

Economic History Association

An Economic Model of Voting Behavior over Specific Issues at the Constitutional Convention of 1787

Author(s): Robert A. McGuire and Robert L. Ohsfeldt

Source: *The Journal of Economic History*, Vol. 46, No. 1 (Mar., 1986), pp. 79-111

Published by: [Cambridge University Press](#) on behalf of the [Economic History Association](#)

Stable URL: <http://www.jstor.org/stable/2121268>

Accessed: 24/09/2010 18:26

Your use of the JSTOR archive indicates your acceptance of JSTOR's Terms and Conditions of Use, available at <http://www.jstor.org/page/info/about/policies/terms.jsp>. JSTOR's Terms and Conditions of Use provides, in part, that unless you have obtained prior permission, you may not download an entire issue of a journal or multiple copies of articles, and you may use content in the JSTOR archive only for your personal, non-commercial use.

Please contact the publisher regarding any further use of this work. Publisher contact information may be obtained at <http://www.jstor.org/action/showPublisher?publisherCode=cup>.

Each copy of any part of a JSTOR transmission must contain the same copyright notice that appears on the screen or printed page of such transmission.

JSTOR is a not-for-profit service that helps scholars, researchers, and students discover, use, and build upon a wide range of content in a trusted digital archive. We use information technology and tools to increase productivity and facilitate new forms of scholarship. For more information about JSTOR, please contact support@jstor.org.



Cambridge University Press and Economic History Association are collaborating with JSTOR to digitize, preserve and extend access to *The Journal of Economic History*.

An Economic Model of Voting Behavior over Specific Issues at the Constitutional Convention of 1787

ROBERT A. MCGUIRE AND ROBERT L. OHSFELDT

Despite hundreds of studies of the influence of economic interests on the formation of the U.S. Constitution, no consensus has been reached. Our study of the Constitutional Convention differs from previous ones by offering an explicit theoretical model of delegates' voting behavior and employing multivariate statistical techniques. We extend our earlier work by analyzing new information on constituents' economic interests and ideology. Further our econometric results on individual roll-call votes strongly suggest delegates who owned slaves or represented slaveowning constituents were more likely to oppose issues favoring a national form of government.

BEFORE the adoption of the federal Constitution in 1787, the American political system consisted of a loose confederation of largely independent states and a weak central government. The Constitution increased the power of the central government relative to state governments and changed the nature and scope of institutional constraints on the actions of individuals and governments.

In spite of continuing controversy over the formation of the Constitution and the importance of the change in institutions, no one has rigorously analyzed the factors explaining the Founding Fathers' choice of specific clauses in the Constitution. Our contribution is an econometric study of the Constitution through an analysis of voting patterns on specific issues at the Philadelphia Constitutional Convention of 1787 as they relate to the economic and other interests of the convention's delegates.

The study concentrates on the activities of the delegates in Philadelphia. The votes of the delegates on several clauses to be proposed for inclusion in the Constitution are related to the economic interests and ideologies of the delegates personally and of their constituents. Our

Journal of Economic History, Vol. XLVI, No. 1 (March 1986). © The Economic History Association. All rights reserved. ISSN 0022-0507.

The authors are Associate Professor and Assistant Professor of Economics at Ball State University, Muncie, Indiana 47306.

The article is part of a larger study which has benefited from comments by many individuals. We wish to thank all of them, but know we will have forgotten several and offer our apologies in advance. We thank Richard D. Brown, Philip Coelho, Lance Davis, Stanley Engerman, E. James Ferguson, Stephan Gohmann, Claudia Goldin, Robert Higgs, Kathleen Kurz, Gary Libecap, Jackson T. Main, Forrest McDonald, Douglass North, Roger Ransom, Hugh Rockoff, John Wallis, and several anonymous referees. We also thank the Ball State Office of Research for financial assistance.

theoretical model is an expected utility analysis that includes personal and constituent variables. Our statistical results provide evidence that the voting behavior of the Founding Fathers on certain issues was related to several of the variables.

I. THE PHILADELPHIA CONVENTION

The Constitutional Convention of 1787 began May 25, when delegates from seven states were in attendance.¹ The authorized purpose of the convention was to amend and revise the Articles of Confederation, providing the central government with power over taxation, authority to regulate interstate and international commerce, ability to provide national defense, and authority over a national judiciary. America's leaders disagreed not over the need for constitutional reform but over the magnitude of reform.

A scrutiny of the nearly four months of debates suggests most of the important votes at the convention were votes either in favor of a strong, national form of government or in favor of a federal form of government.² In fact, the major question at Philadelphia was whether there would be a strengthened, more powerful central government with state sovereignty (a federal system) or a strong, nationalistic central government with little or no state sovereignty (a national system). The answer came in mid-September with the scrapping of the Articles of Confederation and the presentation of a strong, nationalistic Constitution.

The Delegates

Of the 74 delegates appointed by their states, only 55 ever appeared in Philadelphia. Two of the 55 delegates, George Wythe of Virginia and William Houston of New Jersey, left the convention permanently within the first two weeks. No more than 11 states were ever represented at any one time and probably no more than 45 delegates were present at the same time. Several delegates, particularly those who lived near Philadelphia, attended sporadically, and others arrived and departed throughout the summer.³

An analysis of different characteristics of the 53 delegates in attendance beyond the second week shows 30 had served in the Continental Congress, 22 had been officers in the Revolutionary War, 12 held western lands, and 3 were deeply in debt. In terms of their primary occupations, there were 21 lawyers, 8 merchants, 8 politicians, 4

¹ For a discussion of the movement for constitutional reform, see the excellent survey of the maneuvering that led to the Philadelphia convention in Alfred H. Kelly and Winfred A. Harbison, *The American Constitution: Its Origin and Development* (4th ed., New York, 1970), pp. 110–13.

² For a record of the debates, see Max Farrand, ed., *The Records of the Federal Convention of 1787* (New Haven, 1911), 3 vols.

³ *Ibid.*, vol. 3, pp. 586–90.

farmers, 4 planters, 3 physicians, 1 minister, and 1 printer—Benjamin Franklin. In addition, Roger Sherman of Connecticut and Charles Coatsworth Pinckney and John Rutledge of South Carolina were classified with double primary occupations—Sherman as lawyer and merchant; Pinckney and Rutledge as lawyer and planter. There were, therefore, 24 lawyers and 6 planters in total. Also, nearly all delegates were from coastal areas, including the Chesapeake, and most were from major cities. For example, all 4 South Carolina delegates were from Charleston and all 8 Pennsylvania delegates were from the Philadelphia area.⁴

Additional information about the delegates suggests, in general, their wealth holdings were above average.⁵ In terms of financial assets, the average market value of public securities among the 29 delegates who owned public securities was more than \$2,200. The average market value of private securities among the 12 who owned them was almost \$9,000. The 18 delegates who owned slaves held an average of more than 95 slaves.

The largest holders of public securities were, in descending order, Elbridge Gerry, James McClurg, George Clymer, Rufus King, and Robert Morris, all of whom held more than \$4,500 in public securities. All but Gerry owned both public and private securities. Morris was also a land speculator and had merchant interests as did Clymer and Gerry. Gerry held public securities with a market value of \$10,000 in 1787 that appreciated 225 percent by 1791. The market value of McClurg's holdings, \$6,500 in 1787, also more than tripled by 1791. The largest holder of private securities was Robert Morris, followed by Mason, McClurg, John Langdon, and King. Langdon also had merchant interests as well as holdings of private and public securities. Five of the slaveowning delegates owned more than 100 slaves—George Mason and Edmund Randolph of Virginia and Piere Butler, Charles Pinckney, and John Rutledge, all of South Carolina.

Considering the delegates were primarily lawyers, politicians, merchants, financiers, and planters, it is obvious why constitutional historians have argued they were mainly persons of rank or distinction. But it is difficult to imagine any society that would choose individuals with no rank, distinction, or influence to participate in constitutional reform.

⁴ The data for the analysis are taken from several sources. For experience in the Continental Congress and for Revolutionary War rank, see *Dictionary of American Biography* (New York, 1928–1958), selected vols. For economic interests and primary occupations, see Forrest McDonald, *We the People: The Economic Origins of the Constitution* (Chicago, 1958); Jackson Turner Main, "Charles A. Beard and the Constitution: A Critical Review of Forrest McDonald's *We the People*," *William and Mary Quarterly*, 17 (Jan. 1960), pp. 86–110; Kelly and Harbison, *The American Constitution*, pp. 114–21; Richard D. Brown, "The Founding Fathers of 1776 and 1787: A Collective View," *William and Mary Quarterly*, 33 (July 1976), pp. 465–80.

⁵ The following information on securities and slaveholdings is contained in McDonald, *We the People*; and Main, "Charles A. Beard and the Constitution."

We would expect individuals such as James Madison, who has been described as “a brilliant scholar and public servant,” James Wilson, who was “an outstanding legal theorist of America in the latter eighteenth century,” and Gouverneur Morris, who had “marked ability as a statesman and public speaker,” to have been appointed delegates to the convention.⁶ While most delegates had notability in common, the evidence suggests they did not represent homogeneous interests.

II. SCHOLARLY INTERPRETATIONS OF THE FOUNDING FATHERS

During the nineteenth and early twentieth centuries, historians alternated between supporting and condemning the authors of the Constitution. Several historians, including Henry Dawson, Orin G. Libby, and J. Allen Smith, argued economic motives were important but disagreed over whether the opponents or proponents of the Constitution were influenced by such interests. But the credit for offering a lasting economic interpretation of the Constitution must go to Charles A. Beard.⁷

Beard argued the Constitution represented the product of the interplay between conflicting economic interests of the opponents and proponents of the Constitution. He suggested that personal interests—“merchants, money lenders, security holders, manufacturers, shippers, capitalists, and financiers”—were likely supporters of the Constitution. They would benefit from more certainty in the rules of commerce, trade, and credit markets under the Constitution. The most important element influencing events at the convention and during ratification, argued Beard, was the presence of holders of public securities.⁸ The primary beneficiaries under the status quo would be those with realty interests—landed property, specifically small, debtor-farmers, because they would have greater ability at the state level to avoid heavy land taxation which was used in part to pay off the public debt, and to promote “soft” money and laws postponing the payment of private debts (debt moratoria).⁹ They opposed the Constitution. Beard suggested “the direct, impelling motive . . . was the economic advantages which the beneficiaries expected would accrue to themselves first, from their action.”¹⁰

⁶ Kelly and Harbison, *The American Constitution*, pp. 115–16.

⁷ Henry B. Dawson, “The Motley Letter,” *Historical Magazine*, 9 (Mar. 1871), pp. 157–201; Orin G. Libby, *The Geographical Distribution of the Vote of the Thirteen States on the Federal Constitution* (Madison, 1894); J. Allen Smith, *The Spirit of American Government: A Study of the Constitution, Its Origin, Influence, and Relation to Democracy* (Chautaugua, N.Y., 1911); Charles A. Beard, *An Economic Interpretation of the Constitution of the United States* (1st ed., 1913; 2nd ed., New York, 1935).

⁸ Beard, *An Economic Interpretation*, pp. 31–51.

⁹ *Ibid.*, pp. 26–30.

¹⁰ *Ibid.*, p. 16.

Although bitterly attacked in the popular press, Beard's views dominated American historiography through the 1940s. In the 1950s, Beard's thesis came under serious academic attack. Cecelia Kenyon contended Beard misinterpreted the motives of the Antifederalists. Henry Steele Commager questioned the logical consistency of an economic explanation, suggesting the Constitution had little, if any, influence on the economy. The most detailed and influential critiques, however, were those of Robert E. Brown and Forrest McDonald.¹¹

Brown attacked Beard's conclusions that eighteenth-century America was not very democratic, that the wealthy were staunch supporters of the Constitution, and that the Constitution was generally opposed by the unpropertied masses—small farmers and debtors. His qualitative evidence were voting-rights data and the citizenry's view of the Constitution. But Brown presented no empirical analysis of the voting behavior of any delegates or any quantitative evidence on economic interests.

McDonald, in contrast, quantified the economic interests and voting behavior of the delegates at Philadelphia and the state ratifying conventions. He detailed the wealth held by the delegates, arguing a "large" percentage of the delegates who owned public securities was Antifederalist. From his casual use of summary statistics, McDonald concluded "anyone wishing to rewrite the history of those proceedings largely or exclusively in terms of the economic interests represented there would find the facts to be insurmountable obstacles."¹² Yet McDonald presented no rigorous analysis of the voting behavior of delegates to the Philadelphia convention with respect to economic interests and the specific issues considered.

Brown and McDonald are credited with offering sufficient evidence to refute the idea that economic interests had an impact on the formation of the Constitution, even though neither used multivariate statistical analysis or stated such a categorical conclusion.¹³ Brown and McDon-

¹¹ Cecelia Kenyon, "Men of Little Faith: The Anti-Federalists on the Nature of Representative Government," *William and Mary Quarterly*, 12 (Jan. 1955), pp. 3–43; Henry Steele Commager, "The Constitution: Was It an Economic Document?" *American Heritage*, 10 (Dec. 1958), pp. 58–61, 100–103; Robert E. Brown, *Charles Beard and the Constitution: A Critical Analysis of An Economic Interpretation of the Constitution* (Princeton, 1956); McDonald, *We the People*.

¹² McDonald, *We the People*, p. 110. McDonald did not argue economic interests had no influence at the convention. He argued the issue was too complex to put into Beard's dichotomy of personalty versus realty interests or any other specific interests. He concluded, nevertheless, there was no measurable relationship between specific interests and delegates' voting behavior at Philadelphia.

¹³ See James M. Buchanan and Gordon Tullock, *The Calculus of Consent: Logical Foundations of Constitutional Democracy*, (Ann Arbor, 1962); Gordon S. Wood, *The Creation of the American Republic, 1776–1787* (Chapel Hill, 1969); W. Elliot Brownlee, *Dynamics of Ascent: A History of the American Economy* (2nd ed., New York, 1979); Barry W. Poulson, *Economic History of the United States* (New York, 1981); Jonathan Hughes, *American Economic History* (Glenview, 1983). The authors, in our view, overstate the weight of the empirical analyses of Brown and McDonald, particularly, the empirical work of McDonald.

ald have not, however, been entirely immune to criticism. Lee Benson and Jackson Turner Main contended Brown and McDonald lacked sufficient empirical analysis, contained incomplete and inaccurate data, and drew unsubstantiated conclusions. Benson's study, however, is not an investigation of the formation of the Constitution, but primarily concerns the history of intellectual thought. Main's article is a review essay. As such, neither provided comprehensive statistical evidence for their own views about the Constitution. They both suggested, nonetheless, economic interests had some influence on the making of the Constitution.¹⁴

During the 1960s, the debate over the formation of the Constitution continued. Although much of the research suggested economic interests were important, an analysis of the relationship between such interests and the Constitution was seldom the primary objective of the studies. The authors usually argued the issue was complex and were noncommittal toward the dispute about Beard's views.¹⁵

Important contributions to the subject, nevertheless, were made. Merrill Jensen concluded the many delegates "who agreed on ultimate goals differed as to the means of achieving them, and they tended to reflect the interests of their states and their sections when those seemed in conflict with such goals."¹⁶ He suggested further that throughout the convention the delegates expressed their common belief that men conducting public business must be restrained from using their influence to further their private interests.¹⁷ Jensen's conclusion about Beard's work is even more revealing. He argued that eighteenth-century leaders would have been bewildered by the controversy over Beard because they "took for granted the existence of a direct relationship between the economic life of a state or a nation and its government."¹⁸ Educated men in the eighteenth century, according to Jensen, commonly assumed private economic interests heavily influenced public choices.

In another study of the formation of the Constitution, Clinton Rossiter argued economic interests motivated the delegates throughout the convention on many important issues. But he concluded the delegates were essentially "like-minded gentlemen" whose economic

¹⁴ Lee Benson, *Turner and Beard: American Historical Writing Reconsidered* (Glencoe, 1960); and Main, "Charles A. Beard and the Constitution." Also, for a detailed discussion of the intellectual history of Beard's thesis, focusing on common misperceptions among Beard's critics and supporters over the fundamental nature of Beard's interpretation, see Pope McCorkle, "The Historian as Intellectual: Charles Beard and the Constitution Reconsidered," *American Journal of Legal History*, 28 (Oct. 1984), pp. 315–63.

¹⁵ For an example, see E. James Ferguson, *The Power of the Purse: A History of American Public Finance, 1776–1790* (Chapel Hill, 1961). For detailed discussion of historical research in the 1960s, see James H. Hutson, "Country, Court, and Constitution: Antifederalism and the Historians," *William and Mary Quarterly*, 38 (July 1981), pp. 349–53.

¹⁶ Merrill Jensen, *The Making of the American Constitution* (Princeton, 1964), pp. 44–45.

¹⁷ *Ibid.*, p. 106.

¹⁸ *Ibid.*, p. 127.

interests and political ideologies were similar. Rossiter unequivocally stated “no sharp economic or social line can be drawn on a nationwide basis” between the supporters and the opponents of the Constitution.¹⁹ In *E Pluribus Unum*, a continuation of his earlier work, Forrest McDonald concluded with essentially the same observations as Rossiter.²⁰ Other scholars producing state-level studies, however, argued that the supporters and opponents of the Constitution represented distinctly different economic interests. These authors tended to support Beard’s conclusions concerning conflict over the Constitution.²¹

Although scholarship on the formation of the Constitution has not been at a standstill over the last decade or so, most recent studies investigated issues other than the influence of economic interests on the behavior of our Founding Fathers. Recent studies have primarily investigated the ideological leanings of the delegates, political maneuvering at the convention, the democratic nature of supporters or opponents of the Constitution, or the intellectual history of different scholarly views. The studies added little to the subject of economic interests and the Constitution.²² The most recent investigation on the subject is our earlier progress report of preliminary results on voting behavior at Philadelphia and the state ratifying conventions. The report does not include all the measures of delegate ideology or constituent interests employed here, does not report any econometric results explicitly and does not present any results about voting on individual roll calls, the subject matter here.²³

¹⁹ Clinton Lawrence Rossiter, *1787: The Grand Convention* (New York, 1966), pp. 294–95.

²⁰ Forrest McDonald, *E Pluribus Unum: The Formation of the American Republic, 1776–1790* (Boston, 1965).

²¹ See Jackson Turner Main, *The Antifederalists: Critics of the Constitution, 1781–1788* (Chapel Hill, 1961); Staughton Lynd, *Anti-Federalism in Dutchess County, New York* (Chicago, 1962); Robert Allen Rutland, *The Ordeal of the Constitution: The Antifederalists and the Ratification Struggle of 1787–1788* (Norman, 1966).

²² See Daniel Calhoun, “Continual Vision and Cosmopolitan Orthodoxy,” *History and Theory*, 18 (No. 3, 1979), pp. 257–86; John P. Diggins, “Power and Authority in American History: The Case of Charles A. Beard and His Critics,” *American Historical Review*, 86 (Oct. 1981), pp. 701–30; Hutson, “Country, Court, and Constitution”; Robert A. Goldwin and William A. Schambra, eds., *How Democratic is the Constitution?* (Washington, D.C., 1980); James H. Hutson, “The Creation of the Constitution: Scholarship at a Standstill,” *Reviews in American History*, 12 (Dec. 1984), pp. 463–77; McCorkle, “The Historian as Intellectual”; William H. Riker, “The Heresthetics of Constitution-Making: The Presidency in 1787, with Comments on Determinism and Rational Choice,” *American Political Science Review*, 78 (Jan. 1984), pp. 1–16.

²³ Robert A. McGuire and Robert L. Ohsfeldt, “Economic Interests and the American Constitution: A Quantitative Rehabilitation of Charles A. Beard,” this JOURNAL, 44 (June 1984), pp. 509–19. Elsewhere, we examine in detail voting patterns over the general issue of the formation of a stronger national government at the Philadelphia convention and voting behavior at the state ratifying assemblies. See Robert A. McGuire and Robert L. Ohsfeldt, “A New Economic Interpretation of the Formation of the United States Constitution” (unpublished manuscript, Ball State University, 1985); and Robert A. McGuire and Robert L. Ohsfeldt, “Self-Interest, Voting Behavior, and the Ratification of the United States Constitution” (unpublished manuscript, Ball State University, 1985). Our analysis of voting patterns over the more specific issues presented here provides more detail regarding the influence of specific economic interests on voting for issues affecting the specific interests more directly. More analytical difficulties, however, are encountered in an analysis of individual roll-call votes.

III. AN ECONOMIC MODEL OF VOTING BEHAVIOR

We assume the delegates to Philadelphia maximized their personal utility when voting over roll calls at the convention. A delegate would have voted in the affirmative on a particular issue if he perceived his expected utility would be greater if the issue passed. We further assume each delegate's expected utility from voting on particular issues is affected by his personal economic interests (*PE*) and ideology (*PI*), as well as the economic interests (*CE*) and ideology (*CI*) of his constituents. Our assumption of utility maximizing voting behavior should not be interpreted as suggesting political ideology had no impact on voting at the convention.²⁴ More specifically, the factors affecting a delegate's probability of voting in the affirmative on any issue, P_i , may be described using the following general functional specification:

$$P_i = f(PE, PI, CE, CI) \quad (1)$$

On many issues a delegate's personal economic interests might have been in conflict with the economic interests of his constituents, with his personal ideology, or with his constituents' ideology. In such cases, it is still possible to determine conceptually the partial effects of each of the personal and constituent interests on voting behavior through their marginal impact on a delegate's expected utility. But a single partial effect on the probability of voting does not predict a delegate's actual vote. The overall effect of adoption of a particular issue on a delegate's total expected utility would determine his actual vote on the issue.²⁵

With respect to the relative magnitudes of the influence of personal interests versus constituent interests, an important factor is that the delegates to the convention were not elected by citizens and were not subject to re-election. They were chosen by their state legislatures to attend the convention on a one-time basis. The convention was closed

²⁴ For an argument that the economic theory of legislative and political voting is not well developed, see Sam Peltzman, "Constituent Interest and Congressional Voting," *Journal of Law and Economics*, 27 (Apr. 1984), pp. 181-210. To the extent scholars have attempted to model legislative voting behavior, the models have been either simple principal-agent models, where the legislator is the agent of the principal (the constituent) who elects or supports him, or the models have been based on a personal self-interest maxim. For detailed discussion of the principal-agent models, see Peltzman, "Constituent Interest"; Joseph P. Kalt and Mark A. Zupan, "Capture and Ideology in the Economic Theory of Politics," *American Economic Review*, 74 (June 1984), pp. 279-300; Sam Peltzman, "An Economic Interpretation of the History of Congressional Voting in the Twentieth Century," *American Economic Review*, 75 (Sept. 1985), pp. 656-75. For detailed discussion of personal self-interest models, see Robert Tollison, "Rent Seeking: A Survey," *Kyklos*, 35 (No. 4, 1982), pp. 575-602; and Susan Welch and John G. Peters, "Private Interests and Public Interests: An Analysis of the Impact of Personal Finance on Congressional Voting on Agriculture Issues," *Journal of Politics*, 45 (May 1983), pp. 378-96. Our model integrates the two approaches to the issue of voting behavior.

²⁵ As a practical matter, because a delegate's personal interests and his constituents' interests probably coincided in many cases, isolating the impact of personal interest from the impact of constituent interest on the voting behavior of the delegates may be a difficult empirical task. The problem is discussed in more detail later.

to the public and the proceedings were to stay secret. Additionally, each state's credential emphasized the independence of their delegates when they arrived in Philadelphia.²⁶ These conditions suggest delegates' voting behavior was less constrained by the economic interests and ideological preferences of their constituents than ordinary office holders.

The delegates could not, however, ignore their constituents' interests completely. Voting contrary to their constituents' interests might have adversely affected their future political careers. In addition, because the completed draft of the Constitution had to be ratified by the states, the document needed to reflect the interests of a majority of the voting citizenry (at least in broad terms) in at least nine of the thirteen states. The issue of the relative impact of personal interests and constituent interests on voting behavior is essentially an empirical question—a question we will address later in the discussion of our empirical results.

To determine the expected impact of specific constitutional clauses, it is necessary to examine perceptions of economic conditions, the institutional structure existing prior to the Constitution, and the perceived changes in the conditions attributable to specific provisions in the new Constitution. In the 1780s, the economy faced serious problems. The independence of the former colonies from the British empire seriously disrupted foreign trade. Although trade was improving during the 1780s, it had not fully recovered. Holders of confederate securities sometimes did not receive interest when due and feared a loss of principal. Revolutionary War inflation created serious doubts about the efficacy of paper-money issues. Later, state debt moratoria measures and depreciation of the currency caused by state paper-money issues (which were pushed through state legislatures primarily by distressed agrarian interests) made hard-money advocates fearful and hurt creditors. Although state interference in interstate trade was not a major problem during the Confederation period, many commercial interests feared that significant local barriers to interstate trade could develop in the future under the Articles. Additionally, owners of western lands were impatient with the weak Confederation government because of its inability to establish order on the frontiers.²⁷

Because of the perceptions of existing economic conditions, we expect delegates who were creditors or represented creditor interests

²⁶ Farrand, *Records*, vol. 3, pp. 559–86.

²⁷ The statement of economic conditions and perceptions summarizes the work of Gordon C. Bjork, "The Weaning of the American Economy: Independence, Market Changes, and Economic Development," this JOURNAL, 24 (Dec. 1964), pp. 541–60; Ferguson, *The Power of the Purse*; Merrill Jensen, *The New Nation: A History of the United States during the Confederation* (New York, 1950); James F. Shepherd and Gary M. Walton, "Economic Change After the American Revolution: Pre and Post War Comparisons of Maritime Shipping and Trade," *Explorations in Economic History*, 13 (Oct. 1976), pp. 397–422; and Gary M. Walton and James F. Shepherd, *The Economic Rise of Early America* (New York, 1979), chap. 9.

avored provisions in the proposed Constitution that increased the probability of debt payment and measures strengthening the currency, while delegates who were debtors or represented debtors opposed such measures. We expect merchants engaged in interstate commerce favored a prohibition on barriers to interstate trade, while some local interests preferred to retain the possibility of protection from interstate trade. We expect slaveowners, many of whom feared a truly national government controlled by a northern majority, supported measures to protect the institution of slavery. Many western land speculators are expected to have favored a strong, nationalistic government because earlier land ordinances placed control of the Northwest territories with the weak Confederation government.

The ideologies of the delegates and those of their constituents, of course, also affected voting behavior. While this fact can be recognized in theory, the unobservable nature of ideology inhibits an empirical analysis of its effects on voting. Several observable personal characteristics of individuals, however, may be related to their political ideology. Several scholars, for example, suggest an individual's experiences during the Revolutionary War may explain why he supported or opposed a stronger national government.²⁸ Others suggest individuals living in coastal areas were more likely to favor a strong national government than those from inland areas.²⁹ Finally, delegates representing more populous states were more likely to favor a strong national government over a federal form because larger states were expected to dominate a new national government.³⁰

The hypotheses about the impact on voting behavior of the economic and ideological interests of the delegates and their constituents are tested in our empirical analysis of voting behavior. We emphasize the hypotheses refer to the partial effects of a particular economic or ideological interest on voting behavior, holding all other interests constant.

IV. ESTIMATION PROCEDURES

Complications in Estimation

The votes of the delegates on specific issues are estimated as a function of economic interests and ideology to determine the nature of

²⁸ Stanley Elkins and Eric McKittrick, "The Founding Fathers: Young Men of the Revolution," *Political Science Quarterly*, 76 (Nov. 1961), pp. 181-216; and Main, *The Antifederalists*.

²⁹ Hutson, "Country, Court, and Constitution"; Libby, *The Geographical Distribution of the Vote*; Main, *The Antifederalists*.

³⁰ Calvin C. Jillson, "Constitution-Making: Alignment and Realignment in the Federal Convention of 1787," *American Political Science Review*, 75 (Sept. 1981), pp. 598-612; and Calvin C. Jillson and Cecil L. Eubanks, "The Political Structure of Constitution Making: The Federal Convention of 1787," *American Journal of Political Science*, 28 (Aug. 1984), pp. 435-58.

voting patterns. The task is complicated by the multiplicity of issues and proposals at Philadelphia (there were 569 recorded roll-call votes) and the corresponding prospect for strategic voting behavior. Strategic voting behavior primarily consists of compromise votes and logrolling (vote trading). In the presence of strategic voting behavior, individual votes may not be independent of each other. The rhetoric and political strategy employed at the convention also may have affected the range of issues considered.³¹ The possible dynamic nature of the choice process also suggests individual votes may not be independent of each other and may not be the only possible alternatives.

If a particular vote was a compromise measure, delegates with different interests must have originally preferred to vote for a different proposal. They also must have been unsuccessful at passing such proposals. Voting patterns over a compromise measure would still exist to the extent the measure was in the delegates' or their constituents' interests. If a particular compromise measure was a complete compromise (nearly all delegates voted for it), voting patterns could not be determined. Although compromise voting is not explicitly contained in our model, we will argue the evidence suggests an insignificant number of votes in our sample were compromise measures.

Another characteristic of voting behavior not explicitly contained in our model is logrolling. The lack of solutions offered by theory generally prevents scholars from determining the extent and direction of coalition formation and logrolling on any specific issue.³² The lack of data also makes measurements of logrolling nearly impossible. Without prior information it is not possible, to our knowledge, to determine which votes among the hundreds of votes would be exchanged in a vote trade or which delegates would be involved. Without qualitative evidence of the existence of logrolling and its direction, correlations among votes would not be sufficient support for the existence of vote trading. Because numerous votes were taken on similar issues and others attracted the same interests, a factorial analysis or similar technique applied to all possible votes offers little or no help. Additionally, no a

³¹ See Riker, "The Heresthetics of Constitution-Making."

³² See Kalt and Zupan, "Capture and Ideology," pp. 288–89. For sophisticated discussion on the problem of strategic behavior, see Robin Farquharson, *Theory of Voting* (New Haven, 1969); James M. Enelow and David H. Koehler, "Vote Trading in a Legislative Context: An Analysis of Cooperative and Noncooperative Strategic Voting," *Public Choice*, 34 (Issue 2, 1979), pp. 157–75; Kenneth A. Shepsle and Barry R. Weingast, "Uncovered Sets and Sophisticated Voting Outcomes with Implications for Agenda Institutions," *American Journal of Political Science*, 28 (Nov. 1984), pp. 49–74. The authors indicate the multitude of possible voting outcomes given strategic voting behavior in a majority rule context and appear to offer no empirical solutions to the logrolling problem. The only attempt to empirically estimate logrolling, to our knowledge, is James B. Kau and Paul H. Rubin, "Self-Interest, Ideology, and Logrolling in Congressional Voting," *Journal of Law and Economics*, 22 (Oct. 1979), pp. 365–84. They estimate votes on issues as a function of each other. The efficacy of their methodology is dubious.

priori method exists to determine if a delegate would trade away his own interests and ideological preferences or those of his constituents. The relative magnitudes of the different explanatory factors, therefore, may be unaffected, and the determination of such magnitudes is one of our primary objectives.

Although it was not his intention, William Riker presented evidence suggesting personal interests strongly influenced voting behavior at the convention over the issue of popular election of the president. He showed the strength of the “majority who found it distasteful.” Riker’s objective was to show the impact of political maneuvering on the range of alternatives brought before the delegates and the resulting compromises. He demonstrated, in fact, that despite rhetorical and political attacks and compromises, the issue of popular election lost five different times between June 2 and August 24.³³

James Buchanan and Gordon Tullock made two relevant observations about vote trading. They argued vote trading is more likely if the vote involved leads to decisive action being taken. If the decision-making group can modify and change decisions through repeat voting, the vote on any issue loses economic value for a trade. Secondly, they argued that an individual is better off “if he accepts a decision contrary to his desire in an area where his preferences are weak in exchange for a decision in his favor in an area where his feelings are stronger.” They concluded that strongly held interests are less likely to be traded away.³⁴

The possibility of logrolling and other forms of strategic behavior does not mean they were common occurrences. Many delegates obviously possessed important economic interests and strongly held ideologies they were not willing to trade away. The convention’s rules allowed repeat voting throughout—thus, many votes did not lead to decisive actions.³⁵ There also is little evidence of extreme amounts of vote trading. A scrutiny of the literature on the Philadelphia convention shows only one explicit vote trade was ever discussed. If logrolling was a common occurrence at Philadelphia, we would have expected more than one vote trade to have been documented in the hundreds of articles and books written on the subject.³⁶

The existence of strategic behavior could obscure the effects of straightforward self-interest voting. Its existence at the convention would, therefore, bias statistical tests against the hypothesis that economic and ideological interests influenced voting behavior. Consequently, to the extent our statistical results indicate voting patterns

³³ Riker, “The Heresthetics of Constitution-Making,” pp. 6–12.

³⁴ Buchanan and Tullock, *The Calculus of Consent: Logical Foundations of Constitutional Democracy*, chaps. 9, 10.

³⁵ See Farrand, *Records*, vol. 1, pp. 7–17.

³⁶ See *ibid.*; Jensen, *The Making*; Kelley and Harbison, *The American Constitution*; McDonald, *We The People and E Pluribus Unum*; Rossiter, *1787*. Several important compromises were discussed.

related to the delegates' personal interests or those of their constituents, in spite of the obscuring effects of strategic voting behavior, the interests were likely to have had a strong influence on voting behavior.³⁷

The Issues

The specific issues we analyze are contained in Forrest McDonald's *We the People*. He argued it was possible to ascertain the delegates' votes on certain key issues. He presented their probable votes on sixteen roll calls over different economic and political issues. Because each state delegation had only one vote, determined by a simple majority within each delegation, and the votes were recorded only at the state level in the official journal of the convention, McDonald used other sources in addition to the journal to determine the votes. He determined the votes of most delegates for the sixteen issues from attendance records, votes and voting sentiments recorded in the diaries of individual delegates, and other available information.³⁸

McDonald chose the sixteen issues according to how well they represented the fundamental question at the convention. He argued the sixteen votes were related to the issue of forming a strong, nationalistic government versus amending the existing federal government. To quote McDonald, "In general, all sixteen questions bear directly upon Gouverneur Morris' classic statement of the 'great question' (September 17), 'shall there be a national Government or not?' "³⁹ The votes are described in detail in Table 1.

The content of most of the issues indicates an obvious relationship to the fundamental question. The first issue, adding a requirement of judicial consent for exercising the presidential veto, constrains the power of the executive branch of the national government. It follows that a yes vote would be anti-national. The second issue strengthens the national legislature's veto over state laws. The vote was to have an absolute veto over all state laws and is obviously pro-national. The third issue, allowing national legislators to determine their own compensation instead of receiving fixed stipends, reduces constraints on them and is, therefore, pro-national.

The fourth issue, a vote to replace ratification of the Constitution by popularly chosen state conventions with ratification by existing state

³⁷ Of the three most recent papers in the economics literature on single-issue voting, only one (Kalt and Zupan, "Capture and Ideology") even mentions the issue of logrolling but offers no solution. The other two (Peltzman, "Constituent Interest" and "An Economic Interpretation") completely ignore the issue.

³⁸ The attendance records, including dates of known absences; the diaries, including recorded votes of individual delegates; the votes of each state; and other information are contained in Farrand, *Records*. The maximum number of votes for any issue is 53 because McDonald did not include any votes for Houston (New Jersey) and Wythe (Virginia) who departed the convention early. The two delegates are, therefore, not included in our analysis.

³⁹ McDonald, *We The People*, p. 100.

TABLE 1
DESCRIPTION OF SELECTED VOTES, 1787 CONSTITUTIONAL CONVENTION

Vote	Description of Issue ^a
Vote 1	To add a clause requiring a degree of national judicial consent for the use of the executive veto.
Vote 2	To broaden the national legislature's veto power over states, giving it absolute veto power over all state laws.
Vote 3	To adopt a clause allowing national legislators to determine their own compensation instead of adopting a clause specifying fixed stipends determined by the states.
Vote 4	To strike a clause specifying direct election of delegates to state ratifying assemblies and replace it with a clause specifying ratification by state legislatures.
Vote 5	To disqualify individuals indebted to the national government (public debtors) from serving as national legislators.
Vote 6	To set the quorum of the national legislature at no less than a majority, preventing passage of laws by a minority.
Vote 7	To prohibit the national legislature from enacting export tariffs.
Vote 8	To give the national government the power to organize and arm state militias and to control the militias when they are called out at the national level.
Vote 9	To prohibit states from issuing bills of credit.
Vote 10	To prohibit states from passing any bills of attainder or ex post facto laws.
Vote 11	To prohibit states from enacting trade embargoes.
Vote 12	To strengthen an existing clause conditionally prohibiting state import tariffs, making the prohibition absolute.
Vote 13	To add a prohibition on state export tariffs to an existing clause prohibiting state import tariffs.
Vote 14	To consider a clause requiring a two-thirds majority for the national legislature to enact navigation acts.
Vote 15	To give the national government the responsibility for protecting each state from invasions and, at the request of the state government, for protecting each state from domestic violence.
Vote 16	To strike a clause permitting the Constitution to be amended.

^a The descriptions are not verbatim transcripts of each roll-call vote but are our interpretations of the essential questions involved. The descriptions contain some clarifications and corrections in the descriptions provided in McGuire and Ohsfeldt, "Economic Interests," p. 518.

Sources: Farrand, *Records*, vol. 1, pp. 130–47 (vote 30), 162–73 (vote 34), 369–82 (vote 74); vol. 2, pp. 84–96 (vote 203), 116–28 (vote 230), 245–56 (vote 268), 352–65 (vote 336), 380–95 (vote 345), 434–40 (votes 387, 391, 392, 393, 394), 445–56 (vote 399), 457–70 (vote 415), 621–40 (vote 559).

legislatures, and the fifth issue, disqualifying persons indebted to the national government (public debtors) from serving as national legislators, appear to be anti-national issues. The fourth gives more power to state governments and the fifth constrains individuals who may have a stake in the national government. While it is difficult for us to interpret the sixth vote, which specifies the number of legislators at no less than a majority for a quorum, the debates suggest it is anti-national.⁴⁰

The seventh issue, prohibiting the national government from imposing export tariffs, and the fourteenth issue, a vote to consider requiring two-thirds of the national legislature to enact navigation acts, are both anti-national positions. The eighth issue, giving the national legislature authority to organize and arm state militias and to govern them when

⁴⁰ Farrand, *Records*, vol. 2, pp. 245–56.

employed by the national government, and the fifteenth issue, granting authority to the central government to provide both internal security and national defense, clearly represent pro-national positions. The ninth through thirteenth issues are prohibitions on certain acts by the states. They prohibit issuance of paper money and enactment of ex post facto laws, embargoes, and import and export tariffs by states. It follows that a yes vote on any of these represents a pro-national stance. The sixteenth vote was a motion to make the Constitution unamendable. It may be viewed as anti-national because it would prevent the national government from amending the Constitution to the detriment of minority states.⁴¹

The question arises whether the sixteen votes represent the important issues at the convention and, thus, whether they are a reasonable sample of the 569 recorded votes. We suggest they are representative of the important issues. Six votes (Votes 1, 2, 3, 6, 8, and 15) can be interpreted as fundamental issues over whether sovereignty would remain with the states or with a new national government, five votes (Votes 9, 10, 11, 12, and 13) were on different prohibitions against the states, and three votes were on economic clauses (Votes 5, 7, and 14). The vote (Vote 4) on the process of ratification of the Constitution and the vote (Vote 16) on making the Constitution unamendable also were important issues during the debates.⁴²

Our own analysis of the nearly four months of debates provides support for the representativeness of the sample.⁴³ We determined the number of important and minor votes at the convention. We defined a vote as important if it had a clear impact on the overall strength of the national or state governments, if it had a clear impact on economic interests, or if it had an impact on the basic structure of government. Minor votes consisted of issues over details of the day-to-day functioning and operations of the different branches of government, details of the operations of the convention, trivial editorial changes in clauses and motions, and other issues unimportant to the form of government, such as motions for adjournment.

We determined 301 of the 569 recorded votes (52.9 percent) were minor. Additionally, the issue involved for 20 of the 569 recorded votes (3.5 percent) was not noted and could not be determined.⁴⁴ A number of

⁴¹ *Ibid.*, pp. 621–22, 629–31.

⁴² On the importance of the form of ratification, see Kelly and Harbison, *The American Constitution*, chap. 5; and Jensen, *The Making*, pp. 96–105. On the importance of the amending process, see Jensen, *The Making*, pp. 96–105; and Rossiter, *1787*, chap. 11.

⁴³ For the analysis, we scrutinized all documents contained in Farrand, *Records*.

⁴⁴ See Farrand, *Records*, vol. 2, pp. 517, 582. Farrand stated it was virtually impossible to determine numerous votes on two different occasions—between roll call 455 and roll call 472 and between roll call 511 and roll call 569. Others also argued that only a half dozen or so important votes took place during the last four days of the convention when there were almost 60 roll calls. See Jensen, *The Making*, pp. 118–21; and Rossiter, *1787*, chap. 11.

minor votes, 26 out of 301 (8.6 percent), consisted of motions for adjournment. Other minor votes included a motion to form a committee to inspect the minutes of the proceedings, a motion to strike out the age requirement for senators, several motions on how often to have a census, a motion to establish set meeting hours and disallow adjournments, and a motion to repeal the preceding motion and set new meeting hours.⁴⁵

We determined 248 of the 569 recorded votes (43.6 percent) were important. But the journal contained no discussion of the issues for 37 of the important votes (14.9 percent). The journal listed 25 other votes (10.1 percent of the important votes) as determined unanimously. For these 62 votes, determination of the delegates' voting behavior would not be likely. Because of repeat voting and different motions over essentially the same question, the remaining 186 important votes do not represent 186 separate issues. Probably no more than four or five dozen important recorded votes on separate issues existed, and McDonald's votes, with the likely exception of two excluded votes, were on such important issues.

The number of separate issues in terms of general categories was surprisingly small. A number of votes were associated with the composition of the legislature, the executive branch, and the federal judiciary. In the case of the legislature, many votes were on the method of electing members and the apportionment of representatives. The method of selection of the executive and the determination of the power of the executive versus the legislative branch accounted for numerous votes. Key votes also involved the structure of the judiciary and its power relative to the other two branches of government. In terms of the basic structure of the government, many votes consisted of motions about the powers of the central versus state governments and about prohibitions on the actions of the central versus state governments. A few of the more important issues were motions on requirements for implementing national navigation acts, motions on the legality of import and export tariffs at both levels of government, and several motions on the authority and limits of different aspects of the central and state governments' military and police powers.⁴⁶

The records of the convention detailed the existence of at least 272

⁴⁵ The examples of other minor votes can be found in Farrand, *Records*, vol. 1, pp. 29–32 (roll call 1), 209–13 (roll call 56), 575–91 (roll calls 137–39 and 141–44); vol. 2, pp. 321–24 (roll call 317) and 396–99 (roll call 364).

⁴⁶ On the importance of these issues, see Kelly and Harbison, *The American Constitution*, chap. 5; Jensen, *The Making*, pp. 45–95; Rossiter, *1787*, chaps. 10, 11. To quote Jensen on what was "the bitterest fight in the whole Convention: that between the North and South over export duties, slavery, and navigation acts. So violent was it that both northerners and southerners threatened to break up the Convention by walking out" (p. 88). And Jensen later concluded: "Many of the delegates were probably more concerned with placing restraints upon the state legislatures, particularly in economic matters, than with the details of government" (p. 95).

other votes, but they were not recorded. The journal showed only whether they passed or not; 256 were affirmed and 16 failed. The votes of individual delegates are unknown for these votes. Our analysis of the debates also found several errors in McDonald's sample of votes; where possible we made corrections.

We found inconsistencies at the state level between the votes determined by McDonald and the records of the convention for three issues (Votes 1, 3, and 5). We were unable to determine if McDonald's recording of each delegate's votes was accurate for two of the three. If his individual votes are aggregated for each state for Vote 1 and Vote 3, McDonald's votes show several states voted opposite the officially recorded state vote.⁴⁷ While the same problem existed for the other vote (Vote 5), we were able to determine the actual vote for the issue should have been recorded as roll call 230 instead of roll call 228.⁴⁸ We included the correct vote in our analysis of Vote 5. We excluded Vote 1 and Vote 3 from our statistical tests of voting patterns. Even though the errors for Vote 1 and Vote 3 may also be as minor as typographical errors, neither we nor McDonald could determine the correct votes.⁴⁹

The Empirical Model and Data

Voting patterns are estimated employing the following general specification of the vote on issue i for delegate j from state k :

$$V_i^{jk} = g(PE^j, PI^j, CE^k, CI^k) \quad (2)$$

where V_i^{jk} is a dummy variable representing the delegate's vote on issue i , PE^j is a set of the delegate's personal economic interest variables, PI^j is a set of personal characteristics serving as proxies for the delegate's ideology, CE^k is a set of variables measuring the economic interests of the delegate's constituents, and CI^k is a set of variables serving as proxies for the constituents' ideology. Because the dependent variable is limited, the delegate could only vote "yes" (1) or "no" (0); the estimating procedure used is logit analysis.⁵⁰

The specific variables used to measure personal and constituent interests are listed in Table 2. We measure the personal economic interests of the delegates, PE^j , in terms of their primary occupation, speculation in western lands, slaves, public securities, private securities, and their status as debtors.⁵¹ Several proxy variables are used as

⁴⁷ Compare Vote 1 and Vote 3 in McDonald, *We the People*, pp. 102–103, to roll call 30 and roll call 74 in Farrand, *Records*, vol. 1, pp. 130–47, 369–80.

⁴⁸ Compare Vote 5 in McDonald, *ibid.*, to roll call 228 and roll call 230 in Farrand, *ibid.*, vol. 2, pp. 116–28.

⁴⁹ Personal correspondence with Forrest McDonald, May and June 1984.

⁵⁰ A detailed discussion of logit analysis is provided in Eric Hanushek and John E. Jackson, *Statistical Methods for Social Scientists* (New York, 1977), chap. 7.

⁵¹ These variables are primarily contained in McDonald, *We the People*, with some corrections suggested by Brown, "The Founding Fathers"; and Main, "Charles A. Beard and the Constitution."

TABLE 2
MEASURES OF DELEGATES' PERSONAL AND CONSTITUENT INTERESTS, 1787
CONSTITUTIONAL CONVENTION

Personal Economic Interests (PE)

Land speculator (1 if the delegate owned western lands, 0 otherwise)
 Merchant (1 if the delegate's principal occupation was merchant, 0 otherwise)
 Farmer (1 if the delegate's principal occupation was farmer, 0 otherwise)
 Debtor (1 if the delegate was in deep personal debt, 0 otherwise)
 Public securities (market value in \$ thousand in 1787)
 Private securities (market value in \$ thousand in 1787)
 Slaves (number of slaves owned in 1790)

Personal Ideology (PI)

Age (the age of the delegate in years)
 English ancestry (1 if the delegate was of English ancestry, 0 otherwise)
 Officer in war (1 if the delegate had served as an officer in the Revolutionary War, 0 otherwise)

Constituents' Economic Interests (CE)

Slaves per 100 white persons (for each delegate's state in 1790)
 Slaves per slaveowning family (for each delegate's state in 1790)
 Percent of families owning slaves (for each delegate's state in 1790)
 Percent of net wealth in land holdings (per probate-type wealth holder in 1774 for each state)
 Per capita net public debt (per capita amount paid or received subsequent to funding in 1793 for each state)
 Net worth (per probate-type wealthholder in 1774 for each state)
 Net physical wealth (per probate-type wealthholder in 1774 for each state)

Constituents' Ideology (CI)

Distance (from the delegate's home to the nearest navigable coastline, in miles)
 Population (total white population for each state in 1790)
 Percent English ancestry (percent of all families of English ancestry in each state in 1790)

Source: See text.

indicators of delegates' personal ideology, *PI*ⁱ, including their age, war and political experience, and ancestry.⁵² Elkins and McKittrick suggested younger delegates were more likely to support a stronger national government because they lacked experience with British rule and strong central governments. Main argued individuals of English ancestry also tended toward pro-nationalism because they had a greater sympathy for strong central governments than individuals of Irish, Scottish, or other European ancestry. Finally, many scholars believe individuals who were officers in the Revolutionary War tended to support the Constitution, while those in lower ranks opposed it. The argument is that officers tended to be representative of the social elites in America.⁵³

Measures of constituents' economic interests, *CE*^k, are not as readily available. Alice Hanson Jones's estimates of net worth, net worth in land holdings, and total physical wealth are employed as alternative indicators of the wealth status of a delegate's constituents.⁵⁴ Several

⁵² These variables were obtained from the *Dictionary of American Biography*.

⁵³ Elkins and McKittrick, "The Founding Fathers"; Main, *The Antifederalists*; Jensen, *The Making*; Rutland, *The Ordeal of the Constitution*.

⁵⁴ We estimated average state wealth for each state as a population-weighted average of the county wealth estimates for the state reported in Alice Hanson Jones, *Wealth of a Nation To Be* (New York, 1980), pp. 377-79. Because no counties in New Hampshire or Georgia are included in

alternative variables (slaves per 100 whites, slaves per slaveowning family, and percent of families owning slaves) are used to measure constituents' slave interests. The eventual per capita net liability from public debts at settlement in 1793 is used as a proxy for the constituents' public creditor/public debtor status.⁵⁵ To measure constituents' ideology, *CI^k*, we use the distance a delegate lived from the coastline, each state's population, and the percent of English ancestry in each state.⁵⁶ Many scholars, following Libby, argued individuals from coastal areas were more likely to support a strong national government because they tended to be more commercially oriented than individuals from the backcountry. Others argued delegates representing large states were pro-national as were delegates representing areas with a concentration of individuals of English ancestry.⁵⁷

A digression on a third voting alternative, "not voting," is necessary. The sample size is too small for "not voting" to be considered a separate alternative in a multinomial logit or ordered probit model. A potential selectivity bias could be introduced by excluding delegates who did not vote on a particular issue, yet we do not have votes for all delegates for each issue. Farrand, fortunately, included information which offers a possible solution to the selectivity problem.⁵⁸ He provided a list of the delegates including their attendance record,

Jones's estimates, we used her estimates of average wealth for the New England and southern regions as estimates of average wealth in New Hampshire and Georgia, respectively. We use her 1774 estimates because contemporaneous measures of each state's wealth are not available. The estimates should be reasonable proxies for the relative wealth positions of the states to the extent significant changes in price levels or real wealth levels across states did not occur from 1774 to 1787. We do not place much importance on the results for the variable but use it as an attempt to control constituents' wealth across states.

⁵⁵ The data on net public debt at settlement in 1793 are from Ferguson, *The Power of the Purse*, pp. 331–33. Obviously, the variable leaves much to be desired as a measure of public creditor interests, but measures of the level of net public debt for each state in 1787 are not consistently available for all 12 states represented at the convention. Use of this variable serves the same purpose as use of state wealth estimates (see fn. 54). The measures of slave population and the ancestry of the population are from *A Century of Population Growth* (New York, 1969), pp. 116–20, 135–40, 271–90.

⁵⁶ For distance calculations, see Lester Cappon, ed., *Atlas of Early American History: The Revolutionary Era, 1770–1790* (Princeton, 1976). For populations, see U.S. Department of Commerce, Bureau of the Census, *Historical Statistics of the United States: Colonial Times to 1970* (Washington, D.C., 1975). As alternatives to distance from the delegate's home to the nearest body of navigable coastline, we also calculated three other distance measures: 1) distance from home to the Atlantic coast, 2) distance from home to the nearest major city, and 3) distance from home to Philadelphia. In all four cases, distance is measured using a straight-line method. With the exception of distance to Philadelphia, all measures produced similar logit results. Results for the other three measures, therefore, are not reported.

⁵⁷ See Libby, *Geographical Distribution*; Hutson, "Country, Court, and Constitution"; Jillson, "Constitution-Making"; Main, *The Antifederalists*; Jerome J. Nadelhaft, *The Disorders of War: The Revolution in South Carolina* (Orono, 1981); Norman K. Risjord, *Chesapeake Politics 1781–1800* (New York, 1978); E. Wilder Spaulding, *New York in the Critical Period: 1783–1789* (New York, 1932).

⁵⁸ Farrand, *Records*, vol. 3, pp. 586–90.

whether they signed the Constitution (only 39 delegates did), and, for 13 of the 16 non-signing delegates, whether the delegate favored or opposed the Constitution.⁵⁹ We used the information to impute votes for the missing observations.

To determine the sensitivity of our estimates to the potential selectivity bias, voting patterns for each issue were first estimated using only the votes of the delegates who actually voted. Voting patterns were then estimated under the following assumptions: 1) All delegates who signed the Constitution, except three, would have voted with the majority on any particular issue on which they did not actually vote. 2) Three delegates who signed the Constitution—Richard Bassett (Delaware), William Blount (North Carolina), and William Paterson (New Jersey)—would have voted with the minority on any missed vote because of strong evidence they opposed the Constitution. 3) Delegates who did not sign the Constitution would have voted with the majority on any missed issue if Farrand stated they favored the Constitution. 4) Delegates who did not sign the Constitution would have voted with the minority on any missed issue if Farrand stated they opposed the Constitution. And 5) the three non-signing delegates for whom Farrand did not determine attitudes would have voted with the minority on any missed vote.⁶⁰ The actual voting frequencies and the frequencies with the adjustments for not voting are provided in Table 3. The table shows that the percent voting yes is quite similar in both cases except for the final three votes. A comparison of the logit estimates obtained solely from the actual votes with the estimates using the actual and imputed votes indicates the magnitude of the selectivity problem is not large.⁶¹

V. STATISTICAL RESULTS

To test the robustness of our estimates, several alternative specifications of equation 2 were estimated for each of the issues described in Table 1, except the first and third. The effects of various measures of personal and constituent interests indicated by our statistical analysis

⁵⁹ George Read (Delaware) actually signed for himself and for John Dickinson (Delaware) who was not present, see *ibid.*

⁶⁰ We imputed the vote under this assumption for only two of the three non-signing delegates, William Houstoun (Georgia) and Alexander Martin (North Carolina). The third, William Churchill Houston (New Jersey), was excluded from our analysis because of a lack of information. See fn. 38.

⁶¹ Both sets of estimates produced similar results. The issue is discussed in greater detail in the next section. Also, because of different sizes of state delegations, a losing issue that had a majority of the states against it could have had nearly a majority or even an actual majority of individual delegates voting in favor of it. It does not follow, therefore, that the delegates, who left the convention because they were in the minority, could have stayed and passed the losing issues.

TABLE 3
VOTING OUTCOMES FOR SELECTED ISSUES, 1787 CONSTITUTIONAL CONVENTION

Vote ^a	Yes	No	Not Voting	Percent ^b Yes
1 Actual	16	28	9	36.4
Adjusted	20	33	0	37.7
2 Actual	19	24	10	44.2
Adjusted	22	31	0	41.5
3 Actual	17	32	4	34.7
Adjusted	19	34	0	35.8
4 Actual	10	31	12	24.4
Adjusted	14	39	0	26.4
5 Actual	9	34	10	20.9
Adjusted	15	38	0	28.3
6 Actual	10	33	10	23.3
Adjusted	15	38	0	28.3
7 Actual	23	22	8	51.1
Adjusted	28	25	0	52.8
8 Actual	32	10	11	76.2
Adjusted	37	16	0	69.8
9 Actual	33	6	14	84.6
Adjusted	41	12	0	77.4
10 Actual	29	10	14	74.4
Adjusted	36	17	0	67.9
11 Actual	13	29	11	30.9
Adjusted	20	33	0	37.7
12 Actual	15	27	11	35.7
Adjusted	22	31	0	41.5
13 Actual	25	17	11	59.5
Adjusted	30	23	0	56.6
14 Actual	12	30	11	28.6
Adjusted	18	35	0	34.0
15 Actual	32	9	12	78.0
Adjusted	38	15	0	71.7
16 Actual	3	33	17	8.3
Adjusted	12	41	0	22.6

^a The actual vote is the vote at the convention, according to McDonald, *We the People*, pp. 102–103, and our corrections. The adjusted vote is calculated under the assumptions noted in the text.

^b Number of yes votes divided by the sum of yes and no votes.

Source: See text.

are summarized in Table 4.⁶² Our findings suggest many of the personal and constituent interest variables did not have a statistically significant effect on voting behavior. Some of the personal and constituent interests, nevertheless, did affect voting behavior on several issues. For the most part the logit results summarized in Table 4 also suggest

⁶² Over 20 alternative specifications involving different combinations of personal and constituent interest variables were used to estimate voting behavior for each of the issues. The votes were also alternatively adjusted or unadjusted for not voting as described earlier. The signs of the statistically significant logit coefficients generally were not sensitive to specification, with the exception of the last three issues. In Table 4, the entry Y* (or N*), for example, indicates that the logit coefficients of the corresponding variable for the issue in question were consistently positive (or negative) and significant at the .05 level or better.

TABLE 4
SUMMARY OF EFFECTS OF ECONOMIC INTEREST AND IDEOLOGY VARIABLES ON VOTING BEHAVIOR,
1787 CONSTITUTIONAL CONVENTION

Explanatory Variables	Vote (from Table 1)															
	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
Personal Economic Interests (PE)																
Land speculator				Y**												
Merchant		N**									N**		N			
Farmer	N		Y**			Y	N**			N			Y**	N**		
Debtor					Y*				N**		N					
Public securities								Y				N**		N**		N
Private securities										Y**						
Slaves	N**					Y*						N*				
Personal Ideology (PI)																
Age				N**	N**											Y**
English ancestry		Y**			Y**			N**								Y**
Officer in war		N**			N*	N**			Y**			Y**	N**	Y**		Y**
Constituents' Economic Interests (CE)																
Slaves	N**			Y**		Y*		N**		N**		N**	Y*	N**		Y*
Land						Y**										
Net public debt	Y**		Y**		Y*							Y**		N*		
Wealth						Y**				Y*						
Constituents' Ideology (CI)																
Distance	N**		Y**	Y*	Y**			N**	N*	Y**	Y**	N**	Y*	N*		Y*
Population	Y*		N**							N**	N*	Y**		Y**		N*
English ancestry			Y**		Y**	Y*		N**		Y**						N**

Note: The symbols Y and N indicate the vote, either yes or no, was unanimous among delegates with this characteristic; Y* and N* indicate that delegates with this characteristic generally were statistically more likely to have voted yes or no, respectively, on the issue at the .05 level, ceteris paribus; Y** and N** indicate that delegates with this characteristic generally were statistically more likely to vote yes or no, respectively, on the issue at the .10 level, ceteris paribus; and no mark indicates that this characteristic did not have a statistically significant impact on voting behavior. As noted in the text, Vote 1 and Vote 3 are excluded because of data problems.

Source: See text.

constituent interests are stronger predictors of delegates' voting behavior than personal interests, although measures of personal economic interests and ideology are statistically significant in a few cases.

The results in Table 4 can generally be related to the fundamental question of support for a strong, nationalistic government versus support for a federal form of government. Delegates representing coastal areas or large states were more likely to favor issues that increased the power of the national government relative to state governments. The results indicate a negative relationship between distance from the coast and the probability of voting in favor of pro-national issues for Votes 2, 8, 9, 10, 13, and 15, and a positive relationship between distance and voting for the anti-national issues for Votes 4, 5, 6, 14, and 16. The distance variable is not significant for the remaining issue (Vote 7). The results are not as strong for the population variable, but we found that delegates from larger states were more likely to take a pro-national stance on seven of the fourteen votes. The results with respect to the population variable are not significant for the other seven votes.

Delegates who represented slaveowners were less likely to vote in favor of issues strengthening the national government. The results for constituents' slave holdings indicate that delegates representing slave interests were less likely to take a pro-national stance on nine of the votes. Specifically, they were more likely to vote no on Votes 2, 9, 10, 13, and 15, and more likely to vote yes on Votes 5, 7, 14, and 16. The results for the other five votes are not significant with respect to constituents' slave interests.

Delegates who served as officers in the Revolutionary War were more likely to support issues that would lead to a stronger national government in eight of the votes. The results for all but one of the other six votes are not significant. The estimates of the effects of the officer variable for one issue (Vote 16) are contrary to our expectations. The results for another measure of ideology, the English ancestry of the delegates' constituents, significantly influenced delegates to vote in favor of anti-national positions in five of seven cases (Votes 4, 6, 7, 8, and 10). Similarly, the estimates for the delegates' ancestry suggest voting in favor of an anti-national position in the four significant cases (Votes 4, 6, 15, and 16). The logit estimates for all other votes except two (Votes 11 and 16 for constituents' ancestry) are not statistically significant. The results for both ancestry variables are contrary to Main's findings in *The Antifederalists*.

The delegates' economic interests significantly influenced voting behavior for farmer and debtor interests and private security holdings for a small number of votes. The debtor variable indicates debtors were less likely to take a pro-national position for all five votes for which the debtor variable has statistically significant effects. The results for

private security holders indicate they tended to support a pro-national position in all four of the significant cases. Farmers were less likely to take a pro-national position for all three of the significant cases.

An alternative method of estimating the delegates' pro-nationalism, reflected in personal and constituent interests, is to pool the fourteen votes into one variable measuring the proportion of all votes in favor of pro-national issues. Elsewhere, we have estimated voting behavior using a variety of specifications with pooled votes. The results generally indicate that the same variables discussed here explain voting over a general pro-national position. A reasonable indication of the results, in fact, can be surmised from the summary of logit estimates presented in Table 4.⁶³

The findings reported in Table 4 are generally consistent with conclusions in previous studies, with the exception of the results for slave interests and English ancestry. Previous studies usually measured the impact of different interests by comparing simple summary statistics of vote frequencies over different interest categories. Most studies using this methodology find slaveowners either supported the Constitution or were indifferent. By using a multivariate statistical technique to analyze voting behavior, we find that slave interests, holding other variables constant, tended to reduce a delegate's likelihood of voting in favor of pro-national positions. We also find delegates of English ancestry were anti-national, other variables constant. As noted earlier, our expectation is that those with slave interests would have been opposed to a strong, nationalistic government. We have no strong theoretical reason to expect individuals of English ancestry to support pro-national positions.⁶⁴

Discussion of Selected Issues

The logit results from selected specifications for several of the most important issues are reported in Table 5.⁶⁵ Statistical results are expressed in terms of the estimated marginal effect, on the probability of a yes vote, of a change in a particular independent variable, holding other variables constant. This procedure expresses the coefficients of the logit analysis in the more familiar partial derivative form of ordinary least squares regression.

The second issue (Vote 2) was a provision permitting the national legislature to veto state laws. Coalitions capable of sustaining or

⁶³ See McGuire and Ohsfeldt, "A New Economic Interpretation."

⁶⁴ For studies that concluded slaveholding interests were pro-national, see Main, *The Antifederalists*; Norman K. Risjord, "Virginians and the Constitution: A Multivariate Analysis," *William and Mary Quarterly*, 31 (Oct. 1974), pp. 613-32 and *Chesapeake Politics*; Nadelhaft, *The Disorders of War*. Main, *The Antifederalists*, is the only author who makes an issue of ancestry as an indicator of political views.

⁶⁵ All estimates reported in Table 5 are based on the strong assumptions regarding delegates who did not vote. Logit coefficients are reported in the Appendix.

TABLE 5
ESTIMATED MARGINAL EFFECT OF A UNIT CHANGE IN AN INDEPENDENT VARIABLE ON THE PROBABILITY OF A YES VOTE:
SELECTED ISSUES AND SPECIFICATIONS, 1787 CONSTITUTIONAL CONVENTION

Independent Variables	Vote (from Table 1)				
	2	7	9	13	14
Personal Economic Interests (PE)					
Land Speculator ^a	-0.245	-0.111 × 10 ⁻¹	-0.137	0.328	0.381
Merchant ^a	-0.321	-0.793 × 10 ⁻³	-0.509 × 10 ⁻¹	0.532	^b
Farmer ^a		0.396 × 10 ⁻²	-0.481 × 10 ⁻¹	0.236 × 10 ⁻²	0.136 × 10 ⁻¹
Debtor ^a	0.362	^b	-0.959 × 10 ⁻¹	-0.364 × 10 ⁻¹	-0.158
Public securities	-0.366 × 10 ⁻¹	^c	0.521 × 10 ⁻¹	-0.223**	-0.132 × 10 ⁻¹
Private securities	0.729 × 10 ^{-2**}	^c	^b	0.342 × 10 ⁻¹	-0.127 × 10 ⁻²
Slaves	-0.312 × 10 ^{-2**}	0.507 × 10 ^{-4**}	0.175 × 10 ⁻²	-0.829 × 10 ^{-2*}	-0.124 × 10 ⁻²
Personal Ideology (PI)					
Age	-0.109 × 10 ⁻¹	0.464 × 10 ⁻³	0.374 × 10 ⁻²	-0.333 × 10 ^{-1**}	-0.335 × 10 ⁻²
English ancestry ^a	0.226	-0.916 × 10 ⁻¹	-0.458 × 10 ⁻¹	0.555 × 10 ⁻¹	0.140
Officer in war ^a	-0.437 × 10 ⁻¹	0.460 × 10 ⁻²	0.128	0.651**	-0.365*
Constituents' Economic Interests (CE)					
Slave/100 whites	-0.164 × 10 ^{-1**}	0.592 × 10 ^{-3**}	-0.673 × 10 ^{-2**}	-0.318 × 10 ^{-2**}	0.187 × 10 ^{-1*}
Net public debt	-0.832 × 10 ^{-1*}	0.204 × 10 ⁻²	-0.381 × 10 ⁻²	-0.122*	0.315 × 10 ⁻¹
Wealth	0.122 × 10 ^{-2*}	0.193 × 10 ^{-3**}	0.154 × 10 ⁻³	-0.117 × 10 ⁻²	-0.516 × 10 ^{-3**}
Constituents' Ideology (CI)					
Distance	-0.107 × 10 ^{-1*}	0.115 × 10 ⁻³	-0.242 × 10 ^{-2*}	-0.133 × 10 ^{-1*}	0.651 × 10 ^{-2*}
Population	0.584 × 10 ^{-2*}	0.362 × 10 ⁻⁴	-0.381 × 10 ⁻³	0.677 × 10 ^{-2*}	-0.223 × 10 ^{-2**}
English ancestry (%)	0.967 × 10 ⁻²	0.224 × 10 ^{-2*}	0.184 × 10 ⁻²	-0.127 × 10 ⁻¹	-0.156 × 10 ^{-1**}

* Statistically significant at the .05 level.

** Statistically significant at the .10 level.

^a For each binary variable, the marginal effect is calculated as the difference in the predicted probability of a yes vote when the variable has a value of 1 and the predicted probability when it has a value of 0, evaluating all other independent variables at their mean values.

^b Variable was excluded for this vote because all delegates with this characteristic voted unanimously.

^c Variable was excluded for this vote because the logit algorithm would not converge with all variables included. The variable was selected for exclusion because it was the least likely to affect voting behavior.

Note: The land variable was excluded from the specification for all votes reported here.

Source: Computed from logit analysis regression in Appendix. Because $P/(1 - P) = \exp(\alpha + \sum \bar{X}_i \beta_i)$, where P = the probability of a yes vote, α is the estimated constant, β_i are the estimated coefficients, and X_i are the independent variables, $\frac{\partial P}{\partial X_j} = \beta_j \exp(-\alpha - \sum \bar{X}_i \beta_i) / [1 + \exp(-\alpha - \sum \bar{X}_i \beta_i)^2]$.

blocking certain special-interest legislation at the state level may have doubted their ability to create a similar coalition at the national level. Delegates representing economic interests that had benefited from state-level special-interest legislation were expected to vote no on the issue, while delegates representing interests incurring costs were expected to vote yes.

The logit results (see Table 5) indicate delegates who were farmers were unanimously opposed to a national veto of state laws. Delegates who owned slaves or represented slaveowners and delegates representing backcountry areas were more likely to vote no, while delegates with private security holdings (primarily bank stock) and delegates representing large states were more likely to vote yes.

Although the impact of these interests was statistically significant, the marginal effects differed in magnitude. A 1.0 percent increase in a delegate's slave holdings reduces the predicted probability of a yes vote by 0.3 percent, *ceteris paribus*, while a 1.0 percent increase in the number of slaves per 100 whites in a delegate's state decreases the predicted probability of a yes vote on Vote 2 by 1.4 percent.⁶⁶ The largest marginal effect on voting behavior is related to a delegate's state population; a 1.0 percent increase in population increases the predicted probability of a yes vote by 4.5 percent. But the impact of private security interests on voting behavior was trivial. A 1.0 percent increase in the value of a delegate's private securities increases the predicted probability of a yes vote by less than 0.05 percent.

The predicted probability of a yes vote is substantially different for delegates with dramatically different interests. Compare, for example, the effects of changes in a delegate's holdings of slaves and private securities on his voting behavior on Vote 2. For a hypothetical delegate with no slaves and mean values for all other independent variables, the predicted probability of a yes vote is .439.⁶⁷ If the delegate had owned 100 slaves, the predicted probability falls to .159, and for 200 slaves, the predicted probability falls to .044. A hypothetical delegate with 100 slaves, no private securities, and mean values for all other variables has a .150 predicted probability of a yes vote. If personal slave holdings are reduced to zero and private security holdings are increased to \$10,000, the predicted probability rises to .501. The differences are substantial.

The statistical results for Vote 2 are plausible given the nature of state-level special-interest legislation which existed under the status

⁶⁶ These elasticities are calculated as $(\partial P/P)(\partial X_i/X_i) = \beta_i X_i (1 - P)$, where P is the predicted probability of a yes vote, X_i is a particular explanatory variable, and β_i is the estimated logit coefficient for that variable. All elasticities are evaluated at the means of the explanatory variables. See Hanushek and Jackson, *Statistical Methods*, chap. 7.

⁶⁷ The predicted probability of a yes vote is calculated as $P = 1/[1 + \exp(-\alpha - \sum \bar{X}_i \beta_i)]$, where α is the estimated constant, β_i is the estimated logit coefficient for variable X_i , and \bar{X}_i is a particular value of X_i (for example, the mean of X_i). See *ibid.*

quo. Slaveowners, for example, were afraid that a national legislature, potentially dominated by northern states, might veto state laws concerning slavery.⁶⁸ Given the existence of debtor relief statutes in many states and the potential for debtor relief measures in other states, it is not surprising that delegates with private security holdings tended to favor national veto power over state laws.⁶⁹ As farmers had been among the primary beneficiaries of debtor relief measures at the state level, their unanimous opposition to a national veto over state laws would be predicted. Representatives of large states apparently did not object to a national veto, perhaps because they expected their states to dominate the new national government.

Debates over the issue of strengthening a federal veto over state laws suggest that the delegates' sentiments reflected these voting patterns. One of the largest slaveholders at the convention, Pierce Butler (South Carolina), remarked that he was "vehement against the negative in the proposed extent, as cutting off all hope of equal justice to the distant states. The people there would not . . . give it a hearing."⁷⁰ Even though he thought there should be some limits to the federal negative, James Wilson (Pennsylvania), a nationalist with significant banking interests, argued that "the principal of it when viewed with a close and steady eye is right."⁷¹ Gunning Bedford (Delaware) could not have made the nature of the small states' apprehension of this issue more obvious at the convention: "Will not these large states crush the small ones whenever they stand in the way of their ambitions or interested views?" asked Bedford. He continued suggesting "it seems as if Pennsylvania and Virginia wished to provide a system in which they would have an enormous and monstrous influence." James Madison (Virginia) defended the concept of an absolute national veto of state laws, stating that such a power was "absolutely essential to a perfect system."⁷²

Export tariffs by the national government would be prohibited under the seventh issue.⁷³ Delegates who owned slaves were more likely to vote in favor of prohibiting export tariffs. The result is as expected, because well over half of these delegates obtained a major share of their livelihood from exports of rice and tobacco.⁷⁴ Delegates representing slaveowning interests were also more likely to have favored the prohibition (see Table 5). The positive effects for land and wealth

⁶⁸ Farrand, *Records*, vol. 2, pp. 95, 220–23, 364–74, 415–16.

⁶⁹ McDonald, *E Pluribus Unum*, pp. 289, 321–25.

⁷⁰ Farrand, *Records*, vol. 1, p. 168. All quotations of speeches are from James Madison's "Notes" contained in Farrand and are Madison's summary of what was actually said.

⁷¹ Farrand, *Records*, vol. 1, p. 166.

⁷² *Ibid.*, p. 167.

⁷³ On the importance of export tariffs at the convention, see fn. 46.

⁷⁴ McDonald, *We The People*, chap. 3.

variables shown earlier in Table 4 probably reflect the fact that southern states with export-based economies were generally wealthy and held a high share of wealth in land, relative to other states. It is not clear why debtors were unanimous in their support. The apparent indifference of delegates with other personal economic interests is as expected with the exception of merchants. Because a majority of the delegates with merchant interests was heavily involved in export trade, the results indicating no significant differences for merchant interests are contrary to expectations.

Despite their statistical significance, slave interests had a rather minor marginal impact on voting behavior on Vote 7. A 1.0 percent increase in a delegate's personal slaveholdings increases the predicted probability of a yes vote by only 0.002 percent, while a 1.0 percent increase in his constituents' slave holdings increases the predicted probability of a yes vote by only 0.017 percent, *ceteris paribus*. Yet delegates with widely divergent interests have significantly different predicted voting probabilities. For example, a delegate with no slaves, who represented an area with no slaves, and with average levels of all other interests has a predicted probability of a yes vote of .168. But if he personally held 50 slaves and represented an area with 25 slaves per 100 whites, the predicted probability of a yes vote is .765. If slave interests are increased to 100 personal slaves and 50 slaves per 100 whites, a vote to prohibit export tariffs by the national government is predicted to be nearly certain (.987).

Our statistical results as they relate to slave interests should be expected from reading the debates. Indeed, it appears that nearly all southern planters "sought to prevent taxes on exports."⁷⁵ One after another, southern slaveholding delegates stated their opposition to export tariffs. Pierce Butler (South Carolina) made known his strenuous opposition "to a power over exports," stating that export tariffs were "unjust and alarming to the staple states" and that he "would never agree to the power of taxing exports."⁷⁶ George Mason (Virginia), the largest slaveholding delegate at the convention, argued that southern states had legitimate reasons to suspect that export tariffs would work to the advantage of northern interests at the expense of those of the South. He continued by explaining that "the case of exports was not the same with that of imports . . . The impolicy of taxing [tobacco] had been demonstrated by the experience of Virginia."⁷⁷

On Vote 9, which proposed to prohibit absolutely state paper-money issues, delegates with private security interests unanimously supported the prohibition. The results (see Table 5) are as expected given the soft-

⁷⁵ McDonald, *E Pluribus Unum*, p. 289.

⁷⁶ Farrand, *Records*, vol. 2, pp. 360-74.

⁷⁷ *Ibid.*, p. 364.

money policies in many states and the general perception that the new national government would be less likely to emit inflationary paper money than the states.⁷⁸ It also may explain why delegates from the backcountry, possibly representing economically distressed agrarian interests, opposed the prohibition of state paper money. Delegates representing slaveowning interests also were more likely to oppose the prohibition, perhaps for similar reasons. The magnitude of the effects on voting behavior, however, were rather small. Moving 16 miles inland from the coast (the mean distance) decreases the predicted probability of a yes vote from 0.87 to 0.83. A 1.0 percent increase in constituents' slave interests reduces the predicted probability of a yes vote by 0.2 percent. The apparent indifference of delegates who were in personal debt is somewhat surprising, however, because inflationary issues of paper money could have relieved their financial situation.

Madison recorded very little discussion on Vote 9. Roger Sherman (Conn.), one of the debtors at Philadelphia, supported this absolute prohibition as a means of "crushing paper money," stating that "if the legislature could authorize emissions of it, the friends of paper money would make every exertion to get into the legislature in order to license it."⁷⁹ The only other delegate to speak on this roll call, according to Madison, was Nathaniel Gorham (Massachusetts). This merchant and land speculator thought that "an absolute prohibition of paper money would rouse the most desperate opposition from its partisans."⁸⁰ During another roll call, however, Elbridge Gerry (Massachusetts), a major financier at the convention, states that although he was opposed to a federal negative on all state laws he "had no objection to authorize a negative on paper money and similar measures."⁸¹

Export tariffs by states would be prohibited under the thirteenth issue. Similar issues (Votes 11 and 12) considered earlier appear to have involved compromise proposals. The results for Vote 13 indicate that delegates with public securities, slaveowners, and the representatives of slave interests were more likely to have opposed this provision than other delegates. Delegates from coastal areas and from large states were more likely to favor this prohibition (see Table 5).

Although all the marginal effects are statistically significant, they are quite different in magnitude. The largest partial effect on voting behavior was exerted by the delegate's state population, as a 1.0 percent increase in population increases the predicted probability of a yes vote by 3.0 percent. However, a 1.0 percent increase in personal slave holdings reduces the predicted probability of a yes vote 0.5 percent. Constituents' slave interests had a weaker effect on voting behavior, as

⁷⁸ Walton and Shepherd, *Economic Rise of Early America*, chap. 9.

⁷⁹ Farrand, *Records*, vol. 2, p. 515.

⁸⁰ *Ibid.*, p. 439.

⁸¹ Farrand, *Records*, vol. 1, p. 165.

a 1.0 percent increase in slaves per 100 whites is estimated to reduce the probability of a yes vote by 0.16 percent.

The economic reasons why slaveowning delegates were likely to oppose Vote 13 may not be obvious. But a possible explanation, given that import tariffs by states had already been prohibited, is that the delegates hoped to exploit through their state governments a degree of monopoly power in the export of slave-based products through export tariffs. In essence, it would ensure that states with export-based economies would collect the bulk of revenues from interstate tariffs. As Madison had noted earlier, export tariffs “might with particular advantage be exercised with regard to articles in which America was not rivalled in foreign markets, as Tobacco, etc.”⁸² We have no explanation for the apparent opposition of public security holders to this provision.

On Vote 14, which would require a two-thirds majority of the national legislature to enact laws concerning trade, delegates with merchant interests were unanimous in their opposition. But farmers and delegates who represented backcountry areas were more likely to support the provision. Interpreting voting behavior on this particular issue is complicated by a well-known vote trade, in which John Rutledge and other southern delegates agreed to vote against the two-thirds provision in exchange for support from Roger Sherman and other New England delegates for an extension on the limitation of slave imports.⁸³ Despite the obscuring effects of logrolling on the issue, however, it appears that delegates representing slave interests overall were more likely to support Vote 14 than other delegates (see Table 5).

In the debates, C. C. Pinckney (South Carolina) argued that “it was the true interest of the southern states to have no regulation of commerce” but, citing the “liberal conduct toward the views of South Carolina” by the eastern states, concluded that “no fetters should be imposed on the power of making commercial regulation . . .” Pierce Butler (South Carolina) “considered the interests of [the southern states] and the eastern states to be as different as the interests of Russia and Turkey,” but would vote against this provision in the spirit of reconciliation with the eastern states. However, C. Pinckney (also of South Carolina) believed “the power of regulating commerce was a pure concession on the part of the southern states.” Venting his frustration, George Mason asked, “Is it to be expected that [the southern states] will deliver themselves bound, hand and foot, to the eastern states . . .?” He later argued the failure to adopt this type of provision “would enable a few rich merchants in Philadelphia, New York and Boston, to monopolize the staples of the southern states, and reduce their value perhaps 50 percent. . . .”⁸⁴

⁸² Farrand, *Records*, vol. 2, p. 306.

⁸³ See Kelly and Harbison, *The American Constitution and Jensen, The Making*. On the significance of the two-thirds provision at the convention, see fn. 46.

⁸⁴ *Ibid.*, pp. 448–51, 631.

There are several plausible reasons why the results for all issues may not appear outstanding. A possible explanation is delegates were voting on interest-specific issues in some cases, and voting on issues of basic constitutional design in other cases. The former correspond to what Buchanan and Tullock term the “operational” level of public choice, and the latter correspond to what they term the “constitutional” level of public choice. Buchanan and Tullock argue that voting patterns related to personal economic interests are much more likely at the operational level than at the constitutional level, because individuals are more able to predict the economic consequences of specific operational issues than the consequences of general constitutional issues.⁸⁵ The dearth of significant coefficients for personal economic interest variables for many of the issues is not surprising, given the ambiguous or trivial impact of some issues on specific economic interests.

There are, of course, other possible reasons for the lack of statistical significance in all the results. As noted, there are data problems with two of the issues (Votes 1 and 3). It is possible that some of McDonald’s other inferred votes for individual delegates are in error. There is strong evidence of vote trading on one issue (Vote 14), and three issues (Votes 11, 12, and 13) appear to involve attempts to develop a compromise on the issue of state import and export tariffs. The possibility of logrolling and compromises over the remaining issues would obscure voting patterns for the issues and weaken the statistical results. With the possible exception of William Few (a Georgia delegate), no individuals who were “poor, subsistence farmers” were present at the Philadelphia convention. The underrepresentation of individuals viewed as Antifederalists and opponents of the Constitution makes it difficult to determine voting patterns.⁸⁶ The poorest results are for the final votes. Many delegates were absent for the last votes, and most of the last votes were decided almost unanimously by the delegates present (see Table 3). The sample size also is relatively small—never more than 53 and as little as 36 when “not voting” delegates are excluded.

Even though all the results are not overwhelming, several patterns related to economic interests are found, and most of the significant voting patterns indicated by the logit analysis make sense. For example, delegates with private security holdings (private creditors) unanimously opposed state paper-money issues. It also is reasonable that slaveowning delegates, who can be viewed as representing export interests, opposed export tariffs by the national government. It should not be surprising that the only significant economic interest effects are for issues where the impact was expected to be particularly strong. Significant coefficients on these variables are found primarily for issues with an economic component. Measures of ideology generally are better

⁸⁵ See Buchanan and Tullock, *Calculus of Consent*.

⁸⁶ On this point, see Rossiter, *1787*, chap. 12.

predictors of voting behavior than economic interest variables on the remaining issues.

VI. CONCLUSIONS

Our analysis of voting at the Philadelphia Constitutional Convention of 1787 reveals significant patterns on several issues related to the interests and ideologies of delegates and their constituents. The analytical framework employed is based on the view that political institutions are not necessarily formed purely on the basis of political and ideological principles, but are also influenced by the self-interest of individuals involved in the formation of new institutions. Self-interest, as used here, means satisfaction of both personal and constituent interests. Our results support the view that these interests played a role in determining specific clauses in the American Constitution. The voting patterns indicated by our statistical analysis generally support an economic interpretation of the Constitution because personal and constituent interests affected voting behavior on particular issues primarily when the interests could be significantly advanced by the outcome. It seems likely that the product of the convention would have been considerably different had the distribution of the delegates been more representative of the interests of the voting citizenry.⁸⁷

For issues with little direct impact on individual delegates or their constituents, few significant coefficients related to economic interests are obtained. Measures of ideology appear to be the only variables consistently explaining voting over the issues. For issues with a direct economic impact, delegates whose personal economic interests or constituents' economic interests would be adversely affected by the provisions of the new Constitution tended to oppose the provisions, while delegates who expected to benefit from the provisions tended to support them.

⁸⁷ Rossiter, *ibid.*, concluded that if a dozen backcountry farmers had attended the Philadelphia convention, there would have been no nationalist charter.

APPENDIX
LOGIT COEFFICIENTS FOR SELECTED ISSUES AND SPECIFICATIONS

Independent Variables	Vote (from Table 1)				
	2	7	9	13	14
Personal Economic Interests (PE)					
Land Speculator	-1.299 (1.261)	-1.324 (1.710)	-1.016 (1.071)	1.515 (1.685)	2.030 (1.385)
Merchant	-1.969 (2.085)	-0.137 (1.810)	-0.420 (1.720)	3.362 (2.694)	
Farmer		1.078 (2.937)	-0.389 (1.923)	0.009 (2.563)	0.094 (2.273)
Debtor	1.516 (2.299)		-0.700 (1.927)	-0.147 (2.537)	-2.063 (2.224)
Public securities (\$)	-0.165 (0.233)		0.476 (0.325)	-0.906** (0.475)	-0.094 (0.390)
Private securities (\$)	0.033** (0.019)			0.139 (0.165)	0.009 (0.070)
Number of slaves	-0.014** (0.009)	0.010** (0.006)	0.016 (0.012)	-0.033* (0.012)	-0.009 (0.012)
Personal Ideology (PI)					
Age	-0.049 (0.047)	0.084 (0.083)	0.034 (0.048)	-0.135** (0.078)	-0.023 (0.051)
English ancestry	1.047 (1.194)	-6.145 (4.085)	-0.421 (1.109)	0.226 (1.421)	1.006 (1.307)
Officer in war	-0.199 (0.947)	0.885 (1.468)	1.264 (1.034)	3.342** (1.823)	-2.959* (1.347)
Constituents' Economic Interests (CE)					
Slaves/100 white	-0.074** (0.047)	0.107** (0.053)	-0.061* (0.028)	-0.013** (0.006)	0.133* (0.049)
Net public debt	0.375* (0.175)	0.371 (0.274)	-0.035 (0.146)	-0.497* (0.227)	0.223 (1.268)
Wealth	0.055** (0.034)	0.035** (0.019)	0.001 (0.002)	-0.005 (0.010)	-0.004** (0.002)
Constituents' Ideology (CI)					
Distance	-0.048* (0.022)	0.021 (0.026)	-0.022* (0.010)	-0.054* (0.026)	0.046* (0.019)
Population	0.026* (0.001)	0.007 (0.009)	-0.003 (0.005)	0.028* (0.013)	-0.016** (0.009)
English ancestry (%)	0.044 (0.057)	0.408* (0.195)	0.017 (0.051)	-0.052 (0.074)	-0.111** (0.061)
Constant	-8.382 (6.110)	-44.971* (22.108)	0.305 (4.770)	6.184 (9.566)	10.665** (6.187)

* Statistically significant at the .05 level.

** Statistically significant at the .10 level.

Note: Asymptotic standard errors are in parentheses.

Source: See text.