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RULES, SUBJURISDICTIONAL CHOICE, AND CONGRESSIONAL OUTCOMES:
AN EVENT STUDY OF ENERGY TAXATION LEGISLATION
IN THE 93RD CONGRESS

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ABSTRACT

Formal models in political science are increasingly attentive to institutional features that ostensibly play a crucial part in shaping political outcomes. Propositions yielded by these models have proven difficult to test, however. This study has two aims. Its substantive objective is to extend the spatial model of legislatures to illuminate the mechanisms of influence by committees on congressional outcomes. A broader methodological purpose is to introduce to political science a new and promising technique for testing formal models. Event studies are based on the belief that many political outcomes affect the economic welfare of nongovernmental actors and that, accordingly, actors with a vested interest in public policies respond rationally to changing political expectations. The technique is illustrated by testing formally derived propositions about the effects of rules and of subjurisdictional choice (the Ways and Means Committee's decision about the dimensions of its Jurisdiction in which to propose legislation) on Congress's 1974 decision regarding taxation of oil and gas firms. The strong empirical results not only support the theory but also offer promising implications for continued development and testing of formal models of politics and political economy.

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I. INTRODUCTION

Studies of congressional decision-making rarely fail to stress the influence of standing committees on congressional outcomes. Committees possess advantages of information and expertise in their jurisdictions (Maass, 1983) and are recipients of increasing amounts of staff and resource support (Ornstein, et al., 1985). Because of self-selection, committees are often dominated by "preference outliers" who use committee resources to obtain outcomes that diverge from preferences of most noncommittee members (Shepsle, 1977). Multistage decision-making also facilitates committee influence. Committees are initial proposers of legislation, and the parent chamber may either defer to committees by refusing to amend their bills or may be restricted from offering amendments (Bach, 1981). Committee members may be powerful again as penultimate actors in conference committees (McGown, 1927; Vogler, 1971; Shepsle and Weingast, 1985) because conference reports typically are unamendable (Bach, 1984). Finally, a select few standing committees receive special treatment from standing rules of the chamber or from special

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rules from the Rules Committee. For example, legislation of the House Ways and Means Committee is normally protected by a restrictive rule (Manley, 1970; Fenno, 1973), and legislation of six standing committees is given privileged status which ensures that it can be taken to the floor without a special rule from the Rules Committee (Oleszek, 1984).¹

Although the received wisdom about committee influence comes primarily from empirical research, in the last decade formal theorists too have studied the relationship between committees and congressional outcomes. Early attempts to model committee decision-making were based on rather rigid assumptions. Jurisdictions were represented as single dimensions in a multidimensional choice space, and committee members were assumed not to incorporate knowledge about rules and preferences in the parent chamber into their first-stage decisions (Shepsle, 1979). While the initial results highlighted the importance of institutions for generating stable outcomes, the location of the equilibria tended if anything to understate the degree of committee

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influence. Subsequently, several assumptions were relaxed. Shepsle's initial model was extended to instances in which committee members exercise foresight and receive either open or closed rules for their legislation (Denzau and Mackay, 1983; Krehbiel, 1983) and in which jurisdictions may be multidimensional (Shepsle and Weingast, 1985). In these models, situations may arise in which the equilibria are more consistent with casual observations of Congress. Each of these extensions demonstrates the possibility of disproportionate

committee influence, and some of them provide general conditions under which committee choices determine the outcome.

Notwithstanding these theoretical developments and related casual observations, three forms of skepticism persist among political scientists. Some political scientists seem to doubt the effects of

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institutions on outcomes. Many question whether formal models of institutions clarify the relationships between Institutions and outcomes. And most share a belief that tests of these theories exceed the bounds of currently available empirical techniques. In the narrower context of committees and congressional outcomes, this study addresses skepticism about formal theory by raising two questions.

(1) Can formal models offer unique insights into the influence of committees on congressional outcomes? (2) Can the models be tested using real-world data? If both questions can be answered convincingly and affirmatively, then a broader Joint conclusion is justified.

Actual political institutions do affect outcomes, and formal theories of institutions can be useful in understanding how.

Initially a model is proposed that highlights an institutional and strategic basis for committee influence on congressional outcomes. The model departs from previous formal theories in two ways. First, it extends the spatial model from pure open or pure closed rules to modified rules which permit, for example, situations in which a closed rule is in effect on some but not all dimensions of a committee's

jurisdiction. Second, it introduces and formalizes a new element of committee strategy, called subjurisdictional choice (SJC). When a

standing committee considers legislation, it engages in two kinds of activities. The preponderance of attention in previous legislative theory is to the writing (or marking up) of bills on which the parent body subsequently acts. A more subtle but equally important feature of committee strategy stressed in our model is the committee's choice of dimensions in its jurisdiction on which to propose changes to the status quo. The results from the model of rules and SJC comprise our attempt to answer question (1).

The model alone is not likely to reduce skepticism about the empirical relevance of formal models. Therefore, by exploiting the fact that congressional outcomes have undeniable and often unambiguous effects on the economic welfare of nongovernmental actors, the major part of the study addresses question (2). Two theoretically derived propositions are tested by focusing on the House's consideration of energy tax legislation in the 93rd Congress. The political theory is imbedded in an expected utility model of economic actors who have a vested interest in the taxation of oil and gas companies. This permits a natural extension to situations in which the type of rule under which legislation is considered is not known with certainty, as was true in 1974. As rules and SJC affect outcomes so too should changes in expectations about rules and SJC affect expectations about outcomes. Employing a maintained hypothesis of the rational expectations of economic actors, the political theory is tested using an event study technique, which is common in the finance and economics literatures but unique to political science. In particular.

observation of the time series of returns to a portfolio of stocks of oil and gas firms permits assessment of whether changing expectations about congressional procedure have predictable economic effects. Both propositions are supported: rules and SJC affect expectations about outcomes as the model predicts.

Section II introduces the model of the relationship between rules, SJC and outcomes and places it in an expected utility framework amenable to testing. Section III presents a case that illustrates the potential effects of rules and SJC on outcomes. The case facilitates a test of joint hypotheses about institutions and outcomes and about the relationship between political and economic decision-making. Section IV contains the results of the test. Section V is a discussion of the implications of the study. Section VI is a brief summary.

II. A MODEL OF RULES AND SJC

A conventional spatial model of a legislature is employed in which it is assumed that a set N of legislators makes collective choices from an m -dimensional policy space, $X \subset \mathbb{R}^m$. Several assumptions are made about members' preferences, strategies and the institutional design of the legislature. Each legislator, $j \in N$, has a strictly quasi-concave utility function over $x \in X$, $U_j(x)$, with an ideal point $x^j \in X$. Members are perfectly informed about other members' utility functions and ideal points. Members' choice of alternatives from the policy space is sophisticated given the institutional arrangement.⁵ A committee is a subset of members. A

jurisdiction is a set of dimensions in the policy space. A committee system assigns members to committees, and a jurisdictional system assigns dimensions of the policy space to committees. Rules may be either closed (no amendments to a committee proposal), modified (only previously approved amendments) or open (any germane amendments).⁶

The following notation is adopted. Let

x^s = the status quo (or reversion) point,

x^b = the bill reported by the committee,

x^f = the ideal point of the median voter on the floor,

x^c = the ideal point of the median voter on the committee,

x^p = the ideal point of the median voter of the majority party,

x^a = an amendment to the committee's bill,

$R_j(x)$ = the set of points preferred or indifferent to x by the j th member⁷,

CR = closed rule,

MR = modified rule, and

OR = open rule.

Three examples are presented to illustrate the effects of congressional procedure (rules and SJC) on outcomes. The examples are stylized either because of theoretical necessity or for clarity of exposition. Simplifications not required are the restricted dimensionality of the examples and the circularity of indifference curves. However, the floor median voter is assumed to be pivotal on all dimensions, and the committee is treated as an individual. Various arguments have been made to justify anthropomorphizing

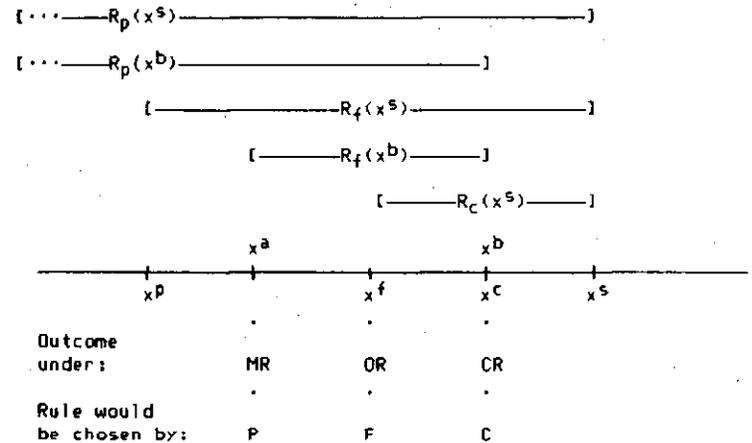
committees, including: committees are small groups and thus can come to agreement on bills even in the absence of a majority rule equilibrium; committees have chairmen who in effect are dictators; and committee members typically have homogenous preferences. While each is lacking in congressional plausibility, two points should be stressed. First, there is no known alternative to using an assumption such as this for the case of multidimensional jurisdictions. Second, the ultimate test should be an empirical one. If the model predicts satisfactorily, then it will have been a useful first step in spite of the strength of some of its assumptions.

Rules, Subjurisdictional Choice and Outcomes

Figure 1 demonstrates theoretically how rules and jurisdiction can determine legislative outcomes. Suppose the committee's legislation is considered under a CR. Behaving sophisticatedly, the committee reports a bill that maximizes the utility of the median member of the committee subject to the constraint that $x^b \in [R_c(x^s) \cap R_p(x^s)]$. In this case, $x^b = x^c$. Notice, however, that the committee's proposal power is undermined by an OR. If amendments are permitted on the floor, then the outcome is the floor median, x^f (Black, 1948, 1958). It is theoretically impossible even for a sophisticated committee to preclude x^f under an OR.

The importance of choice of rules is illustrated by cases in which alternative members dictate the rule.⁸ First, if the median member of the committee with jurisdiction selects the rule, then a CR results. An OR never yields a better outcome for the committee median

FIGURE 1
Different Outcomes under Different Rules and Choosers of Rules



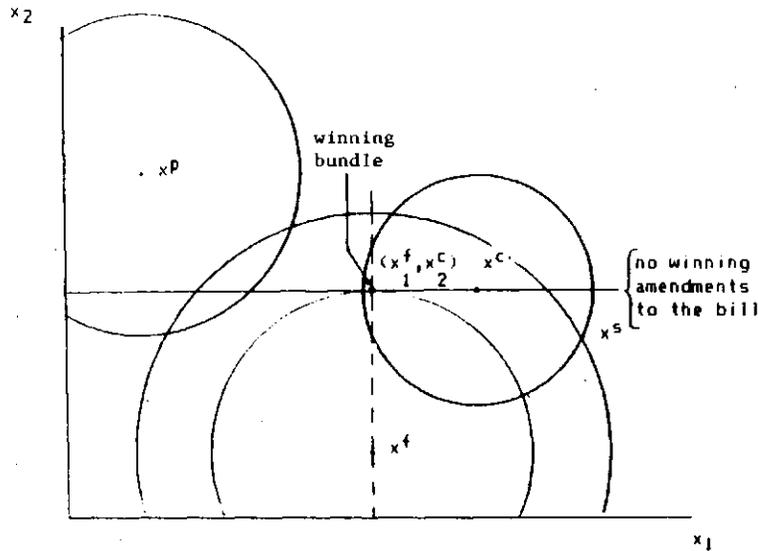
member and, as Figure 1 shows, sometimes results in a worse outcome than the CR. Second, if the selection of the rule is made by the floor median voter, an OR is chosen because it always results in x^f . Finally, suppose the rule is chosen by the median member of the majority party. The median member of the majority party chooses an MR that permits consideration of a utility maximizing x^a such that $x^a \in [R_p(x^s) \cap R_p(x^b) \cap R_f(x^s) \cap R_f(x^b)]$. That is, the median member of the majority party provides for a vote on an amendment to the committee's original proposal that both he and the median voter on the floor prefer to the bill and to the status quo. In sum, alternative rules and how they are chosen can result in a wide range of outcomes.

As in the above example, the traditional spatial model of legislatures focuses on the committee's decision regarding location of its bill, x^b . For committees with multidimensional jurisdictions, however, a prior committee decision is the dimensionality of its bill—the subset of dimensions in its jurisdiction in which it elects to propose changes to the status quo, x^s . The committee's decision about dimensionality is called subjurisdictional choice (SJC). The notation used for SJC accentuates the difference between a committee's choice of the subjurisdiction for a bill and its choice of location of the bill. When an x contains a superscript, such as x_1^b , it refers geometrically to a coordinate on a dimension and substantively to the content of the committee's bill. Without a superscript, such as x_2 , the reference is to the entire dimension of policy space, with the subscript denoting which dimension. Accordingly, SJC is represented

by an n -tuple with components x_i ($i = 1 \dots n$) or "...", where a "." denotes the absence of a proposed change on that dimension. For example, a committee with a two-dimensional jurisdiction must make one of five SJs: report no change to the status quo, denoted (\cdot, \cdot) ; propose a change to the status quo only on the first dimension, (x_1, \cdot) ; propose a change to the status quo only on the second dimension, (\cdot, x_2) ; propose separate changes to the status quo on each dimension, (x_1, x_2) ; propose changes to the status quo on both dimensions at once, (x_1, x_2) .

Figure 2 illustrates how a committee can use SJC to maintain the status quo even given an unfavorable rule. The configuration of preferences on the x_1 dimension is identical to that in Figure 1. With SJC = (x_1, \cdot) , the committee reports $x_1^b = x_1^c$ given a CR. In contrast, if an OR or MR amendment is permitted on the x_1 dimension, the committee's (weakly) best SJC is (x_1, x_2) . Any bill with an SJC of (x_1, \cdot) is vulnerable to amendment, such as x^a , for reasons illustrated in Figure 1. However, after an SJC of (x_1, x_2) , the committee sophisticatedly locates the bill to ensure its defeat. The committee protects against any OR or MR amendment by reporting the bill $x^{ob} = (x_1^c, x_2^{\theta} + \epsilon)$ where x_2^{θ} is the highest vertical coordinate of the points contained in $R_f(x^s)$. This bill is called an obstructive bundle⁹ because all permissible amendments under the OR or MR on x_1 are outside $R_f(x^s)$ and thus fail if offered. Obstructive bundles exemplify the defensive powers of committees via SJC.

FIGURE 3
Sophisticated SJC and a Winning Bundle



KEY

Rule	SJC	Bill	Outcome
(MR, CR) or (OR, CR)	(x_1, x_2)	(x_1^f, x_2^c)	(x_1^f, x_2^c)

income of the agent or the agent's net wealth transfer. Assume that the various policies are ranked from their highest x^1 to their lowest x^k values for the agent, and that preferences satisfy the von Neumann-Morgenstern axioms. Further let $\pi = (\pi^1, \dots, \pi^1, \dots, \pi^k)$ represent the agent's subjective probability assessment of the outcomes. Given this characterization, the agent's expected utility is given by

$$v(x, \pi) = \sum_{1 \leq k} \pi^k v(x^k), \tag{2.1}$$

where $\sum_{1 \leq k} \pi^k = 1$. Thus, the agent's expected utility of the policy outcomes is conditioned by his expectations over legislative outcomes. For instance, if an event makes the agent believe that x^1 is more likely and x^k is less likely to occur, his expected utility changes. To quantify the effects of changes in π on $v(x, \pi)$, totally differentiate (2.1). Subject to the constraint that $\sum_{1 \leq k} d\pi^k = 0$, this yields

$$dv(x, \pi) = \sum_{1 \leq k} v(x^k) d\pi^k. \tag{2.2}$$

Equation (2.2) is illustrated by two examples on which the subsequent empirical tests are based. Assume that there are five possible congressional outcomes, x^S, x^C, x^W, x^F , and x^A , for which $v(x^S) > v(x^C) > v(x^W) > v(x^F) > v(x^A)$. Following the model presented above, these outcomes represent the status quo, the committee median, the winning bundle under the SJC of (x_1, x_2) , the floor median, and P's amendment under an SJC of (x_1, \cdot) . Suppose the agent is certain that

the policy will be considered under a CR with an SJC of (x_1, \cdot) . Given the theory presented above, this implies that $\pi = (0, 1, 0, 0, 0)$. His expected utility given π is simply $v(x^c)$. Next, suppose that an event causes him to believe that an MR may be applied to the bill. His revised probability assessment is $\pi = (0, 1-\rho, 0, 0, \rho)$ where $0 < \rho < 1$, since he knows that an MR with SJC of (x_1, \cdot) yields x^a , but he is uncertain that an MR will be used. The change in his utility due to the change in his expectation regarding the rule is equal to $-v(x^c)_\rho + v(x^a)_\rho = \rho[v(x^a) - v(x^c)] < 0$. Thus,

Proposition 1: Given the agent's ranking of the alternatives, the relationship between rules and outcomes, and an SJC of (x_1, \cdot) , an increase in the probability that x_1^b will be considered under an MR as opposed to a CR reduces the agent's expected utility.

Similarly, suppose the agent is certain that the bill will be considered under an MR with an SJC of (x_1, \cdot) . In this case, $\pi = (0, 0, 0, 0, 1)$ and his expected utility is given by $v(x^a)$. Assume that the agent's beliefs change so that there is a possibility that the committee's SJC is (x_1, x_2) . Then his revised subjective probability estimate is either $\pi = (\rho, 0, 0, 0, 1-\rho)$ where $0 < \rho < 1$ or $\pi = (0, 0, \tau, 0, 1-\tau)$ where $0 < \tau < 1$, depending on the previously illustrated relationship between $R_f(x^s)$ and $R_c(x^s)$. In either case,

the change in his utility due to this altered expectation is positive. Thus,

Proposition 2: Under an MR, an increase in the likelihood of an SJC of (x_1, x_2) as opposed to (x_1, \cdot) increases the expected utility of the agent.

Joint consideration of the political model and expected utility theory has precise implications for the behavior of agents affected by congressional policies. If the goal of an economic agent in an uncertain environment is to maximize his expected utility, then changes in expectations regarding congressional rules and SJC result in changes in the agent's behavior. For example, suppose that x represents the after-tax profits of a corporation under alternative policies and that these profits are highest under x^s and lowest under x^a . The amount an agent would be willing to pay for a claim, such as stock, on these after-tax profits clearly depends on his expectations regarding the rules and SJC. Moreover, changes in his expectations result in changes in the maximum amount he is willing to pay for such a claim. These assumptions form the basis for the empirical test in section IV.

III. ENERGY TAX LEGISLATION IN THE 93rd CONGRESS

The previous section demonstrates how congressional procedure can theoretically affect policy. In this section an actual case is discussed in which changes in rules and SJC seem to have been critical determinants of the legislative outcome. The case is used for two

reasons. First, while the relationship between congressional institutions and outcomes can be demonstrated analytically, few illustrations or tests of these hypotheses exist in the literature. Second, while there is little direct support for the hypothesis that institutions affect outcomes, there is no direct support for the hypothesis that nonlegislative actors who are affected by the policy incorporate strategic and institutional subtleties into their decision-making. The case permits a test of the joint hypothesis that rules and SJC have predictable effects on outcomes and that interested economic agents recognize or can be informed of this relationship and subsequently incorporate it into their decisions.

Federal Taxation of Oil and Gas Firms¹⁰

Oil and gas firms were subject to many special provisions of the federal tax code in 1974 when the second session of the 93rd Congress convened. Like all firms, oil and gas producers were allowed to depreciate the costs of capital investments and expenditures. But unlike most other firms, oil and gas producers could employ one of two methods of depreciation. First, they could use the standard method of depreciating a portion of the cost of the assets in each year until the original cost equaled accumulated depreciation. This method of depreciation was referred to as cost depletion. Alternatively, an oil and gas firm could use percentage depletion to recover its exploration and development costs. Percentage depletion was based on the gross income generated from a property subject only to the constraint that the total deduction not exceed some fixed percentage of the net income

of the property. For instance, suppose the percentage depletion, also called the oil depletion allowance (ODA), was 22% so long as the total deduction did not exceed 50% of the net income from the property. If the gross income generated by a well was \$100,000, the maximum deduction for that well was \$22,000. If, however, the net income (gross income minus other deductions) from the well was \$40,000, then only \$20,000 of the deduction was allowed. The total depreciation taken on any given property under the percentage depletion was unrelated to the costs of acquiring the property. Percentage depletion, along with expensing of intangible drilling expenses and dry holes, generated two special and salient features to the federal tax treatment of oil and gas production. First, by accelerating depreciation, the tax treatment allowed a firm to defer taxes. Second, by increasing total allowable deductions on a given property, it reduced a firm's total tax liability.

Oil and gas firms were also affected by some generic features of the federal tax code. Firms earning income from foreign sources subject to foreign taxation qualified for equivalent levels of tax credits against their U.S. tax liabilities. The creditability of foreign income taxes proved particularly beneficial for U.S., multinational oil and gas producing firms. In 1973, most of these companies had accumulated foreign tax credits (FTC) in excess of their U.S. tax liabilities.

The Economic and Political Environment of the 93rd Congress¹¹

In many respects, the time was ripe for changes inimical to the interests of gas and oil producing firms. Recent changes in the structure of international petroleum markets was a major contributing factor. In 1973, the Organization of Oil Exporting Countries (OPEC) restricted production and deliveries. OPEC's actions increased prices for all petroleum products and substitutes to Western and Third World countries and led to large increases in profits of the oil industry. These so-called windfall profits spawned the ire of many voters and congressmen. An attempt to tax windfall profits had failed the previous year because of a successful filibuster in the Senate. Indeed, the House's reluctance to pass any energy legislation that did not contain a windfall profits tax led to Congress's failure to pass any energy bill in the first session.

Existing criticisms of the oil and gas industry continued in the second session of the 93rd Congress. Three distinctive provisions, the ODA, the FTC and the expensing of intangible drilling expenses, again provided a focal point for criticisms of the tax treatment of large multinational energy companies. Indeed, it was estimated that the ODA and the immediate deductibility of intangible drilling expenses alone provided the industry with approximately \$3.3 billion in federal subsidies in 1974. Recent studies also called into question the notion that these tax breaks were necessary to stimulate the development of domestic energy supplies. In short, it was all but inevitable that Congress would conduct a thorough and critical

examination of oil industry tax policies.

Jurisdiction over tax legislation in the House belongs exclusively to the Ways and Means Committee. Prior to 1974, compositional and behavioral changes in the committee were generally unfavorable to the interests of oil and gas producers. The minority leadership of the committee had become less cooperative with chairman Wilbur Mills, a pro-oil representative. The Democratic median on the committee had moved in an anti-oil direction in part due to turnover following the 1972 elections but more likely due to changes in members' preferences brought on by the oil embargo and corresponding increasing profits of oil companies.

In addition to changes within the committee, its relationship with the House Democratic leadership changed as a result of reforms initiated by the Democratic Caucus in February, 1973. One reform made it possible for a Democratic majority to challenge the right of the Rules Committee to issue a closed rule for legislation reported by a committee. The jurisdiction of the Ways and Means Committee had come under scrutiny, also. The net effect of these changes was that the authority of the committee chairman and the autonomy of the committee itself were being challenged in ways that had not been observed since the reforms of 1910.

Consideration of the Energy Tax Act of 1974

The Oil and Gas Energy Tax Act of 1974 began its legislative journey in the spring in an environment hostile to oil and gas industries and to the Democratic leadership of the House Ways and

Means Committee. The committee met in early February to begin mark-up of the bill. Attempts by the chairman to construct a bill representing the committee's median proved difficult. Conservative members of the committee preferred the status quo. They saw little advantage to eliminating or reducing the ODA or FTC or to imposing a windfall profits tax on oil producing companies, particularly given the goal of developing domestic energy production. Liberal members demanded immediate elimination of the ODA, imposition of a windfall profits tax, and the abolition of FTC. By the end of April, a natural compromise emerged which contained a gradual (three year) phase-out of the ODA, a limit (52.8) to the percentage of FTC a company could apply against its U.S. tax liabilities, and a weakened windfall profits tax supported by the Nixon Administration. On May 1, the committee reported H.R. 14462 in this state and, as a matter of standard procedure, requested a CR for its consideration on the floor.

Also on May 1, Representative Green, a liberal member of the Ways and Means Committee, began collecting signatures in an attempt to convene the Democratic Caucus to review the committee's request for a CR on H.R. 14462. In particular, his aims were to collect 50 signatures, to call a Caucus meeting, and to request that the Caucus instruct the Rules Committee to write an MR that provided for a separate vote on an amendment to repeal the ODA retroactively beginning January 1, 1974. Within two days, over half of the Democratic members of the House signed the petition. On May 6, another liberal member of the committee, Representative Vanik, used

this same procedure to arrange for consideration an amendment calling for the immediate elimination of the FTC. On May 15, the Democratic Caucus met and overwhelmingly endorsed both requests. The Rules Committee was officially instructed to write an MR for H.R. 14462 that would permit debate and votes on these two anti-oil amendments.

The Ways and Means Committee and its leadership were not powerless against the Democratic Caucus, however. The committee's chairman first responded by delaying floor consideration and refusing to appear before the Rules Committee. Then, on June 6, the chairman threatened to exercise his prerogative under House rules to bring the privileged bill directly to the floor without a rule. Were this to occur, H.R. 14462 would be considered under an OR with all amendments meeting standard germaneness requirements in order. It was widely believed that consideration under an open rule would effectively kill the bill. Liberals and conservatives alike could propose amendments, and debate would not be limited. Mills's strategy was perhaps best characterized by Rules Committee member Richard Bolling, who said it "was like offering a person coming off the desert a drink of water and then totally immersing him with a tub" (CQ Almanac, 1974, p. 189).

Many Ways and Means Committee members opposed the OR, too. Consequently, the committee met again on June 10 and decided to repeat its request for a CR. The House leadership, wishing to avoid a potentially destructive party fight, postponed consideration of the rule request for energy tax legislation until after the summer recess. Thus, in the early part of the summer uncertainty prevailed concerning

the rule under which H.R. 14462 would be considered. Relative to the spring, however, it was clear that a CR was less likely and an MR more likely.

In the middle of July the Ways and Means Committee met once again to consider energy and other pieces of pending tax legislation. The outcome of these meetings was the incorporation of H.R. 14462 into the general tax reform bill, which was reported out of committee on August 2. For two reasons, this strategy was recognized as inimical to the liberal interests in the committee and in the House in general. First, few members, particularly the House leadership, were interested in considering a general (multidimensional) tax bill under an MR. The number of amendments commanding the support of a majority of the members of the Democratic Caucus could be quite large under these conditions, and it would be virtually impossible to ensure final passage.¹² Second, the general tax bill was considered too lengthy and complex in its current form for complete consideration and passage in the current session, particularly in light of pressing business in the Senate.¹³ Thus, the effect of the July meetings of the Ways and Means Committee was to reduce the likelihood that energy tax legislation would be considered alone. Indeed, the new expectations were that a multidimensional tax bill would be reported.

As the remainder of 1974 progressed, it became increasingly apparent that no tax legislation would be forthcoming from the 2nd session of the 93rd Congress. Wilbur Mills, for reasons transcending the scope of the current analysis, resigned the chairmanship of the

Ways and Means Committee on December 4. The new President was not favorably disposed towards general tax legislation. And the Senate, which had helped dispose the old President, had little time remaining to grapple with the minutiae of tax policy. As of January, 1975, the tax treatment of the oil and gas had not changed. Table 1 presents a brief chronology of the events concerning energy energy tax legislation in the 93rd Congress.

IV. EMPIRICAL ANALYSIS

Changes in expectations regarding the legislative procedures used to consider energy tax proposals should have altered the willingness of agents to pay for residual claims (stocks) to the profits of firms in the oil and gas industry. In this section we test this hypothesis by examining the relationship between changes in prevailing expectations about congressional procedure for H.R. 14462 and the return to a portfolio of stocks of oil and gas producing firms.

Institutional Expectations for Energy Tax Legislation

The discussion of H.R. 14462 suggests that there were two major events affecting agents' expectations about the institutional regime under which energy tax legislation would be considered. Until late April, 1974, the prevailing expectation was that H.R. 14462 would be considered under a CR like all previous tax legislation originating in the Ways and Means Committee from 1932 to 1973.¹⁴ Since the bill was essentially unidimensional in an anti-oil pro-oil space, the SJC

TABLE I

CHRONOLOGY OF EVENTS PERTAINING TO ENERGY TAX LEGISLATION

<u>Date</u>	<u>Event</u>
Nov.-Dec., 1973	President Nixon outlines effects of energy shortage; proposes legislation. Senate acts promptly. House acts slowly due to dispute concerning imposition of a windfall profits tax. Senate and House cannot agree on legislation. No energy legislation passes during the 1st session of 93rd Congress.
Jan.-Apr., 1974	93rd Congress reconvenes. Hearings begin on taxation of oil industry. Mark-up of Energy Tax Act begins. Many anti-oil provisions are discussed. Administration proposes a modest windfall profits tax. Chairman Mills supports gradual phase-out of the ODA. Limitations on FTC are proposed. On April 30th, the Oil and Gas Energy Tax Act is reported by the Ways and Means Committee. The committee formally requests a closed rule.
May-June, 1974	Green and Vanik petition House Democrats for a caucus to review the closed rule request on H.R. 14462. Caucus votes to instruct the rules committee to write a modified closed rule permitting amendments to repeal the ODA and FTC for oil and gas firms. Mills delays by refusing to appear before the Rules Committee. Mills threatens open rule. Ways and Means Committee reconvenes and decides to request a closed rule again. House leadership postpones consideration of H.R. 14462.
July-Aug., 1974	Ways and Means Committee reconvenes and votes to combine H.R. 14462 with general tax bill with minor modifications. Green and Vanik, together with industry supporters, oppose action. No further action on tax bill is taken.
Sept.-Dec., 1974	No action taken until post-election session. In late November, committee reports bundled bill, again opposed by liberal members of the committee. Chairman Mills appears with stripper on Boston stage. New Ways and Means Committee Chairman Ullman requests rule for H.R. 17488, the bundled tax bill. Rules Committee refuses to move bill to House floor. Tax reform in the 93rd Congress dies.

was simply (x_1, \cdot) . Expectations about the rule were likely to have changed throughout early May, however, as petitions were circulated, signatures were obtained, and finally, on May 15, the Democratic Caucus voted to instruct the Rules Committee to write an MR.

A second change in expectations occurred in late July and early August. On August 2, the Ways and Means Committee voted to report the substance of H.R. 14462 in the more general tax bill, H.R. 17488, thus implying tax legislation with an SJC of (x_1, x_2) .¹⁵ Since committee deliberations occurred throughout the last half of July and the committee's activity became public knowledge, expectations were probably changing over this entire period. Figure 4 summarizes these expectations using the notation introduced in section II.

Capital Market Reactions to Procedural Expectations

The capital market reactions of a portfolio of stocks of oil and gas firms to changes in procedural expectations for H.R. 14462 are measured below. To reiterate, the value of a residual claim to the profits of a firm reflects the present value of all estimated future profits based on information currently available. The arrival of new information with implications for expectations of future profits affects the current value of the claim. In particular, because alternative procedures yield different levels of post-tax profits, a change in the procedural expectations regarding energy tax legislation should be reflected in the current value of a portfolio containing

FIGURE 4

Prevailing Expectations About Oil and Gas Taxation, 1974

	January	May 15	August 2	December
Rule	(CR,CR)	(MR,CR)	(MR,CR)	
SJC	(x ₁ ,·)	(x ₁ ,·)	(x ₁ ,x ₂)	
Bill	(x ₁ ^C ,·)	(x ₁ ^C ,·)	(x ₁ ^f ,x ₂ ^{θ+ε})	
Outcome	(x ₁ ^C ,·)	(x ₁ ^a ,·)	(x ₁ ^s ,x ₂ ^s)	

stocks of gas and oil producers.

Assumptions about the capital market and the formation of stock prices must be specified to conduct the test. The first assumption is that the efficient markets/rational expectations hypothesis holds. This hypothesis states that stock prices reflect all available relevant information. An implication of the hypothesis is that it is impossible to make profits by trading stocks on the basis of available information. That is, if R_{it} is the return on a stock or portfolio of stocks i in period t , Φ_{t-1} is the information available in period $t-1$, $E(\cdot)$ is the expectation operator, and $\epsilon_{it} = R_{it} - E(R_{it}|\Phi_{t-1})$, then $E(\epsilon_{it}) = 0$. Essentially, this hypothesis implies that the effects of new information are reflected fully and quickly in stock prices. The empirical evidence supporting this hypothesis is substantial (Schwert, 1981).

The second assumption is that there is a common factor in the return to all assets or a portfolio of assets. This common factor is the return to a value-weighted portfolio containing all tradeable assets. Given this assumption, the return to any given security or portfolio of securities is

$$R_{it} = \alpha_i + \beta_i R_{mt} + \epsilon_{it} \tag{4.1}$$

where R_{it} and ϵ_{it} are defined above, R_{mt} is the return to a value-weighted portfolio of all marketable securities, and α_i and β_i are parameters. Equation (4.1), referred to as the market model, yields estimates of the return to a stock or portfolio of stocks which

control for marketwide variations in the return to all traded assets. The market model can be generated under alternative theoretical assumptions and has substantial empirical support (Fama, 1976).

Conditional on the information set, Φ_{t-1} , and the contemporaneous return to the market portfolio, equation (4.1) implies that the equilibrium expected return to asset i is simply $E(R_{it} | \Phi_{t-1}, R_{mt}) = \alpha_i + \beta_i R_{mt}$. Thus, equation (4.1) provides a basis for measuring "unexpected" or "abnormal" returns to assets. Abnormal returns are the measured parts of R_{it} unaccounted for by equation (4.1). Given the rational expectations/efficient markets hypothesis, abnormal returns result from changes in information relevant for determining the future profits of firms in the specified portfolio.

In the present case, changes in economic agents' expectations regarding the rules and SJC for energy tax legislation should result in abnormal stock returns. In particular, two predictions are tested. Given an SJC of (x_1, \cdot) , increases in the likelihood of an MR as opposed to a CR should generate negative abnormal returns (Proposition 1). Given an MR, increases in the likelihood of an SJC of (x_1, x_2) as opposed to (x_1, \cdot) should generate positive abnormal returns (Proposition 2). Thus, the following equation is estimated:

$$R_{it} = \alpha_i + \beta_i R_{mt} + \gamma_1 D_{1t} + \gamma_2 D_{2t} + \varepsilon_{it}, \quad (4.2)$$

where

R_{it} = the weekly return to the equally-weighted portfolio of stocks of oil and gas producers listed in Table 2.¹⁶

TABLE 2

FIRMS CONTAINED IN OIL AND GAS PORTFOLIO*

FIRMS	
Ameranda Hess	Apco Oil
Ashland Oil	Atlantic Richfield
Clark Oil and Refining	Commonwealth Oil and Refining
Conoco Oil	Crown Central Petroleum
E D G. Inc.	Earth Resources
Exxon Corp.	Getty Oil
Gulf Oil	Holly Corp.
Husky Oil	Kerr McGee
Kewanee Inds.	Marathon Oil
Mobil	Murphy Oil
O K C. Corp.	Pacific Petroleum
Phillips Petroleum	Quaker State Oil
Reserve Oil and Gas	Shell Oil
Standard Oil of California	Standard Oil of Indiana
Standard Oil of Ohio	Sun Oil
Tesoro Petroleum	Texaco Oil
Total Petroleum	Union Oil of California

*This list represents all firms in the 2911 and 2912 Standard Industrial Classification (SIC) codes for which daily stock return data appeared on the Center for Research and Security Prices (University of Chicago) for the dates relevant for estimation.

R_{mt} = the weekly return to the value-weighted market portfolio of all stocks traded on the New York and American Stock Exchanges.

D_{1t} = dummy variable equaling one in weeks of increasing expectations of an MR for H.R. 14462, given an SJC of (x_1, \cdot) , and zero is otherwise.

D_{2t} = a dummy variable equaling one in weeks of increasing expectations of SJC of (x_1, x_2) given an MR, and zero otherwise,¹⁷ and

e_{it} = the error term.

The hypothesis $H_1^0 : \gamma_1 = \gamma_2 = 0$ is tested against the alternative $H_1^A : \gamma_1 < 0, \gamma_2 > 0$. Rejection of H_1^0 supports the joint hypothesis that rules and SJC affect outcomes and that economic agents recognize this relationship and incorporate it in their decisions.

Additionally, we test $H_2^0 : -\gamma_1 = \gamma_2$ against $H_2^A : -\gamma_1 \neq \gamma_2$. Rejection of H_2^0 implies that there is a significant difference between expected outcomes under an SJC of (x_1, \cdot) with a CR and an SJC of (x_1, x_2) and with an MR on x_1 .

Estimation

Table 3 contains the results of OLS estimations of equation (4.2) using data for the three year period January 1, 1973 through December 31, 1975. The alternative models are designed to detect changes in expectations occurring in weeks other than those containing the primary event dates of May 15 (the Democratic Caucus vote) and

TABLE 3

ESTIMATION OF EQUATION (4.2) FOR ALTERNATIVE CODINGS OF D_{1t} AND D_{2t}

$$R_{it} = \alpha_i + \beta_i R_{mt} + \gamma_1 D_{1t} + \gamma_2 D_{2t} + e_{it}, \quad t = 1, \dots, 157$$

Event Interval	Parameter Estimates ^a				Test ^b of H_1^0	Test ^c of H_2^0	R^2
	$\hat{\alpha}_i$	$\hat{\beta}_i$	$\hat{\gamma}_1$	$\hat{\gamma}_2$			
(0)	.003 (1.94)	1.06 (22.03)	-.020 (1.106)	.010 (0.555)	.777	.148	.766
(-1,1)	.003 (2.07)	1.05 (23.01)	-.029 (2.950)	.020 (1.994)	6.47**	.786	.773
(-2,1)	.003 (1.90)	1.06 (22.78)	-.018 (2.00)	.018 (2.00)	4.10**	.000	.775
(-3,1)	.003 (1.95)	1.05 (22.52)	-.016 (1.98)	.013 (1.58)	3.31**	.079	.773
(-4,1)	.003 (1.95)	1.06 (22.54)	-.013 (1.83)	.010 (1.40)	2.76*	.091	.772

^aT Statistics reported in parenthesis below parameter estimates

^b Likelihood ratio test statistic is distributed as an F(2,153)

^c Likelihood ratio test statistic is distributed as an F(1,153)

*Significant at the ten percent level

**Significant at the five percent level

August 2 (the Ways and Means Committee vote). There are two reasons that changes outside of these two event weeks may have occurred. First, in both cases information and evaluations of the primary congressional event were published in major newspapers in the week subsequent to the event's actual occurrence.¹⁸ Thus, we try to capture the effects of these news reports on expectations by including in the definitions of D_{1t} and D_{2t} the week following the primary event week. Second, changes in expectations regarding procedural regimes undoubtedly occurred prior to the actual events. Agents may have forecasted the effects of the Democratic Caucus's action on the outcome once the procedure was initiated. Similarly, the leaking of information by members or staff of the Ways and Means Committee may have reached the capital market prior to the formal event. These possibilities suggest a need to analyze several types of coding. Using May 15 and August 2 as the event dates for D_{1t} and D_{2t} , the intervals (0), (-1,1), (-2,1), (-3,1) and (-4,1) are the alternative codings. The first number in parentheses indicates the number of weeks before the event week and the second represents the number of weeks after the event week included in the definitions of D_{1t} and D_{2t} .

The results in Table 3 illustrate the stability of the model. The estimated parameters of the market model, $\hat{\alpha}_1$ and $\hat{\beta}_1$, have the correct signs and values and do not change significantly with alternative definitions of D_{1t} and D_{2t} . Summary statistics of the estimations, such as the R^2 , are also stable across alternative definitions of D_{1t} and D_{2t} . In general, equation (4.2) represents a

consistent and significant representation of R_{1t} , the weekly return on the portfolio of oil and gas stocks.

The values of the parameters of importance for H_1^0 and H_2^0 are also stable across all estimations of equation (4.2). $\hat{\gamma}_1$ and $\hat{\gamma}_2$ are the correct sign for estimates using alternative definitions of D_{1t} and D_{2t} . Indeed, the only variation is the change in the statistical significance of the parameter estimates as more or fewer weeks are included in the definition D_{1t} and D_{2t} . The first estimation, (0), illustrates the significance of ignoring public announcements that occurred in the week subsequent to the congressional event and the possibility of prior leakage of information. Neither $\hat{\gamma}_1$ or $\hat{\gamma}_2$ are significantly different from zero, nor can we reject H_1^0 and H_2^0 . However, the situation changes dramatically as alternative definitions are considered. For instance, the (1,1) definition of D_{1t} and D_{2t} yields $\hat{\gamma}_1$ and $\hat{\gamma}_2$ which individually are significantly different from zero and together permit rejection of H_1^0 at a significance level of less than .01. With the exception of the estimation where D_{1t} and D_{2t} are defined as (0), we are always able to reject H_1^0 at no higher than the .10 level of significance. Notice that H_2^0 is never rejected. Expected outcomes under the unidimensional SJC with a CR and the multidimensional SJC with an MR are not significantly different.

The parameter estimates $\hat{\gamma}_1$ and $\hat{\gamma}_2$ have straightforward interpretations. The average weekly return to R_{1t} over the estimation period is .00185, which under continuous compounding implies an annualized rate of return of 10.09 percent. According to the

estimation where D_{1t} and D_{2t} are defined by $(-2,1)$, the return to R_{it} exhibits a one time reduction of 7.00 percent around May 15 and a one time increase of 7.04 percent around August 2. Thus, in weeks of increasing expectations an MR given an SJC = (x_1, \cdot) , the annualized return to the portfolio of oil and gas producing stocks is 69.38 percent lower. Similarly, in weeks of increasing expectations of SJC of (x_1, x_2) , the annualized return is 70.69 percent higher. Clearly, changing expectations regarding congressional procedures for energy taxation legislation affected the value of oil and gas producing stocks as predicted.

Finally, Figure 5 is a graph of the accumulated weekly abnormal returns, $AWAR_t$, to R_{it} throughout the year 1974. That is, for $t = 1, \dots, 52$ weeks in 1974, $AWAR_t = \sum_{s \leq t} (R_{is} - \hat{R}_{is})$ where \hat{R}_{is} is the predicted value of R_{is} according to the market model. The market model is estimated using data from January, 1973 through December, 1975 and is used to generate \hat{R}_{it} for weeks in 1974. As expected, changes in $AWAR_t$ around May 15 and August 2 are evident.

V. IMPLICATIONS

Based on analysis of the House's consideration of energy taxation in the 93rd Congress, the two questions raised in the introduction receive unambiguous affirmative answers. The formal model of rules and SJC does offer unique insights into how committees influence congressional outcomes, and the predictions derived from the model are testable using the event study technique. Broader implications are discussed below as they relate to committees and

congressional outcomes, the relationship between political and economic decision-making, and additional uses of event studies for testing formal theories of politics and political economy.

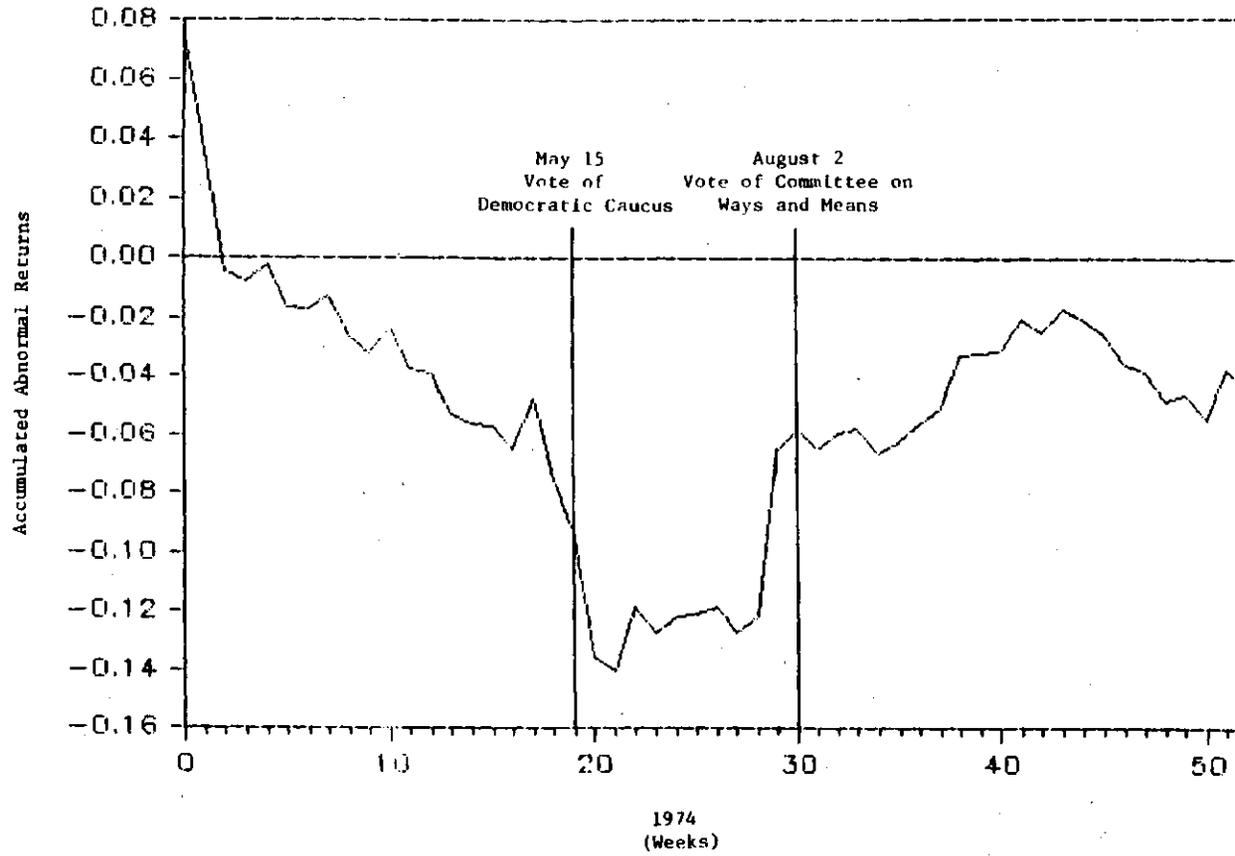
Committees and Congressional Outcomes

As stressed above, beliefs about the existence of committee influence are pervasive in the congressional literature. In light of past studies, the strong evidence of influence of the Ways and Means Committee on tax policy in 1974 may not be surprising. But the theory and test also contribute to an understanding of the mechanisms of committee influence and the benefits from incorporating them into a formal model. Political scientists have suspected for some time that the closed rule accounts for the relatively great power of committees whose legislation receives its protection (Manley, 1970; Fenno, 1973). But explicit theoretical explanations for the desirability and effects of restrictive rules been offered only recently (Krehbiel, 1985), and never have they been subjected to tests using congressional data.¹⁹ In contrast, the model presented in section II further illustrates the effects of the closed rule and its unanticipated loss. More importantly, the test in section IV provides strong support for the underlying theory.

Another insight supported by the empirical analysis is that the loss of the closed rule need not immediately and permanently undermine the committee's influence. Pro-oil members of the Ways and Means Committee were able to use SJC as an effective strategic response to the loss, or threatened loss, of their historical

FIGURE 5

Integrated Gas and Petroleum Firms



institutional advantage of the closed rule. Two more general comments can be offered. First, the power of sophisticated SJC is theoretically more prevalent than the examples in section II might suggest. General and empirically plausible conditions for the existence of obstructive and winning bundles are derived elsewhere (Gilligan and Krehbiel, 1986). Second, the model and case suggest that neither institutions nor strategies should be considered in isolation. In practical politics, strategies (such as SJC) are conditioned by institutions (such as rules) as well as by changes in procedural regimes (such as the apparent shift in rule-making powers from the Rules Committee to the Democratic Caucus in the mid-70s). To the degree that the incorporation of these features in the spatial model clarifies these complex relationships, formal modeling may be regarded as a worthwhile theoretical endeavor. But if additionally the models yield testable implications that subsequently receive empirical support, they must be regarded not merely as thought-provoking exercises, but as convincing tools for demonstrating how institutions affect outcomes.

Political and Economic Decision-making

Although the primary substantive focus of this study was on political decision-making, the empirical results have implications for the relationships between political and economic decision-makers or, in this case, between Congress and markets. In the empirical test, this connection was represented by the maintained hypothesis of rational expectations. Since the findings could not have emerged

without some alternative but unspecified connection between political and economic decisions, the maintained hypothesis received implicit support. Elaboration upon its meaning in the context of congressional politics is therefore helpful. Obviously, the rational expectations hypothesis does not require that all traders on the New York and American Stock Exchanges are well-versed in the minutiae of congressional procedure. Nor is it necessary to adopt the somewhat less strict interpretation that most economic actors are sophisticated with regard to political institutions. All that is necessary is that traders receive good information about congressional institutions, strategies, and their implications for outcomes. Little is known about the sources of this information or its path to the marketplace. But this study suggests that along the path from initial sources to final traders, some actors are institutionally sophisticated. Thus, while the nature of the connection between political and economic decisions is unclear, its existence is undeniable.

Other Uses of Event Studies

The connection between political and economic decision-making not only made the present test possible but also accentuates opportunities for additional theoretically motivated empirical research. The 1974 case is a straightforward illustration of the event study technique for testing formal theories of legislatures. In spite of the increasing literature on institutions and equilibria, empirical tests of the associated theories are rare and limited. Some encouraging tests have been conducted in nonlegislative settings (Romer

and Rosenthal, 1982) or in laboratory legislatures (Krehbiel, 1986a). But tests using congressional data have been limited by crude measures of actors' preferences (Ferejohn and Krehbiel, 1985), and/or by restricted applicability to unidimensional situations (Krehbiel, 1986b). The event study technique circumvents these limitations in cases, such as the present one, in which actors' preferences and changes in procedural expectations can be identified unambiguously. Although there may be an element of fortuity in finding these cases, information on Congress is substantial and thus typically permits reasonable inferences about preferences and identification of key congressional events.

Finally, we are confident that the applicability of the technique is broader than the present focus on congressional rules and strategies suggests. For example, economists interested in regulation have recently attempted to use event studies to measure the effects of regulatory policies. In at least two instances (Binder, 1985; Rose, 1985), the results are contrary to those reported above: the political events identified did not have significant effects on returns to the relevant portfolios. Although this study cannot directly refute these findings, it does suggest why market effects of political decisions were minimal in previous studies. Proper identification of political events requires specification of a political model that is attentive to institutional detail and corresponding optimal strategies. Subtle choices of rules and jurisdictions can be much more important than conspicuous choices such as committee votes on bills, floor votes on

amendments, conference reports, or votes on final passage. Alternatively, changes in congressional outcomes may be caused by exogenous events such as Supreme Court decisions (Gilligan, Marshall, and Weingast, 1986). In short, prior failures to measure the effects of regulation may be attributable to inadequate political theory rather than inadequate empirical techniques. If so, then the study of political economy will progress only when political and economic theories are suitably merged.

VI. CONCLUSION

To illustrate an institutional and strategic basis of committee influence on congressional outcomes, the spatial model of legislatures was extended to incorporate modified rules and subjurisdictional choice. Two propositions were derived from the theory and tested using economic time series data during the 93rd Congress. The predicted effects of rules and SJC on outcomes were observed. Considered jointly, the theoretical and empirical analysis has two broader implications. First and foremost, political institutions affect political outcomes; formal models can capture and illuminate these effects; and event studies are straightforward but overlooked techniques for testing formal models. Second, the implicit support for the existence of a systematic relationship between political and economic decisions also has promising implications for the development and testing of institutionally and strategically enriched theories of political economy.

FOOTNOTES

1. The committees are Standards of Official Conduct, House Administration, Rules, Appropriations, Budget, and Ways and Means. Legislation of the first three committees typically pertains only to internal House matters. Legislation of the last three, while privileged, nevertheless usually passes through the Rules Committee. Appropriations bills often require waivers for points of order; Budget and Ways and Means Committees typically want and receive restrictive rules for major money bills. As the case below illustrates, however, the mere ability to bypass the Rules Committee can be strategically valuable.
2. Shepsle's (1979) model contains a structure-induced equilibrium at the intersection of floor medians. Thus, under the assumptions of the model, the existence of "preference outliers" on committees has implications only for the location of committees' bills, not the location of final legislative outcomes.
3. See, for example, the report on the roundtable on the congressional budget process at the 1985 meetings of the American Political Science Association (Thurber, 1985).
4. In the unidimensional case, our incorporation of modified rules resembles Shepsle and Weingast's (1981) LCRC game.
5. Definitions of sophisticated behavior are institution-specific. See, for example, Farquharson (1969) for sophisticated voting on binary agendas, and Denzau and Mackay (1983) for sophisticated behavior by legislative committees with unidimensional jurisdictions.
6. The House's germaneness constraint requires that amendments pertain closely to the legislation under consideration, but this is the only constraint under an open rule. Modified rules may be modified-open or modified-closed, but there is no clear distinction between the two. Deschler and Brown (1982), for example, refer to "rules open in part or closed in part." For theoretical purposes, the key feature of modified rules is that permissible amendments are specified in the rule.
7. If a member is indifferent between two points, he is assumed to vote for the last-proposed point. This technical assumption permits avoiding rather cumbersome notions of epsilon equilibria.
8. The examples are not intended to be accurate portrayals of choice of rules in legislatures but rather are abstractions designed to represent the effects of choice of rules on outcomes.
9. The notion of bundling here is similar to Mackay and Weaver's (1983) "commodity bundling." A key difference is that their bundling implicitly incorporates an SJC in which commodity levels (policies) are altered in all dimensions.

10. The discussion is based on Background Readings on Energy Policy, hearings before the Committee on Ways and Means, March 1, 1975, pp. 353-413.
11. The information in this subsection is extracted from Morrison (1975) and Balz (1974).
12. The theoretical basis for the expectation is the absence of a pure majority rule equilibrium in a multidimensional choice space (McKelvey, 1976).
13. Among other things, the Senate was increasingly occupied with Watergate hearings. See Morrison (1975).
14. During this forty-one year period, the only exception to the (closed) rule occurred in 1973 on a noncontroversial extension of the interest equalization tax on foreign stocks and debt obligations (HR 3577). In spite of the open rule, the bill passed unamended, 358-23. See CQ Almanac, 1973, p.219.
15. The second dimension in the formal model is a composite dimension representing all non-oil provisions in the tax code. The actual provisions in H.R. 17488 were numerous, including revision of taxation of real estate and political parties, increasing the low-income allowance, increasing the standard deduction, adjusting withholding tables, and allowing individuals to use large capital losses to reduce federal taxes due for previous years. See CQ Almanac, 1974, pp. 189-193.

16. Often securities are not traded regularly on a daily basis. Nonsynchronous trading can cause biases in estimates of parameters derived from daily data (Dimson, 1979). Additionally, there are frequently day-of-the-week effects in securities returns that may also cause biases. The use of weekly returns (the geometric accumulation of daily returns over a seven calendar day period) minimizes these biases.
17. For both event periods, the New York Times Index was surveyed for other events that might substantially affect oil and gas firms. None were found.
18. See The New York Times Index and The Washington Post Index.
19. Some insights can be obtained from laboratory experiments, however. See Eavey and Miller (1984), Isaac and Plott (1978), Kormendi and Plott (1982), and Krehbiel (1986a).

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