descriptions of the political process provided the foundation for later work on the political economy of policy formation in many areas beyond trade policy.

A recent flurry of work, however, has largely disputed this conclusion and has rejected or downplayed the role of constituent economic interests in the passage of the Act. Stressing the partisan nature of the Congressional tariff vote, many analyses have simply attributed the tariff to party politics. Robert Pastor (1980), for example, argues that the Smoot-Hawley tariff was simply an outgrowth of the landslide Republican victory in 1928. Herbert Hoover and the Republicans had made the tariff a campaign issue, he argues, and read their electoral success as

a mandate for increased protection.

Attempting to resurrect some role for economic interests, Barry Eichengreen (1989) suggests that a coalition of northern farmers and light industries drove the passage of Smoot-Hawley, although he did not formally investigate these influences.¹ In an empirical model of the final vote on Smoot-Hawley in the House of Representatives (June 14, 1930), however, Colleen Callahan, Judith McDonald, and Anthony Patrick O'Brien (1994) fail to uncover any evidence of such a coalition. Constructing indices of the amount of heavy and light manufacturing in each representative's district and indicators for Canadian border states, they estimate a probit equation that predicts each representative's vote by these economic interests, state unemployment, political party, and a measure of each representative's ideology. Only unemployment and party appear to have a statistically or economically meaningful effect on a representative's vote, and economic interests do not appear to matter. Callahan et al. (1994, p. 690) conclude that "our evidence would appear to provide significant new support for Robert Pastor's emphasis on the strongly partisan nature of the voting on Smoot-Hawley."²

Richard Cupitt and Euel Elliott (1994) examine several Senate roll-call votes on specific amendments to the Smoot-Hawley tariff bill and again find little, if any, influence of economic

¹ Eichengreen argues that there were sharp divisions both among agricultural and manufacturing interests in the passage of the Smoot-Hawley tariff. According to Eichengreen, only "light" labor-intensive manufacturing industries and U.S. farmers along the Canadian border and the Eastern seaboard were facing significant import competition at the time, whereas Southern farmers and "heavy" industries using mass production techniques were either unaffected by import competition or were competitive internationally and would benefit little from protection.

² Marc Hayford and Carl Pasurka (1992, p. 42) examine the political and economic determinants of the cross-industry variation in tariff levels in the Smoot-Hawley tariff, but obtain results that are "less clear cut as to which factors determined the ability to influence policy."

interests on these votes. According to their results, party explains so much of the observed voting patterns that they conclude (p. 197) that "partisanship . . . appears to be the most dominant influence on Senate decision making over the Smoot-Hawley Tariff Act While the standard historical studies argue for a distributive, log-rolling analytic framework for understanding the decision process, we suggest that strong elements of partisan polarization were at play."

The goal of this paper is to reexamine the roles of partisan politics and economic factors in the passage of this momentous tariff legislation.³ The strict party-line votes on the final passage of Smoot-Hawley tariff mask a rich cauldron of factors that produced the Tariff Act of 1930. Section II provides a brief legislative history of the Smoot-Hawley bill, emphasizing the vastly different legislative procedures in the House and the Senate. In the House, the powerful Ways and Means Committee essentially forced the tariff bill through without substantive debate or minority participation. There were no roll-call votes on tariff rates for individual goods. In the Senate, by contrast, the "committee of the whole" procedure opened up the possibility of numerous roll-call votes on tariff duties for specific items.

Section III then reconsiders the debate about whether and how partisan divisions, economic interests, and log-rolling can account for Congressional action (see, e.g., Joseph Kalt and Mark Zupan 1984, Sam Peltzman 1984, and Thomas Stratmann 1992). Contrary to recent work that stresses the partisan nature of voting on the tariff to the exclusion of other factors, our empirical model of voting behavior shows how the economic interest of Senators' constituencies affected

³ This paper is devoted to the political economy of Congressional voting on the Smoot-Hawley tariff. For a recent discussion of the height of the tariff and its economic effects, see Douglas Irwin (1996).

the votes which shaped the final tariff legislation. In addition, we use a method to identify a more subtle form of influence by economic factors, namely log-rolling or vote-trading (terms which we use interchangeably), which has not been studied in the recent empirical literature on Smoot-Hawley. Our evidence, supported by anecdotal descriptions from the Congressional Record, demonstrates the role of log-rolling coalitions in raising tariffs on specific goods. A final section concludes with a brief summary and implications for understanding the political and economic forces shaping trade policy.

II. Legislative History and Political Background of the Smoot-Hawley Bill

From the 1880s through the 1930s, the politics of the tariff issue appeared quite simple: when the Republicans were in power they would raise the tariff (1883, 1890, 1897, 1909, 1922, 1930), and when the Democrats were in power they would lower the tariff (1894, 1913). The Republicans enjoyed a sweeping victory in the 1928 elections, significantly increasing their control of both houses of Congress (moving from 237 to 267 seats in the House and from 49 to 56 seats in the Senate). The last major change of the tariff had been the Fordney-McCumber Act of 1922, and during the campaign Herbert Hoover and the Republicans argued that some tariff revisions were now necessary. In his inaugural address, President Hoover called for a special session of Congress to convene immediately to implement his campaign promises:

Action upon some of the proposals upon which the Republican Party was returned to power, particularly further agricultural relief and limited changes in the tariff, cannot in justice to our farmers, our labor, and our manufacturers be postponed (Congressional Record, March 4, 1929, p. 6).

How Hoover's call for "limited changes in the tariff" was transformed into the quintessential

protectionist legislation of the twentieth century is the story that has made the Smoot-Hawley measure among the most notorious in twentieth-century U.S. history.

Because the Constitution mandates that all revenue-raising measures must originate in the House of Representatives, the House Ways and Means Committee initiated the tariff bill with hearings in January 1929, after the Republican victory in 1928 but prior to the inauguration of Herbert Hoover. (Table 1 presents a chronology of the development of the Smoot-Hawley Tariff legislation.) The majority members of the Ways and Means Committee, under the chairmanship of Willis C. Hawley (R-OR), were the most powerful force in determining the tariff in the House. The Republicans on the committee simply drafted a bill themselves and presented it to the minority party committee members for inspection as a *fait accompli* and then to the whole House. Many commentators, such as Frank Taussig (1931, p. 491), consider the House Ways and Means Committee procedure at this time to be an "ideal" vehicle for log-rolling. Researchers, however, face the problem that vote-trading cannot be identified directly in the House because there are no observations of roll-call votes on specific goods.

When the bill went to the floor of the House of Representatives on May 9, 1929, there was virtually no opportunity for debate or amendment. On May 24, the day after a Republican conference approved a special order to give priority to amendments proposed by the Ways and Means Committee, the House passed a rule (after just 1-1/2 hours of debate) declaring "that general debate on the bill be now closed . . . but Committee amendments to any part of the bill shall be in order at any time" (quoted in Macmahon 1930, p. 46). The rule further provided that consideration of the bill was to continue until May 28, at which time a vote on all amendments and the bill itself would take place. This ensured that the Ways and Means Committee had a

virtual lock on any changes to the bill and effectively froze out the Democrats from having any influence whatsoever. They decried it as the most restrictive rule ever employed by the House to pass legislation -- passed, in the words of one Senator, by "whip and gag." With any deals having been cut in secret among party members, and hence unobservable, it may not be surprising that the vote on passage runs largely along party lines. On May 28, 1929, the House passed the Hawley bill by a vote of 264 (244 Republicans, 20 Democrats) to 147 (12 Republicans, 134 Democrats, 1 Farmer Labor).

The bill was then referred to the Senate Finance Committee, which took the House bill as given but was free to make amendments to it. Before the Finance Committee had begun deliberations on the bill, however, Senators representing agricultural interests were angered that the House measure had raised tariffs on industrial goods by as much or more than the tariff increases for agricultural goods. They viewed this measure as contrary to the President's desire for "limited tariff revision" designed primarily for the benefit of agriculture. On June 17, 1929, the Senate voted on a proposal from Sen. William E. Borah (R-ID) that would restrict the Finance Committee to considering only revisions to the agricultural schedules of the 1922 tariff, thereby holding industrial tariff rates at their current level. This resolution lost by only a single vote, with 38 (13 Republicans, 25 Democrats) in favor and 39 (32 Republicans, 7 Democrats) opposed, indicating the strength of the agricultural coalition in the Senate. Agricultural interests found a more receptive outlet for their views in the Senate rather than the House, since industrial states with large populations achieved greater representation in the House, while less populous agricultural states of the Mid-West and Rockies had proportionally more power in the Senate.

The Senate Finance committee considered the bill from May until September 1929. The

Finance Committee amended the House bill in a way that reduced many more tariff rates than it increased. The Committee reported the bill to the Senate in September, where it was considered in the "committee as a whole." Unlike in the House, the Senate's committee of the whole procedure permitted open-ended debate in which any Senator could offer amendments and request votes of the entire Senate on tariff rates for specific goods (see U.S. Senate 1929). For several weeks the Senate debated the administrative clauses of the tariff before moving on to consider the tariff rate schedules in the bill. At this point, the forces that had manifested themselves in the Borah vote acted to reduce further the non-agricultural tariffs reported by the Finance committee, tariffs that were already lower than those in the House bill.

In late October and early November 1929, the agricultural coalition succeeded in reducing industrial tariffs (often restoring them to the 1922 level) in a series of roll-call votes in the Senate acting as a committee of the whole. Sen. David Reed (R-PA) said that

the coalition has made up its mind to knock out every increase in the industrial rates, and we might as well go ahead and have done with it. Then the bill will go to conference, and the House and the Senate will never agree, but we will at least be rid of it and can go on with our routine business (Congressional Record, November 6, 1929).

This was not a prospect Reed viewed with equanimity. After a vote to reduce the tariff on pig iron he blasted the coalition by saying: "I do not think the Communists are doing any damage at all, but I believe that the action of the Senate on such items as this . . . is doing more damage to the stability and the structure of American industry than anything which could be done by these unworthy groups I have mentioned."

Senate votes to moderate the proposed high tariffs continued when Congress reconvened in January 1930. Finally, on March 4, 1930, the Senate completed consideration of the bill in a

committee of the whole and shifted the bill to the Senate floor for further debate before final passage. Once on the Senate floor, Senators could again offer amendments and request new votes on good-specific tariff rates, even if precisely the same issue had been voted on during the committee of the whole procedure.

There was no difference of substance between the Senate considering the bill as a committee of the whole and as a deliberative body overall on the Senate floor. Opponents of the reductions in the industrial tariffs, however, had time to regroup and propose new amendments on the Senate floor. A different coalition of voting emerged, one not based on broad agriculture versus industrial interests but on vote-trading among unrelated goods. Such log-rolling was noted at the time, and this effort succeeded in reversing several of the tariff reductions that had been voted upon in the committee of the whole. On January 16, 1930, for example, the Senate had restored the 1922 rate on sugar by a vote of 48 (18 Republicans, 29 Democrats, 1 Farmer Labor) to 38 (34 Republicans, 4 Democrats). Sen. Reed Smoot (R-UT), the chairman of the Finance Committee, came from a state with extensive cultivation of beet sugar and could not stand for such a humiliating defeat. On March 5, the day after the Senate took the bill from the committee of the whole and was again able to consider the sugar issue, the Senate voted 47 (38 Republicans, 9 Democrats) to 39 (13 Republicans, 26 Democrats) to increase the tariff on sugar, though not quite to the higher rate proposed by the House.

Table 2 shows the degree to which tariff rates changed in the House, the Senate as a committee of the whole, and the entire Senate in March when logrolling was (to judge from

statements in the Congressional Record) suspected.⁴ As Table 2 indicates, the House bill would have increased tariffs across many products. Specifically, the House bill involved 845 increases in tariff rates to 82 decreases relative to the 1922 Tariff Act. The Senate Finance Committee moderated many of the industrial tariff increases in the House bill without significantly increasing protection to agriculture. The committee of the whole increased tariffs on agricultural goods and raw materials (such as metals and wool) while further moderating tariffs on manufactures. The Senate in the committee of the whole reported a bill that involved 620 tariff rates increases and 202 tariff rate decreases. In the final stage on the Senate floor in March, however, the Senate added 75 increases and 31 decreases to this bill, although the value of imports on the increases was more than ten times those on the decreases (see Macmahon 1930, p. 923). The Senate completed its deliberations and passed the measure on March 24, 1930, by a vote of 53 (46 Republicans, 7 Democrats) to 31 (5 Republicans, 26 Democrats).⁵

The reversals in March of the previous tariff moderation gave rise to claims of vote trading, back room deals, special interest lobbying and buy-offs. Sen. Robert LaFollette (R-WI), for example, characterized the Senate bill as:

the product of a series of deals, conceived in secret, but executed in public with a brazen effrontery that is without parallel in the annals of the Senate. . . . it seems to me that a vote for this bill condones the vote-trading deals by which some of the most unjustifiable

⁴ Since many tariffs took the form of fixed customs duties, changes in the nominal price of the import good could have a large impact on the ad valorem equivalent tariff rate (see Mario Crucini 1994). The rates in Table 2, which are the ones discussed in the Senate debates, are calculated using the 1928 value and volume of imports.

⁵ Hayford and Pasurka (1991) calculate how Smoot-Hawley changed the effective rates of protection for a number of products and find that the Act generally lowered the effective rate of protection for agriculture.

rates in the bill were obtained. . . . this Congress has demonstrated how tariff legislation should not be made (Congressional Record, March 24, 1930, 5976-77).

The agricultural interests that had been evident in the Borah vote decried the reversals. Sen.

LaFollette continued:

The farmer has been betrayed by this bill. . . . The farmer's back . . . has been made the springboard from which the industrial lobbyist have leaped to new and higher tariff rate levels for the benefit of the special industrial interests they represent. The agricultural tariff granted the farmer, in many instances ineffective, carries with it the obligation to pay higher prices upon almost every article that is used upon the farm (Congressional Record, March 24, 1930, p. 5977).

Taussig (1931, p. 498) describes the events of this period as follows:

As the individual items were taken up in the Senate and became subject to amendment from the floor, the changes were sometimes in one direction, sometimes in another. There was no rhyme or reason in it all; a deviation from the agreement here, a return to it there; duties shoved up on one motion, then shoved down on the next.

Our empirical work in the next section will attempt to make sense of these apparently random changes by identifying log-rolling coalitions among otherwise unrelated interests.

In April 1930, a House-Senate conference committee went to work at resolving the differences between the two bills. Eventually, the House and the Senate accepted the conference report. On June 13, 1930, the Senate passed it by just two votes, 44 (39 Republicans, 5 Democrats) to 42 (11 Republicans, 30 Democrats, 1 Farmer Labor), the lower margin arising primarily because the conference bill contained higher tariff rates than originally passed by the Senate. The next day the House passed the bill by 222 (208 Republicans, 14 Democrats) to 153 (20 Republicans, 132 Democrats, 1 Farmer Labor). Although many groups, including hundreds of economists, protested that the President should not sign the bill which went dramatically beyond his original call for "limited" revisions, Hoover signed the Smoot-Hawley Tariff Act on June 17,

1930, and it became effective the next day.⁶

III. Partisan Divisions or Economic Interests and Logrolling?

As noted in the introduction, recent studies on the Smoot-Hawley tariff have emphasized the partisan nature of its passage. The nearly strict party line vote in both houses for final passage of Smoot-Hawley in 1930 appears to support the partisan view. Also, given the restrictions on House floor activity described above and the consequent party-line nature of the Smoot-Hawley vote, it is not surprising that party would be a very successful explanatory variable in a probit voting model. As the figures above indicate, only about ten percent of Republicans and Democrats in the House defected from their party's position. Party alone thus predicts the Smoot-Hawley vote correctly for about 90 percent of the representatives.

Instead of examining final votes, we focus on several Senate roll-call votes because, for reasons described above, the contemporary procedures of the Senate provide a more appropriate testing ground for the role of economic interests. The Senate procedures permit us to study a series of separate votes on specific changes in the tariff rates for individual goods. The final package of tariff revisions was the outcome of lengthy and complex process in which Senators could and did request multiple votes to revise the duties on individual items. It may be particularly difficult to identify the relevant aggregative economic interests, such as "light" versus "heavy" industry, in final passage, whereas the relevant economic interest is much more

⁶ Numerous countries raised their tariffs following the passage of the Smoot-Hawley tariff, but Eichengreen (1989) argues that most of the subsequent increases were in response to the deepening of the depression rather than retaliatory (and discriminatory) tariff increases against U.S. products.

straightforward to identify in good-specific votes. In addition, we will investigate a more subtle form of the influence of economic interests by specifying a test for the existence of log-rolling coalitions. Party, for example, could simply be a mechanism for enforcing vote-trading agreements among otherwise disparate economic interests.

A. Modelling Partisan and Economic Influences on Senate Tariff Votes on Specific Goods

To reassess the importance of economic interests in the passage of Smoot-Hawley, we develop a logit model of tariff voting for the Senate. The basic voting equation (1) we estimate has the following form:

$$V_i = \alpha_i + \beta_i X_E + \gamma_i X_C + \epsilon_i,$$

where V_i is a binary (0,1) variable representing Senators' votes on issue i , X_E is a vector of the economic characteristics of the Senators' electorates, X_C is a vector of the characteristics of the Senator, and ϵ is an error term.⁷ The dependent variable is the roll-call vote (including announced pairs that indicate a Senator's position) by each Senator on the tariff for a specific commodity. To simplify the interpretation of our results, we follow the convention that a vote in favor of a higher tariff (or against a measure that would lower a tariff) always is coded as one and a vote to lower a tariff (or against a measure to raise a tariff) is coded as zero, regardless of whether the Senator was voting yea or nay on the particular bill at hand.

The vector X_E contains variables representing both "specific" and "general" economic interests of a Senator's constituency. In a tariff vote concerning an individual good, we include

⁷ There is a large literature and debate concerning the interpretation of such regressions, and the relative role played by economic interests and the representative's ideology. See, for example, Peltzman (1984) and Kalt and Zupan (1984).

an interest-specific variable that proxies for the importance of the production of that good in the Senator's state. Using the 1929 Census of Manufactures, we obtain the value of production of that good in each state and divide that number by the total value of state output. In the votes to change lumber duties, for example, the proxy for state lumber interests is the value of lumber production in the state as a share of total state output. We describe below which votes we examine. (Appendix 1 provides a complete description of the data sources and construction of all the variables used, and Appendix 2 provides the sample statistics.)

To represent the general economic interests of each Senator's constituency, we include three variables: (i) a proxy for broad farm interests, defined as the share of total state employment in agriculture in 1929; (ii) a proxy for economic distress, measured as the state unemployment in April 1930 (the first available unemployment data from the Census); and (iii) the percent of total state population in urban areas, to capture the economic interests of cities, which would be predicted to be generally against increases in tariffs on inputs to manufacturing and on agriculture.

Two variables enter the vector X_C that describes the attributes of the Senator. First, we include an indicator variable for party affiliation, which is one if the Senator is a Republican and zero if a Democrat (with the single Senator from the Farm Labor party also coded as zero). In addition, to capture any political factors that might be related to membership on the Finance Committee, we include an indicator that is one if the Senator is a member of the Finance Committee and zero if not.

B. Identifying Vote-Trading in Senate Tariff Votes on Specific Goods

After determining whether and how constituents' direct economic interests appear to

influence Senators' voting behavior, we can then extend the framework to search for evidence of vote-trading among the Senators. As Schattschneider (1935) emphasized, the product-specific tariff amendments tend to be issues that have highly concentrated benefits -- hence are highly valuable to certain representatives' constituencies -- but widely dispersed costs. Product-specific votes on the tariff thus may be an ideal setting for the formation of log-rolling coalitions. A tariff on sugar, for example, could bring enormous benefits to farmers in the relatively few regions that grow sugar (such as sugar beet growers in Sen. Smoot's home state of Utah), and a tariff on glass, similarly, would have benefits concentrated in states with large glass-production facilities. The costs of each of these tariffs would be spread across consumers of these goods in all regions. In order to win passage, a Senator whose constituents care mainly about sugar might agree to support protection for glass in exchange for a promise from another Senator whose constituents care mainly about glass to support for protection for sugar.

We look for evidence of log-rolling on good-specific tariff votes concerning lumber, oil, sugar, and glass in March 1930. We focus on these goods for four reasons. First, the tariff rates on these items were reconsidered on the Senate floor after each had already been put to a vote in the "committee of the whole" in late 1929 or early 1930. Senators who desired higher tariffs on these goods were attempting to reverse the earlier votes that had limited the tariff increases on these items.⁸ Second, the votes on altering these tariffs were relatively close. For votes that are

⁸ Twenty-four product-specific tariff votes on the Senate floor were second votes on issues that had been voted on during the committee of the whole procedure. Of these, 13 of the original votes were reversed and 11 were not reversed. Having a second vote on the same goods raised the ire of numerous Senators. Those Senators, for example, who succeeded in reducing tariffs in late 1929-early 1930, only to find the Senate reconsidering these actions in March, protested vehemently and, having been overturned, inserted in the Congressional Record the record of the

nearly unanimous, there is insufficient variation in the dependent variable to estimate a meaningful voting equation. Third, data on the economic interests of the producers in each state was available from the 1929 Census of Manufactures in order to create the "specific" constituency economic interest variable.⁹

Finally, statements in the Congressional Record pointed us to these commodities as ones that were likely to have been involved in log-rolls. Just prior to the vote on reconsidering the duty on lumber, for example, Sen. David Walsh (D-MA) stated:

I can not help but say that things have been happening here in recent weeks that have somewhat shaken my confidence in the judgment of the Senate always being reflected upon conscientious conviction. If logrolling, which is the trading of votes, is not here, then some other invisible influence has brought about a shifting of votes and reversals of judgment that is unparalleled in the history of legislation (Congressional Record, March 20, 1930, p. 5669).

On sugar, Sen. T. H. Caraway (D-AK) asserted:

I am aware that no argument, no information available or might be produced, is to be effective in the vote that is pending. The fate of this bill was settled by trade, an agreement, in which my information is--and I think it is accurate--that eight Senators have agreed to change their votes upon this rate, and vote for sugar in return for votes that are to be hereafter cast for other duties that are pending (Congressional Record, March 5, 1930, p. 4769).

Similarly, concerning glass, Sen. Alben Barkley (D-KY) railed:

. . . this whole question [of the tariff rate on glass] was gone into thoroughly when the bill was being considered in the Committee of the Whole. There is no new information that any Senator has secured since then; not even the diligent and hard-working and eloquent

previous vote to show the apparent inconsistency in the Senate's action.

⁹ A number of items were so narrowly defined that a meaningful proxy for the specific producer interests could not be created. The vote on the clothespins duty is such an example. The Census of Manufactures had data on "turned wood products" which includes clothespins as one of the many items in this broad category.

Senator from West Virginia [Goff] has been able either to discover or to fabricate any additional facts (Congressional Record, March 8, 1930, p. 5015).

Finally, an opponent of the tariff increases had the following Washington Post article titled "New Tariff Abominations" read into the record:

The coalition of logrollers that seems to have the upper hand in the Senate is giving a twist to the tariff bill . . . The new coalition is reaching out for indefensible duties on necessities of life, such as sugar, lumber, and petroleum (Congressional Record, March 8, 1930, p. 5011).¹⁰

To test for the existence of log-rolling coalitions among the four interests, we use a method to analyze evidence of a linkage between Senators' votes on these tariff issues (see Stratmann 1992 and 1995). Consider the example of Senators who have promised to vote for higher tariffs on glass in return for promises by others to vote for higher tariffs on sugar. Such a deal would imply that how these Senators vote on the glass tariff should, ceteris paribus, contain information that helps to predict their votes on the sugar tariff. Conversely, how they vote on sugar should help to predict their votes on glass. In other words, after controlling for specific and general economic interests and characteristics of each Senator, Senators' votes on sugar should be positively related to their votes on glass and vice versa.

If we simply included each Senator's glass vote in the basic vote equation (1) for sugar, however, our test for a linkage between the two votes would involve simultaneous equations bias since the factors which predict his support for sugar now also predict his support for glass. To avoid such problems, Stratmann (1992) demonstrates that the most efficient way to test for a vote linkage would be to include instead each Senator's predicted vote on glass from our basic vote

¹⁰ Accusations also were made about cement being involved in a coalition (see Sen. Nye's statement in the Congressional Record, March 11, 1930), but we did not find evidence of this.

equation (1) in the equation estimating the Senator's vote on sugar, and vice versa. The existence of a log-roll on sugar and glass would imply that the coefficients on the predicted values of the votes on the other issue would be positive.

More formally, we employ a two-stage procedure in which we first estimate the basic vote equation (1) for each of the products that are suspected to be involved in a log-roll. From these equations, we can calculate the predicted values of each Senator's votes concerning the products and call these predicted values \hat{v}_2 and \hat{v}_3 . We then estimate an augmented version of the basic vote equation for product 2 which includes the predicted value of the product 3 vote:

$$V_2 = \alpha_2 + \beta_2 X_E + \gamma_2 X_C + \delta_2 \hat{v}_3 + \epsilon_2.$$

Analogously, for the vote on product 3, we estimate:

$$V_3 = \alpha_3 + \beta_3 X_E + \gamma_3 X_C + \delta_3 \hat{v}_2 + \epsilon_3.$$

The test for log-rolling on the votes about the two products is that $\delta_2 > 0$ and $\delta_3 > 0$.

Note that identification comes from the specific producer interests. To obtain the predicted value for a sugar vote, for example, the specific sugar producer interests are included in the basic vote equation (1) but the specific glass producer interests are excluded. In the second stage estimate of the glass vote, which includes the predicted sugar vote as an independent variable, specific glass producer interests are included but specific sugar producer votes are excluded.¹¹

C. Results

Table 3 reports the results of estimating our basic vote equation (1) for the initial tariff

¹¹ In addition to the two-stage procedure, Stratmann (1992) estimates a simultaneous model which allows for correlation among the errors of each equation but finds little effect on the coefficient estimates and standard errors of taking this correlation into account.

votes on the glass, sugar, lumber, and oil when considered in the "committee of the whole" of the Senate between November 1929 and February 1930.¹² Contrary to previous findings for the House (Callahan et al. 1994) and for the Senate (Cupitt and Elliott 1994), we find that the tariff votes are not strictly partisan. Our results indicate both constituency economic interests and partisanship influence the voting behavior of legislators these roll-call votes on specific tariff issues.¹³

For each good, the coefficient estimate on the specific producer economic interest variable is positive and statistically significant.¹⁴ This result implies that the greater is each good's production in the share of total state production, the more likely is a Senator to support protection for that good. The coefficient on Republican party affiliation also is positive for all four goods and is statistically significant at conventional levels for all but lumber (where the t-statistic is 1.60). Consistent with previous findings, Republicans are more likely to favor tariff increases than are the Democrats. After controlling for the specific producer interest, our proxies for both general agricultural interests and general urban interests were negatively associated with votes to

¹² Table 3 reports the logit coefficients. In Appendix 3, we present the marginal effects of each independent variable (evaluated at the mean) on the vote probability and the associated standard errors (see Green 1993, pp. 645-46). Following Greene (1993, p. 651), the pseudo-R² is $1 - \ln L / \ln L(0)$, where $\ln L(0)$ is the log-likelihood function computed with a constant term.

¹³ In contrast to our study, Cupitt and Elliott (1994) use data from the 1927 Census of Manufactures rather than 1929 and rougher proxies for the economic interests of the goods' producers (e.g., number of establishments manufacturing the good relative to total number of establishments in the state). Such differences may account for our contrasting results.

¹⁴ When interpreting the logit results, recall that we have defined a vote favoring a tariff increase as one and decrease as zero, and that the effective outcome of each of these votes was to reduce or not increase the duty on each of the four goods.

increase tariffs, and these coefficients are statistically significant in all but the oil equation. On average, it appears that neither group wished to see increases on goods which might be part of household consumption or inputs into their production processes. The coefficient on the state unemployment rate, our measure of relative economic distress, varies in sign and is statistically significant in only the sugar equation. Finally, membership on the Senate Finance Committee does not appear to have an appreciable influence on the Senators' votes.¹⁵

As noted above, the tariff votes on glass, sugar, lumber, and oil in the committee of the whole were reconsidered in new roll-call votes on the Senate floor during March 1930. Frustrated Senators and newspaper reports suggest that a log-rolling coalition formed in March to attempt to increase the tariffs on these goods, even though such efforts had been defeated during the previous few months. Table 4 examines the re-votes for each of these goods. We consider two specifications for each of these votes. First is the basic voting equation (1), and the second is the two-stage estimation which includes the predicted value of the vote on another good that might be involved in a log-roll.

The specific producer interest coefficients are positive in all eight specifications in Table 4 and statistically significant in six of the eight.¹⁶ In the first sugar and second glass specifications, the specific producer interest coefficients have p-values of 0.11 and 0.13. The

¹⁵ We also examined the motion of June 17, 1929 sponsored by Senator Borah (R-ID) to direct the Senate Finance Committee to consider increases only in agricultural and not industrial tariffs. The coefficients on both party and general agricultural interests are of the expected signs and statistically significant.

¹⁶ Table 4 reports the logit coefficients. In Appendix 4, we present the marginal effects of each independent variable (evaluated at the mean) on the vote probability and the associated standard errors of the marginal effects (see Green 1993, pp.645-46).

results on the second votes again underscore the influence of specific economic interests on the voting behavior of Senators.

Partisan factors, however, appear to be somewhat less influential in these second votes. The magnitude of the Republican party coefficient is smaller for each good in Table 4 than in Table 3 (with the exception of the basic vote equation on sugar, where the coefficients are roughly equal). The party coefficient is no longer statistically significant in the lumber equations or the basic glass equation. In the two-stage estimation of the glass vote, however, the party coefficient becomes negative and statistically significant. The general economic interest variables, the state unemployment rate, and membership on the Finance Committee have similar effects to what they were found to have in the first round vote equations in Table 3.

The most interesting results in Table 4, however, concern the tests for log-rolling. The two-stage estimates strongly support the existence of log-rolling coalitions between sugar and glass and between lumber and oil. The predicted value of a Senator's vote on sugar has a positive and statistically significant influence on his vote on glass and vice versa (columns ii and iv). Similarly, the predicted value of a Senator's vote on lumber has a positive and statistically significant effect on his vote on oil and vice versa (columns vi and viii).¹⁷ This evidence, consistent with accusations in the Congressional Record and in the contemporary press, suggests that log-rolling coalitions which formed in March 1930 had an important effect on the outcome of the Smoot-Hawley Tariff Act of 1930.

¹⁷ We also searched for but did not find evidence of larger and more complex coalitions among the four groups by including predicted values Senators' vote on combinations of two and three issues (e.g., including predicted values of lumber, oil, and glass in the sugar vote).

IV. Conclusion

Contrary to recent studies of the political-economy of congressional voting on the Smoot-Hawley tariff, which have found a dominant role of party politics in predicting voting behavior, we find that the economic interests of a Senator's constituency strongly influences his voting behavior. The influence takes two forms. First, using a series of Senate roll-call votes on tariffs for individual goods, we uncover specific producer beneficiaries in each Senator's constituency that appear to have influenced voting behavior, even when controlling for party affiliation. Second, we find evidence of a more subtle form of economic influence on Senators' voting patterns, namely log-rolling. Senators with otherwise unrelated constituency interests formed log-rolling coalitions in order to increase tariff rates on specific goods. Our study provides the first systematic empirical analysis of how vote-trading among politicians can influence tariff legislation and thus contributes to broader debates about the role economic interests play in influencing congressional voting (see Peltzman 1984, 1985) and the role of congressional institutions in fostering log-rolling coalitions and shaping legislative outcomes (see Kenneth Shepsle and Barry Weingast 1994 and Randall Kroszner and Thomas Stratmann 1995).

The Senate roll-call votes we analyze were generated by special procedures in which Senators could propose amendments and request votes on good-specific tariff rates in the "committee of the whole" and again on the floor. This procedure was subject to much contemporary criticism: complaints ranged from its simple inefficiency (because it permitted multiple votes over time on exactly the same issue) to concerns that it fostered log-rolling or, at least, the perception among outside observers that log-rolling was taking place. Sen. LaFollette's comments, quoted above, that the Smoot-Hawley bill was "the product of a series of deals,

conceived in secret, but executed in public," expressed many Senators' concerns that the negative press and ill-will generated by the procedures made vote-trading too obvious. In response to such criticisms, the Senate abolished the committee of the whole procedure near the end of the Smoot-Hawley debate (May 16, 1930). The voting on Smoot-Hawley also proved to be the last general tariff code revision by the U.S. Congress.

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TABLE 1: Chronology of the Smoot-Hawley Tariff Legislation, 1928-1930.

1928

December 3. Republican members of the House Ways and Means Committee commits itself to undertake hearings to revise the tariff act of 1922

1929

January 7 - February 27. Hearings before the Ways and Means Committee

March 4. Herbert Hoover inaugurated President

March 27. Subcommittee on tariff rates submits recommendations to majority members of Ways and Means Committee

May 9. Ways and Means Committee passes and reports bill to the House

May 28. House of Representatives passes tariff bill

May 29. In the Senate, bill referred to Finance Committee

June 12 - July 18. Finance committee hearings

September 4. Finance Committee reports bill

September 4 - March 4, 1930. Senate debate in committee of the whole

1930

January - March 4. Senate debate continues in committee of the whole

March 4 - March 24. Senate debates

March 24. Senate passes tariff bill

April 3 - 28. Bill in conference committee

May 9 - 24. Second conference committee

June 13. Senate adopts conference report

June 14. House adopts conference report

June 17. President Hoover signs Tariff Act of 1930

TABLE 2: Proposed Tariff Duties at Various Stages of Congressional Consideration of the Smoot-Hawley Tariff.

Product Category	Act of 1922	House Bill	Senate Finance Committee	Committee of the Whole	Senate Bill	Final Bill
1. Chemicals, Oils, Paint	28.92	31.82	29.37	30.32	30.95	36.09
2. Earthenware & Glassware	45.52	54.87	53.61	48.12	53.09	53.73
3. Metals	33.71	36.34	29.45	32.37	32.35	35.08
4. Wood	15.84	25.34	15.65	15.57	15.65	11.73
5. Sugar, Molasses	67.85	92.36	84.75	68.17	77.15	77.21
6. Tobacco	63.09	66.96	63.09	63.09	63.09	64.78
7. Agricultural Products	22.37	33.35	32.40	35.84	35.95	35.07
8. Alcoholic Beverages	36.48	47.44	47.44	47.44	47.44	47.44
9. Cotton	40.27	43.19	43.19	37.64	40.59	46.42
10. Flax, Hemp, Jute	18.16	19.03	19.36	19.50	18.95	19.14
11. Wool	49.54	58.09	56.87	57.12	57.38	59.83
12. Silk	56.56	60.17	62.44	58.03	58.03	59.13
13. Rayon	52.68	53.42	53.78	53.64	49.14	53.62
14. Papers and Books	24.51	26.14	26.13	25.63	25.91	26.06
15. Sundries	20.99	28.57	26.52	20.92	19.98	28.45

Sources "Comparison of Rates of Duty in Pending Tariff Bill of 1929," Senate Document No. 119, 71st Cong 2d Session, USGPO, 1930, and Congressional Record, June 14, 1930, p. 10748. Duties computed using the 1928 value and volume of imports.

TABLE 3: Logit Model of the Effects of Partisanship and Economic Interests on Senate Votes to Change Tariffs on Specific Goods in the Smoot-Hawley Tariff Bill. (t-statistics are in parentheses below each coefficient estimate. Variable definitions and sample statistics are in Appendix 1 and Appendix 2.)

Specific Good:	Glass	Sugar	Lumber	Oil
Date of Vote:	11-6-29	1-16-30	2-27-30	2-28-30
	(i)	(ii)	(iii)	(iv)
Constant	10.70 (1.87)	1.41 (0.50)	7.22 (2.17)	-3.39 (0.71)
Specific Producer Interest	347.65 (1.68)	16.20 (1.78)	8.48 (2.08)	120.60 (3.33)
Party (Republican=1)	3.73 (3.05)	1.95 (3.21)	1.02 (1.60)	6.03 (2.36)
Agricultural Share of Total Employment	-27.24 (2.68)	-9.23 (1.97)	-17.26 (3.13)	-8.90 (1.23)
Unemployment Rate	-2.85 (0.06)	52.82 (1.81)	31.96 (1.10)	52.89 (1.23)
Percent of Population in Urban Areas	-13.81 (2.05)	-6.75 (1.97)	-10.83 (2.70)	-8.51 (1.63)
Finance Committee Membership (Yes=1)	0.58 (0.58)	0.87 (1.17)	-0.31 (0.39)	-0.20 (0.16)
Pseudo-R²	0.59	0.30	0.31	0.68
Percent of Votes Correctly Predicted	0.87	0.77	0.79	0.90
Log Likelihood	-19.82	-43.29	-38.36	-17.29
N (Vote Breakdown)	69 (33-36)	90 (40-50)	80 (38-42)	79 (34-45)

Note: The dependent variable is one if the vote is in favor of increasing the tariff on the good in question.

TABLE 4: Tests for Log-rolling in the Logit Model of the Effects of Partisanship and Economic Interests on the Second Round of Senate Votes to Change Tariffs on Specific Goods in the Smoot-Hawley Tariff Bill. (t-statistics are in parentheses below each coefficient estimate. Variable definitions and sample statistics are in Appendix 1 and Appendix 2.)

Specific Good:	Sugar	Sugar (w/log-roll)	Glass	Glass (w/log-roll)
Date of Vote:	3-5-30	3-5-30	3-12-30	3-12-30
	(i)	(ii)	(iii)	(iv)
Constant	2.35 (0.66)	-5.28 (1.05)	5.63 (1.41)	0.71 (0.15)
Specific Producer Interest	16.62 (1.60)	18.55 (1.84)	209.00 (1.73)	188.19 (1.54)
Party (Republican=1)	2.30 (3.44)	1.67 (2.39)	0.83 (1.20)	-3.09 (1.81)
Agricultural Share of Total Employment	-11.70 (2.03)	4.00 (0.47)	-18.34 (1.20)	-9.66 (1.20)
Unemployment Rate	88.55 (2.56)	48.94 (1.31)	39.96 (1.14)	-76.05 (1.39)
Percent of Population in Urban Areas	-9.62 (2.16)	-3.31 (0.65)	-8.48 (1.82)	1.06 (0.18)
Finance Committee Membership (Yes=1)	0.77 (0.89)	-1.62 (1.17)	2.37 (2.33)	2.22 (1.87)
Predicted Vote on Glass	-	6.45 (2.23)	-	-
Predicted Vote on Sugar	-	-	-	9.62 (2.52)
Pseudo-R²	0.40	0.45	0.43	0.50
Percent of Votes Correctly Predicted	0.81	0.86	0.82	0.85
Log Likelihood	-35.45	-32.59	-28.50	-24.82
N (Vote Breakdown)	86 (47 - 39)	86 (47 - 39)	72 (36 - 36)	72 (36 - 36)

Note: The dependent variable is one if the vote is in favor of increasing the tariff on the good in question.

TABLE 4 (continued): Tests for Log-rolling in the Logit Model of the Effects of Partisanship and Economic Interests on the Second Round of Senate Votes to Change Tariffs on Specific Goods in the Smoot-Hawley Tariff Bill. (t-statistics are in parentheses below each coefficient estimate. Variable definitions and sample statistics are in Appendix 1 and Appendix 2.)

Specific Good:	Lumber	Lumber (w/log-roll)	Oil	Oil (w/log-roll)
Date of Vote:	3-20-30	3-20-30	3-21-30	3-21-30
	(v)	(vi)	(vii)	(viii)
Constant	5.63 (1.97)	3.28 (1.03)	9.43 (2.14)	1.17 (0.18)
Specific Producer Interest	6.49 (1.94)	13.45 (2.90)	91.12 (3.07)	107.78 (3.03)
Party (Republican=1)	0.36 (0.66)	-1.22 (1.56)	4.28 (3.17)	4.02 (2.78)
Agricultural Share of Total Employment	-13.85 (2.95)	-14.44 (2.59)	-26.31 (3.11)	-15.95 (1.59)
Unemployment Rate	26.44 (1.01)	20.59 (0.71)	13.23 (0.43)	-20.10 (0.55)
Percent of Population in Urban Areas	-7.49 (2.22)	-5.25 (1.47)	-16.61 (2.65)	-9.54 (1.32)
Finance Committee Membership (Yes=1)	-0.42 (0.62)	-0.53 (0.72)	-0.83 (0.80)	-0.37 (0.35)
Predicted Vote on Oil	-	4.06 (3.54)	-	-
Predicted Vote on Lumber	-	-	-	6.07 (1.69)
Pseudo-R²	0.32	0.39	0.61	0.64
Percent of Votes Correctly Predicted	0.78	0.82	0.89	0.90
Log Likelihood	-45.56	-36.02	-21.75	-20.08
N (Vote Breakdown)	85 (43 - 42)	85 (43 - 42)	81 (40 - 41)	81 (40 - 41)

Note: The dependent variable is one if the vote is in favor of increasing the tariff on the good in question.

APPENDIX 1: Definitions and Data Sources for Variables Used in Logit Regressions in Tables 3 and 4.

Votes: "Smoot-Hawley Tariff Bill of 1930," Yea-and-Nay Votes in the United States Senate, Seventy-First Congress, on the Bill and all Amendments Thereto," Senate Document No. 177, 71st Cong. 2nd Session, USGPO, 1930.

All votes in favor of higher tariff or against reducing tariff coded as 1. All votes in favor of lower tariff or against raising tariff coded as 0. Pairs that announced voting intentions are counted, others are not. Tied votes were broken by the Vice President (acting as President of the Senate).

Producer Specific Interests in Glass, Petroleum, Lumber, and Sugar:

These variables were defined as the share of the specific goods production in total state production. The source was: U.S. Department of Commerce, Bureau of the Census, Fifteenth Census of the United States: 1930, Manufactures: 1929, Volume 2, Reports by Industries (Washington, D.C.: U.S. Government Printing Office, 1933). Glass, p. 869. Lumber, p. 443. Sugar (includes sugar cane refining), p. 212, sugar cane p. 211, and beet sugar, p. 207. Petroleum, p. 771. State output is from Vol. 1, pp. 17-20.

To maintain confidentiality, the Census does not separately report the value of production in a state if there are a small number of producers. They do, however, report the number of establishments in each state and aggregate value of production for groups of states with few producers. To obtain the value of state production in these cases, we assume that the establishments are of equal size and apportion the production accordingly.

Members of the Senate Finance Committee: 71st Congress, 1st Session, May 1929, as listed in the Congressional Directory, p. 184.

Agricultural employment, unemployment, urban population: U.S. Department of Commerce, Statistical Abstract of the United States, 1931 (Washington, D.C.: GPO, 1931). Agriculture, pp. 53-55. Unemployment, pp. 365-66. Urban, p. 48.

APPENDIX 2: Sample Statistics for Variables Used in Logit Regressions, Tables 3 and 4.

Variable	Mean (Std. Dev.)
Party (Republican=1)	0.60 (0.49)
Agricultural Share of Total Employment	0.27 (0.15)
Unemployment Rate	0.042 (0.017)
Percent of Population in Urban Areas	0.46 (0.20)
Membership on Finance Committee (Yes=1)	0.19 (0.39)
Glass Specific Producer Interest	0.0039 (0.013)
Sugar Specific Producer Interest	0.014 (0.031)
Lumber Specific Producer Interest	0.056 (0.097)
Oil Specific Producer Interest	0.057 (0.13)

APPENDIX 3: Marginal Effects for Logit Model from Table 3, which Estimates the Influence of Partisanship and Economic Interests on Senate Votes to Change Tariffs on Specific Goods in the Smoot-Hawley Tariff Bill. (standard errors in parentheses)

Specific Good:	Glass	Sugar	Lumber	Oil
Date of Vote:	11-6-29	1-16-30	2-27-30	2-28-30
	(i)	(ii)	(iii)	(iv)
Specific Producer Interest	80.06 (39.98)	3.89 (2.01)	2.12 (1.02)	5.61 (2.82)
Party (Republican=1)	0.86 (0.24)	0.47 (0.13)	0.25 (0.16)	0.28 (0.20)
Agricultural Share of Total Employment	-6.27 (1.96)	-2.21 (1.03)	-4.31 (1.37)	-0.41 (0.56)
Unemployment Rate	-0.66 (8.58)	12.67 (6.44)	7.98 (7.22)	2.46 (3.33)
Percent of Population in Urban Areas	-3.18 (1.30)	-1.62 (0.76)	-2.71 (1.00)	-0.40 (0.41)
Finance Committee Membership (Yes=1)	0.13 (0.19)	0.21 (0.16)	-0.08 (0.20)	-0.01 (0.09)

Note: Marginal effects are evaluated at the mean of the independent variables.

APPENDIX 4: Marginal Effects for the Logit Model from Table 4, which Estimates the Influence of Log-rolling, Partisanship and Economic Interests on the Second Round of Senate Votes to Change Tariffs on Specific Goods in the Smoot-Hawley Tariff Bill. (standard errors in parentheses)

Specific Good:	Sugar	Sugar (w/log-roll)	Glass	Glass (w/log-roll)
Date of Vote:	3-5-30	3-5-30	3-12-30	3-12-30
	(i)	(ii)	(iii)	(iv)
Specific Producer Interest	4.09 (2.48)	4.54 (2.36)	51.63 (29.05)	46.29 (29.13)
Party (Republican=1)	0.57 (0.16)	0.41 (0.16)	0.21 (0.17)	-0.76 (0.40)
Agricultural Share of Total Employment	-2.88 (1.38)	0.98 (1.99)	-4.53 (1.66)	-2.38 (1.91)
Unemployment Rate	21.81 (8.17)	11.98 (8.70)	9.87 (8.47)	18.71 (12.99)
Percent of Population in Urban Areas	-2.37 (1.06)	-0.81 (1.18)	-2.09 (1.12)	0.26 (1.38)
Finance Committee Membership (Yes=1)	0.19 (0.21)	-0.40 (0.32)	0.59 (0.24)	0.55 (0.28)
Predicted Vote on Glass	-	1.58 (0.68)	-	-
Predicted Vote on Sugar	-	-	-	2.37 (0.90)

Note: Marginal effects are evaluated at the mean of the independent variables.

APPENDIX 4 (continued): Marginal Effects for the Logit Model from Table 4. (standard errors in parentheses)

Specific Good	Lumber	Lumber (w/log-roll)	Oil	Oil (w/log-roll)
Date of Vote	3-20-30	3-20-30	3-21-30	3-21-30
	(v)	(vi)	(vii)	(viii)
Specific Producer Interest	1.58 (0.77)	2.67 (0.51)	6.97 (2.26)	4.68 (2.72)
Party (Republican=1)	0.09 (0.13)	-0.24 (0.09)	0.33 (0.10)	0.17 (0.11)
Agricultural Share of Total Employment	-3.37 (1.08)	-2.86 (0.61)	-2.01 (0.64)	-0.69 (0.77)
Unemployment	6.43 (6.00)	4.08 (3.17)	1.01 (2.34)	-0.87 (2.79)
Percent of Population in Urban Areas	-1.82 (0.78)	-1.04 (0.39)	-1.27 (0.48)	-0.41 (0.55)
Finance Committee Membership (Yes=1)	-0.10 (0.16)	-0.11 (0.08)	-0.06 (0.08)	-0.02 (0.08)
Predicted Vote on Oil	-	0.81 (0.13)	-	-
Predicted Vote on Lumber	-	-	-	0.26 (0.28)

Note: Marginal effects are evaluated at the mean of the independent variables.