Western University
Scholarship@Western

Political Economy Research Group. Papers in Political Economy

Economics Working Papers Archive

1990

Energy Politics in Canada, 1980-81: Threat Power in a Sequential Game

Patrick James

Follow this and additional works at: https://ir.lib.uwo.ca/economicsperg_ppe

 Part of the Economics Commons

Citation of this paper:

James, Patrick. "Energy Politics in Canada, 1980-81: Threat Power in a Sequential Game." Political Economy Research Group. Papers in Political Economy, 3. London, ON: Department of Economics, University of Western Ontario (1990).

POLITICAL
ECONOMY
RESEARCH
GROUP

PAPERS IN POLITICAL ECONOMY

ECONOMICS REFERENCE CENTRE
FEB 1 5 2000
N ONTARIO
5001
6001
47001
743001

Paper No. 3

"Energy Politics in Canada, 1980-81: Threat Power in a Sequential Game"

Patrick James

The UNIVERSITY *of* WESTERN ONTARIO

The Political Economy Research Group was established in the faculty of Social Science at the University of Western Ontario in 1988. Its purpose is to foster scholarship, teaching and interdisciplinary research in political economy, with a focus on:

1. the application of economic models and methods to the study of political processes and institutions,
2. the economic impact of political processes and institutions,
3. the influence of economic factors on the formation of public policy and on institutional change,
4. the politics of economic policy making,
5. the political, social, and economic effects of public policy.

Co-directors:
Ronald Wintrobe (Economics)
Robert Young (Political Science)

Board of Directors:
Peter Howitt (Economics)
B.B. Kymlicka (Political Science)
John N. McDougall (Political Science)
Peter Neary (History)
John Whalley (Economics)

Staff:
Jayne Dewar

For further information:
Political Economy Research Group,
Department of Economics,
Social Science Centre,
London, Ontario, Canada N6A 5C2
phone: (519) 661-3877
fax: (519) 661-3292

ISSN: 1181-7151
ISBN: 0-7714-1228-2

Energy Politics in Canada, 1980-81:

Threat Power in a Sequential Game*

Patrick James
Department of Political Science
McGill University
Montreal, Quebec
Canada H3A 2T7

* This draft is not to be quoted without permission from the author, although criticism is welcome. I am grateful to Paul Barker, André Blais, Norman Frohlich, John A. Galbraith, Michael Lusztig, Hudson Meadwell and Eric Uslaner for helpful commentaries. I also thank Robert Michelin for work as a research assistant, Maria Marcheschi for word processing services, and the Social Sciences and Humanities Research Council of Canada for support under grant 410-87-0403.

Abstract

Almost a decade ago, the Liberal Government announced one of the most controversial policy initiatives in Canadian history, the National Energy Program (NEP). Within the history of federal-provincial relations, the era of bargaining that followed the Program's announcement on 28 October 1980 easily is recalled. It represented an intense conflict that encompassed economic and, ultimately, constitutional issues. It therefore is not surprising to discover that Canadian energy politics in the early 1980s have generated a wide range of scholarly and journalistic investigations.

There is, however, a prominent gap in the scholarship pertaining to the Program. Specifically, there are very few studies which adopt the theoretical perspective of rational choice. With regard to explanation of strategic interaction over energy policy in the era of the NEP, one potentially useful component of rational choice is game theory. Such an approach, focusing on strategic choice, might provide an opportunity to situate the difficult political processes surrounding the NEP within a wider context.

There will be five stages to the game-theoretic investigation that follows. First, a brief history of the phase of confrontation will be provided. Second, the game-theoretic interpretation will be presented in general terms, including participants, strategies and potential outcomes. Relevant measurements will be derived in the third phase. In the fourth stage, the process of a sequential game will be analyzed, in both abstract and operational terms. Fifth, and finally, policy-related implications of the analysis will be discussed, along with possible directions for further research.

> Energy policy, especially with respect to oil and gas resources, has been a high profile -- and perhaps the most contentious-- item on the intergovernmental agenda in the past decade. It is one of the most regionally divisive areas of Canadian public policy.... Moreover, it was the Trudeau government's policy on energy, more than other policies, that had perhaps the most deleterious effect on federal-provincial relations in the early part of the 1980's.
>
> -- Pollard (1986: 164).

> Many political and economic assumptions that inspired the National Energy Program in 1980 no longer exist. With its foundations eroding, the NEP was bound to fail, though several of its goals remain intact.
>
> -- Toronto Globe and Mail, 30 March 1985: 6.

Almost a decade ago, the Liberal Government announced one of the most controversial policy initiatives in Canadian history, the National Energy Program (NEP). Although there have been memorable developments in public policy since that time, including such recent examples as Meech Lake and the free trade agreement with the United States, the NEP and its aftermath remain interesting to students of Canadian and comparative politics. Within the history of federal-provincial relations, the era of bargaining that followed the Program's announcement on 28 October 1980 easily is recalled. It represented an intense conflict that encompassed economic and,

ultimately, even constitutional issues.[1] It therefore is not surprising to discover that Canadian energy politics in the early 1980s have generated a wide range of scholarly and journalistic investigations, in a quest for greater understanding of the policy process.[2]

There is, however, a prominent gap in the scholarship pertaining to the Program. Specifically, there are only two studies of the bargaining stimulated by the NEP which adopt the theoretical perspective of rational (also known as public or social) choice.[3] The latter refers to the use of economic theory to explain nonmarket decision making.[4] As Sproule-Jones (1982: 790) has pointed out, rational choice "offers the prospect of coherent and systematic knowledge about natural resource management." The approach transcends the description of individual case histories. It is able to generate explanations which potentially apply to different resources, societies and time periods. Rational choice entails three basic concepts: the nature of the good, institutional arrangements and individualism. Decisions are made in an institutional setting by individuals acting out of self-interest. The decisions to be made depend on the type of issue at hand. For example, the right of extraction for oil or natural gas is indivisible, while economic rents from processing and sales are not. These properties will have implications for the process of bargaining that takes place.

With regard to strategic interaction over energy policy, one potentially useful component of rational choice is game theory. The theory of games, sometimes referred to by students of rational choice as the science of strategy, provides a rigorous means of analyzing bargaining and negotiation, as opposed to a strictly descriptive account of those

processes.[5] Such an approach, focusing on strategic interaction, communication and mixed motives, might illuminate the difficult political processes surrounding the NEP within a wider context. With its focus on strategic structure, game theory provides a basis for clarifying situations. Regarding the NEP and its aftermath, there may be less than obvious reasons behind the ten-month intergovernmental deadlock and ultimate resolution that took place.

There will be five stages to the game-theoretic investigation that follows. First, a brief history of the phase of confrontation will be provided, although this account is not intended to be exhaustive. (The description instead will focus on aspects that are essential to the subsequent analysis.) Second, the game-theoretic interpretation will be presented in general terms, including participants, strategies and potential outcomes. Relevant measurements will be derived in the third phase. In the fourth stage, the process of a sequential game will be analyzed, in both abstract and operational terms. Fifth, and finally, policy-related implications of the analysis will be discussed, along with possible directions for further research.

The NEP: Energy Politics in an Era of Confrontation

The "energy" game, to be described later in strategic terms, spanned the period of intense confrontation involving Ottawa and Alberta over resource revenues at the outset of this decade. For analytical purposes the game is considered to begin in June 1980 and conclude with the signing of the Canada-Alberta Energy Agreement on 1 September 1981. This era can be described most effectively through division into four phases: (a) the

negotiations between the governments of Alberta and Canada from June 1980 onward, including Alberta's July proposals; (b) announcement of the NEP and virtually immediate retaliation by Alberta late in October 1980; (c) a period of stalemate from November 1980 to March 1981; and (d) the series of negotiations which followed, ending with the September 1981 Canada-Alberta Agreement.

Events prior to June 1980 set the stage for bargaining to begin over economic rents. The 1979 oil shock saw the international commodity value of gas and oil assets increase 100% almost overnight. When the Liberals returned to office in early 1980, they realized that, if the anticipated trend of increasing world oil prices continued, the producing provinces would have the power to radically rearrange the distribution of economic power in Canada. By moving the price of their oil more in line with the world level, those provinces could obtain extraordinary income: "The federal and Alberta governments realized that huge economic rents could be generated by the single stroke of a pen" and that such a move would "challenge federal economic management power and, in the process, confound the intricate formulas for federal-provincial equalization payments" (Doern and Toner 1985: 7).

Phase (a) of the game involved four formal, top-level meetings between representatives of each government. The first meeting took place in June 1980 and the last in early October of that year. The period prior to these meetings, in terms of a later game-theoretic approach focusing on Alberta and Ottawa, constitutes a preplay position. This means merely that, although Alberta had been holding out for a new accord on energy since the fall of the Clark government in 1979, the formal, bilateral game-playing had

not yet started. The two players had neither articulated their preference orderings nor selected strategies with which to pursue those desires.

Alberta's proposals in July 1980 revealed its keen interest in collecting the substantial economic rents from energy resources. The proposals covered conventional oil and gas pricing, oil sands development, revenue sharing, interprovincial loans and taxation.[6] Lougheed proposed to raise conventional oil prices over the course of three years to 75% of the world price, with no increase in provincial royalty rates for either conventional oil or gas. Development of the oil sands would be accelerated, including a $7 billion investment directly in the sands and provision of an infrastructure for the workforce by the Province of Alberta. (The federal share of royalties from the oil sands would increase also.) With regard to natural gas, the price would be fixed at 85% of the oil price, with producers paying costs of transportation of new gas to eastern Canadian markets. New mineral leases would be subject to federal taxation and Alberta would provide funding for various interprovincial projects and loans. However, Lougheed asked that Ottawa refrain from imposing a wellhead tax on either oil or natural gas and also not tax natural gas exports.

For Alberta, the resulting distribution of economic revenues would be ideal; by comparison, Ottawa would receive far less than it had been expecting. In light of the very real possibility that Alberta would carry through on its proposals, the Trudeau Government decided to challenge the producing provinces -- especially Alberta -- over the issues of revenue sharing and pricing. Conflict between the levels of government intensified; almost predictably, meetings that lasted until October 1980 failed to settle the intergovernmental dispute over energy. In the aftermath, observers

described the ineffectiveness of the meetings in stark terms: the bargaining sessions "cumulatively fueled the mutual perception that neither side was prepared to negotiate" (Doern and Toner 1985: 45).

Since each side approached the negotiations aggressively and demonstrated an unwillingness to concede any aspect of its position, the meetings failed to result in an agreement. On the federal side, the Liberals had been in a combative frame of mind after the failure of the Conservative Government to negotiate an agreement with Alberta. The subsequent loss by the Conservatives in the 1980 election was perceived by the Liberals as evidence that they had the upper hand over Alberta in bargaining over energy (Doern and Toner 1985: 44).[7] Furthermore, with one seat west of the lakehead, the Liberals had little western support (real or potential) to lose.

Lougheed's team in Alberta had equal confidence that it held the stronger position in the negotiations and thus also hesitated to make concessions. The Government of Alberta could see that the province effectively controlled the supply side, due to the potential of the two oil sands projects, Cold Lake and Alsands, to provide crude oil. The Albertans also believed that they could not be bullied economically by Ottawa because of the sizeable and expanding Alberta Heritage Savings Trust Funds (AHSTF). The AHSTF enabled loans to other provinces, presumably building further national support for Alberta's position. In addition, historically, governments that stand up to Ottawa can expect political rewards from constituents.

Alberta's Government also thought that the federal Liberals could afford to devote only limited resources to the energy issue.[8] Furthermore,

members of the provincial government suspected that Lougheed knew much more about the intricacies of the energy industry and therefore could outduel his federal counterpart in subsequent bargaining (Doern and Toner 1985: 44). The conclusion of phase (a) came with the unilateral price increase of $2 per barrel imposed by the Alberta Government in August 1980. The stage then was set for Ottawa to act, and on 28 October 1980 it did so.

Announcement of the NEP as the central component of the Liberal budget initiated phase (b) of the bargaining process. In economic terms, the NEP included a series of comprehensive and detailed measures concerning the pricing of oil and natural gas, incentives for producers, revenue-sharing among provinces and taxation of energy firms. The Program proposed that the production of oil and natural gas be at least 50% Canadian-owned by 1990. It also called for Canadian control of a significant number of the larger oil and gas firms and an early increase in the proportion of the sector owned by the federal government.

A review of the specific provisions of the NEP makes it easy to see a federal point of view. The federal government set wellhead prices for crude oil and natural gas at levels favourable to consumers in central Canada. Ottawa levied a petroleum compensation charge on all users of oil products and transferred 50% of the revenues from the oil export tax to the producing provinces. The federal government created a Natural Gas and Gas Liquids Tax (NGGLT) on domestic and export sales, starting at $.30/million cubic feet (mcf) and rising to $.75/mcf by 1983. Ottawa also instituted an 8% Petroleum and Gas Revenue Tax (PGRT) on net revenue, along with the phasing out of depletion allowances and the introduction of incentive grants.[9] Finally, Grant (1983: 33) noted what may have been the most controversial

measure of all: "the provision that the federal government would take a 25 per cent interest in oil and gas plays [ventures] in the Canada lands, thus confiscating at a stroke a major source of future foreign income."

Stage (b) of intergovernmental bargaining did not last long, however, because announcement of the federal policy led to Alberta's retaliation two days later. Although Alberta had anticipated a federal move along the lines established by the new policy, and planned retaliatory measures in advance, the breadth and depth of the Liberals' attempt to move into the energy industry came as a shock. A recent court case over Saskatchewan's potash had established Ottawa's constitutional right to regulate resources under the trade and commerce power, but the NEP represented a much more extensive form of intervention. To Albertans, the federal budget looked like a blatant effort by Ottawa to seize control of a sector of the economy over which the provinces had presumed constitutional jurisdiction. Alberta Energy Minister Mervin Leitch described the budget as "a massive and discriminatory attack on Alberta" and asserted that it had "created a confrontation between the federal government and ourselves" (Globe and Mail, 3 November 1980: 1), while Premier Lougheed called the budget "an outright attempt to take over the resources of this province" (Globe and Mail, 1 November 1980: 14).[10]

Lougheed had not been prepared for the legislative authority granted to the Federal Energy Minister by the Trudeau government. His negotiating strategy had assumed that a deal could be worked out only between the ultimate power-brokers involved, himself and Trudeau. The advent of the NEP demonstrated that the Alberta leader had erred in this assumption. Lougheed could see after October 28 that an energy agreement would not be arranged

between the two leaders; an intergovernmental battle, in which the winner would have the final say in matters of Canadian energy policy, had developed.

On 30 October 1980, Lougheed announced a three-pronged retaliation. First, Alberta promised to reduce conventional oil shipments to eastern Canada (specifically, Ontario and Quebec), envisioning a series of three 5% cutbacks in production over nine months. Each reduction would amount to 60,000 barrels of oil per day. The cutbacks, scheduled to begin on 1 March 1981, eventually would reach 15% of the prior production level of 1.2 million barrels per day. This reduction ostensibly would continue until Ottawa had acknowledged Alberta's position and promised to resume negotiations for a more equitable arrangement on energy-pricing and revenue-sharing. Lougheed also promised to cancel the cutbacks if shortages occurred in other Canadian provinces, but warned that shortages created artificially by the federal government would be ignored (Globe and Mail, 1 November 1980: 14).

Alberta's other two forms of retaliation meant withholding provincial approval for the Alsands and Cold Lake oil sands projects and challenging the NEP in the courts. Delaying the projects would exert pressure on Ottawa because the latter thereby would find its drive for Canadianization of the energy sector stalled. By disputing the constitutionality of federal taxes on its resources, such as the tax on exports of provincially-owned natural gas, the province believed that the federal intervention might be overturned altogether. Thus phase (b) ended with the two sides more in confrontation than ever before.

Phase (c) constituted a waiting period. In November, talks between the two governments resumed at the deputy ministerial level. Given this renewed communication, it is clear that both sides had become aware that the bloodletting of October 28-30 moved the confrontation to a new, more intense level. The adversaries thus demonstrated — in principle — a willingness to negotiate in order to reach the settlement which had escaped them prior to announcement of the new energy policy.

Progress, however, remained elusive; each of the rivals continued to hope for a weakening of the adversary's resolve (Maclean's, 2 March 1981). Even by March 1981, each side still attempted to convince the public that the adversary should be held responsible for the lack of a solution. For example, Lalonde connected rising gas prices to Alberta's cutback in supply, while Leitch blamed Ottawa for the 1/2 cent per litre increase (Globe and Mail, 3 March 1981: 1).

Phase (d) began formally in April 1981 with a new round of negotiations between Lalonde and his Alberta counterpart, Leitch. These bargaining sessions continued through the summer of 1981 and concluded with a six-day, marathon session in late August. The negotiations in this phase reflected a change in the relative positions of the two players. Once formal discussions at the ministerial level began in April, it had become evident that the post-NEP environment increasingly favoured Ottawa. The Trudeau government had demonstrated its capabilities by implementing a major and decisive policy with widespread public support. In the words of contemporary observers: "They were now the initiators and Alberta would have to react" (Doern and Toner 1985: 311).

On Alberta's side, Lougheed's government held a position less strong than that which it occupied in the summer of 1980. The Albertans found it difficult to counter the Canadianization goals of the NEP. Their bargaining leverage had been diminished by a promise, given at the time of response to the NEP, not to harm the energy supplies of other provinces. It also appeared that Lougheed's retaliation against the federal energy policy had proven more harmful to Albertans than to any other Canadians (Helliwell and McRae 1981: 20). The cutbacks in oil production initiated by the retaliation negatively affected not only oil producers but also the important oil service sector of the economy. Thus the Lougheed government had to anticipate mounting pressure to settle with Ottawa. The federal side did not have to consider that factor to the same degree, because Canadians in general appeared to be relatively unaffected by Alberta's maneuvers.[11]

Ottawa made it clear from the beginning of the talks that it wanted an agreement by 1 September 1981, in time for a fall budget, and that created further pressure. This deadline contained an implied threat: A new budget brought down without an energy agreement could very well prove as harsh in its treatment of Alberta as the previous one had been. Alberta, believing that to be quite possible, and convinced that Ottawa would proceed with a full implementation of the NEP if an agreement was not reached, experienced greater pressure to settle the issue.

Of course, it should be noted that Ottawa also had an interest in settling matters. As Uslaner (1989: 177) noted,

> the import tax was becoming a political burden for the Liberal government. So was the growing perception that Ottawa had lost interest in the consumers of central Canada simply for the sake of

pursuing a partisan battle with Lougheed. Furthermore, the stalemate did nothing to resolve the constitutional issue.

In fact, over a longer period of time, the stalemate might have developed into the worst scenario for Trudeau. This is true especially of the non-monetary payoffs (in areas such as the planned constitution and voter approval), which were bound to deteriorate. However, in terms of relative pressure, Alberta had a more desparate need to act. The confrontation, by implication, became attractive to the federal side. It could hold out longer, eventually obtaining an agreement with Alberta on energy, while also building its reputation for assertiveness in intergovernmental bargaining. In sum, a compromise -- with Ottawa setting the agenda -- would set an excellent precedent for later constitutional bargaining.

On 1 September 1981, representatives of the two governments unveiled a new energy accord. The Canada-Alberta Energy Agreement substantially revised the energy-pricing and revenue-sharing regimes established by the NEP. With regard to pricing, the Agreement created a two-tier system to govern oil prices through 31 December 1986.[12] One price schedule pertained to conventionally produced oil from existing fields (oil recovered from sources discovered before 1 January 1981) and another covered production from conventional fields, enhanced recovery schemes, oil sands plants and frontier oil from 1 January 1981 onward. According to the Agreement, the price of conventional, "old" oil would not be allowed to exceed 75% of the international price, while "new" oil would be priced according to its full, world market value. The pricing changes would come into effect through regularly scheduled increases in the price of oil up to anticipated

ceilings. Natural gas pricing also changed; every six months beginning 1 February 1982, the price would increase by $0.25/mcf.

With regard to revenue-sharing, the federal government agreed to withdraw its contentious NGGLT on 1 October 1981. Alberta, in return, agreed to an increase in the federal PGRT from 8% to 16% (effectively 12%, given the introduction of a Resource Allowance set at 25%) and the introduction of a 50% Incremental Oil Revenue Tax (IORT).[13]

With the 1981 Agreement, stage (d) of federal-Alberta bargaining over energy policy drew to a close. Having described the history of the confrontation phase, it is feasible to outline the game-theoretic interpretation.

The Game-theoretic Interpretation

Using the language of game theory, federal-Alberta energy bargaining in 1980-81 can be described as two-player, quasi-cooperative and variable-sum. Strategies available to the players and potential outcomes also will be explained.

The Actors

Describing the game as two-player in nature means that only two actors are considered to have significant roles during the period in question: the Governments of Canada and Alberta. James and Michelin (1989) made this argument extensively, asserting that, during an era of crisis in the realm of energy politics, the state autonomist approach offered the most thorough explanation of decisions made by the two governments. According to this state-centred model, actors within the state autonomously make efforts to

translate their preferences into authoritative actions (Nordlinger 1981: 1). Public policy is the result. In extreme circumstances, there is no influential input from other, non-state participants; their actions result from manipulation by actors within the state. Thus, if an area of public policy is described properly in terms of state autonomy, negotiations involve only actors within the state and, by assumption, the preferences of societal actors can be bracketed.

Other normally important actors, such as interest groups, watched the energy game from the sidelines. The energy industry, for example, generally looked at the conflict from Alberta's point of view and made that position rather obvious. However, the Canada/Alberta conflict ultimately focused on constitutional issues, such as ownership and taxation of natural resources. Only governments could participate directly and effectively in that type of dispute.

Each government did attempt to build a coalition of support among those outside of the governmental realm, in order to enhance the credibility of its position. Ottawa, for example, emphasized the NEP's beneficial pricing policy for consumers and its favourable treatment of Canadian firms in the energy industry. However, in the 1980-81 bargaining with Alberta over economic rents from energy resources, neither consumers nor entrepeneurs participated. Both interest groups and the voting public are regarded as part of the political environment, as opposed to players in the game.[14]

Bureaucratic politics might be raised as an obstacle to the two-player assumption: what about the possibility of conflict within the respective levels of government? In the case of Alberta, a history of conflict and the desire to obtain greater influence with Ottawa would motivate provincial

officials to support Lougheed in the confrontation. As for the larger and more diverse federal bureaucracy, the evidence suggests a unity of interests behind the NEP.[15] Bargaining over energy between the Governments of Canada and Alberta from June 1980 until 1 September 1981 therefore is defined as a two-player game.

A Quasi-Cooperative, Variable-Sum Game

Another important aspect of the setting concerns the type of resolution that may be achieved. At one extreme, a purely cooperative game is one in which binding agreements are feasible. As Friedman (1986: 148) has suggested, "[t]he fundamental distinction between cooperative and non-cooperative games. . . is that cooperative games allow binding agreements while non-cooperative games do not". This description, however, is of more practical value when treated as a continuum rather than a dichotomy. It is difficult to imagine any agreement in political life that is completely enforceable; examples to the contrary are easy to cite. Even when there is absolute harmony among parties to an agreement (i.e., self-enforcing arrangements in games of coordination), if perceived interests change, compliance may be short-lived. There are, however, constraints upon such actions and, in a political system such as that of Canada, blatant disregard by governments for negotiated settlements will be prohibitively expensive. A record of capricious dealings could impede subsequent efforts to collaborate with other governments or interest groups. Thus, even with the game of energy policy not being cooperative in the strict sense, it is reasonable to assume that potential effects on a player's reputation will occupy a prominent role in strategic choice. The long-term costs of

breaking an agreement very often will outweigh any immediate benefits. This property leads to an expectation against a lengthy sequence of player movements.

The game is variable-sum because the revenue pool circa 1980 was projected to expand (Simeon 1980: 182; Courchene and Melvin 1980: 192; Norrie 1984; Ruitenbeek 1985). Thus, rather than one player losing benefits and the other player gaining at the loser's expense, both players potentially could benefit from the right sort of deal. This property is illustrated by the fact that the combined financial payoffs change under different scenarios, such as the NEP, the Program with Alberta's retaliation factored in, and the Agreement (Helliwell and McRae 1982). Thus the game should not be regarded as an all-out conflict, devoid of potential for cooperation.

Of course, at each outcome -- such as the 1981 Agreement -- there must be a division of payoffs between the players, meaning that some element of conflict is present. The costs that each player can impose on itself and the adversary create the potential for cooperation; there must be an agreement on rent shares and overall revenues. The latter depend on the energy industry's reaction, with the levels of government having a common interest in further exploration and production. Thus even the division of rents is more complex than a zero-sum conflict.

When assessing bargaining and negotiation in a game-theoretic context, the process is described in terms of strategies and preferences regarding outcomes. Strategies will be identified first, followed by a description of outcomes and the players' preferences regarding the latter.

Strategies

There are two basic strategies to consider: cooperation (C) and non-cooperation (C'). While it is true that a continuum of choice exists, ranging from full agreement to absolute conflict, there are at least three compelling arguments in favour of a streamlined approach toward the description of strategic options.

First, even the simpler, strategic form of a game -- which displays only strategies, outcomes and payoffs, as opposed to the sequence of play--becomes extremely complex with more than two strategies per player. For example, a 3x3 matrix would entail nine payoffs for <u>each</u> player; assessment of equilibria (i.e., stable outcomes) also would be significantly more complicated.

Second, as a related point there is potential measurement error to consider. To conduct an equilibrium analysis for the game, it is essential to identify a rank-ordering of the outcomes for each player. As will become apparent, even with only four outcomes it can be difficult to develop valid and reliable assessments of preference. With more outcomes, and less "distance" between them with regard to payoffs, the chances of measurement error increase dramatically, creating a greater risk of an incorrect ranking.

Third, the dynamics of the conflict between Alberta and Ottawa can be modeled effectively using existing theories of strategic interaction under conditions of dichotomous choice. In other words, the game as it took place can be explained without resorting to more subtly distinguished strategies.

For such reasons, the energy conflict will be modeled as a 2x2 game. It now is appropriate to describe the strategies (C and C') for the players

at each stage of the game. (The payoffs for the players at each of the four resulting outcomes will be described at a later point.)

In phase (a), for the federal side (F), C meant trying to negotiate without taking any dramatic, interventionist actions like the NEP. This strategy produced an outcome that, from F's point of view, amounted to provincial victory. By taking a cooperative position — implicitly recognizing some of Alberta's (A) claims by not engaging in punitive actions — F almost certainly would have precluded the possibility of a federal victory in the rivalry. Strategy C might have resulted in something better, but only if A played C as well — compromising through acceptance of F's right to tax resource revenues — before Ottawa could announce a new, hard-line energy program. The latter was most unlikely, given the fact that, in playing such a strategy, A would have had everything to lose. Player A could gain only if F elected to be gracious in its time of victory by granting A some of its demands.

The second strategy of the federal government, C', involved articulation of a hard-line energy policy, like the NEP, designed to change the balance of the game. Such a strategy would have eliminated what F perceived to be the evolving state of affairs and least-preferred federal outcome: provincial victory, symbolized by the latter's exclusive right to control economic rents from energy production.

On Alberta's side, C in phase (a) of the game would have meant softening its position of June-October 1980 and accepting at least some of the demands of the federal government in the energy industry. This strategy, though, was not pursued. Instead, A instituted strategy C', represented by the July proposals, designed to discourage the federal

strategy C′. This strategy saw Alberta trying to convince the federal government, currently playing C, of its resolve.

In terms of strategic choice, phase (b) constituted a period of transition. The decision by the Trudeau government to play C′ by announcing the NEP created a new situation. The cooperative strategy for F in phase (b) would have meant continuing negotiations which, as noted previously, appeared to be at an impasse, thus favouring A.

Faced with the reality of the NEP, which effectively overturned its July proposals, A still could have opted for C. However, A believed that course of action would not produce results; considering the degree of coercion in the Program perceived by Albertans, a conciliatory policy would have been impossible to justify. Furthermore, in choosing C′, A believed its retaliatory capabilities to be strong enough to force F to change positions on the energy issue. Thus Lougheed announced the three forms of retaliation described previously: reduced oil shipments, withholding approval for large-scale projects and a court challenge.

In phase (c), the C′ strategy for F involved use of the now-superior federal position to force Alberta back to the negotiating table in order to reach a settlement. The Trudeau government believed that the possibility of a provincial victory had been all but eliminated for two reasons: (1) the failure of Alberta's retaliation; and (2) the popularity of the NEP in most of Canada. The other option, C, would have seen F choose either to accept the main points of A's position or do nothing in response to the latter's retaliation. This scenario had a very low likelihood of taking place, given F's beliefs about A's bargaining position.

In stage (c) of the game the Alberta government had to choose between the resumption of negotiations (C) or holding out against the measures directed by Ottawa toward the energy industry (C'). Alberta tried the second of these two options, believing that pressure would increase more rapidly and reach a higher level for Ottawa. This expectation by **A**, as noted previously, turned out to be incorrect.

When phase (d) of the game began in April 1981, it had become clear to both sides that the Trudeau government enjoyed the superior negotiating position. The federal government agreed to resume negotiations after the retaliation by Alberta had proven ineffective. The waiting game of phase (c) set the groundwork for the strategic decisions of stage (d). Selection of cooperative strategies by **A** and **F** eventually led to a mutually acceptable outcome: the settlement of September 1, 1981. This completes the description of strategies over each stage of the game.

Outcomes

In generic terms, for a two-player game with binary choice, there are four resulting outcomes: mutual non-cooperation (O_1); **F** cooperates and **A** does not (O_2); **A** cooperates and **F** does not (O_3); and mutual cooperation (O_4). These outcomes correspond to stalemate, victory for **A**, victory for **F** and compromise. Figure 1 displays the basic 2x2 matrix for the game, with

(Figure 1 here)

the four outcomes identified in the key. Payoffs appear in each cell for Alberta and the federal government, respectively. For example, **A**'s payoff

FIGURE 1

THE GAME IN STRATEGIC FORM

Government of Alberta (A)	Federal Government (F): Do Not Cooperate	Federal Government (F): Cooperate
Do not Cooperate	a_{11}, f_{11}	a_{12}, f_{12}
Cooperate	a_{21}, f_{21}	a_{22}, f_{22}

Key

$O_1 = a_{11}, f_{11}$
$O_2 = a_{12}, f_{12}$
$O_3 = a_{21}, f_{21}$
$O_4 = a_{22}, f_{22}$

in the first cell is a_{11}; for F, the corresponding entry is f_{11}. Each of the four outcomes depicted in Figure 1 will be described in turn.

When a confrontation -- for example, that which occurred in phase (c)-- is tolerated by both sides, then a stalemate exists (O_1). This outcome persisted in 1981 because, for several months, neither player demonstrated any willingness to modify its position.

The second potential outcome (O_2) involves successful provincial action. This outcome would see Alberta victorious, with the federal government losing support from the public for its programs, especially in the realm of energy policy. The provinces would emerge as the leaders in federal-provincial relations, a likely scenario had the July proposals met with a cooperative federal response. Such an outcome, however, also could seriously damage federal-provincial relations, perhaps to the point of permanence.

The third possible outcome (O_3) would see the federal government seizing, through something like the NEP, almost absolute control of the energy industry in Canada in terms of supply, development, revenue-sharing and pricing. This outcome would put Alberta (and other producing provinces) in an inferior position vis-à-vis the federal government in the energy industry -- virtually a junior partner -- and establish Ottawa as the final arbiter of all questions dealing with energy in Canada. Accompanying these developments, however, would be terrible, perhaps irreparably damaged relations with the Western provinces and the probable failure of the Trudeau constitutional reform package.

The final outcome (O_4) corresponds to the two sides obtaining a negotiated settlement, in other words, a compromise. Such a compromise

undoubtedly would lie somewhere between O_2 and O_3, including the acceptance of some federal demands about revenue-sharing as well as certain provincial claims relating to jurisdiction over ownership and development of non-renewable, natural resources. Both sides recognized that such issues involved questions of fundamental importance to the nature of federalism in Canada and, because of that, hesitated to risk an outcome that might irreparably damage federal-provincial relations.

Why did O_4 ultimately emerge as a lasting outcome? An answer to this question must await the analysis of strategic interaction. An important step toward that stage is to identify the players' preferences over the outcomes.

Measuring Preferences and Ranking Outcomes

With respect to economic rents, each of the actors had a two-dimensional utility function within the context of this game. A and F hoped to obtain revenue, but each also wanted to limit the amount received by the rival government. It is impossible to estimate the marginal rate of substitution for these commodities (i.e., absolute versus relative gain), so the most straightforward approach available is to estimate the proportion of rent obtained by each rival.

Table 1 displays data on expected economic rent shares from oil and gas

(Table 1 here)

for the provincial and federal governments, along with producers and consumers, as projected for 1986.[16] This table has been constructed on the

TABLE 1

EXPECTED ECONOMIC RENT SHARES FROM NON-FRONTIER OIL AND GAS FOR THE PROVINCIAL AND FEDERAL GOVERNMENTS

Outcome	Scenario	Provincial Governments	Federal Government	Producers and Consumers
		% Share of Rents	% Share of Rents	% Share of Rents
O_1	Stalemate with Alberta's Retaliation, November 1980-March 1981	36	27	37
O_2	Alberta's July 1980 Proposals	46	11	43
O_3	Unrevised NEP, 28 October 1980	34	25	41
O_4	Canada-Alberta Agreement, 1 September 1981	39	34	27

Source: Estimated from Helliwell and McRae (1982: 17).

basis of data from Helliwell and McRae (1982). Using a macroeconomic model of the non-frontier oil and gas industry, they estimated the provincial and federal shares of energy revenues under various conditions. Four of these scenarios, listed in Table 1, correspond to the outcomes O_1 through O_4.

To reiterate, percentage shares, as opposed to aggregate revenues, are used to assess the preference orderings of the players. This decision recognizes the element of rivalry in the intergovernmental game. While Alberta and Ottawa hoped to maximize individual gain, each also wanted to limit the share of overall income alloted to its rival.

Projected revenue shares for 1986, the final year of the Canada-Alberta Agreement, are deemed more appropriate than the proportions for 1982, also estimated by Helliwell and McRae and used in the game-theoretic analysis by James (1989). While the shares for 1982 have immediate relevance, those for 1986 reveal the more permanent pattern. It can be assumed that even governments, which traditionally tend to focus on the short-term, will be concerned with developments over at least five years. In that sense, Trudeau's Liberals had won an election in 1980, while Lougheed's Conservatives had a virtually permanent mandate.

The data points generated by the macroeconomic model have "face" validity. The scenarios are based on assumptions built into the actual policies put forward by the governments. Thus the revenue shares listed in Table 1 reflect the expectations of the players during the game. For example, the four scenarios build in a 2% annual increase in the world oil price, as anticipated by all parties in 1980-81 (Helliwell and McRae 1982: 14).[17]

With respect to reliability, the modeling procedures described in great detail by Helliwell and McRae (1981) do not appear to have provoked criticism.[18] The data also appears to be sufficiently reliable because the game-theoretic analysis entails rank-ordering of outcomes. Thus small discrepancies in the measurement of percentage shares cannot overturn the presumed structure of the game matrix. Based on the percentage figures from Table 1, the payoff ranking for **A** is $a_{12} > a_{22} > a_{11} > a_{21}$; for **F**, $f_{22} > f_{11} > f_{21} > f_{12}$.

The Rivalry as a Sequential Game

Among the 78 2x2 strictly ordinal games, 57 do not contain a mutually best outcome. Strategic interaction therefore determines the outcome. One such case is the game of confrontation involving the Government of Alberta and the Federal Government over energy revenues. Figure 2 displays the game in strategic form with rank-ordered payoffs, with **A** as the row and **F** as the

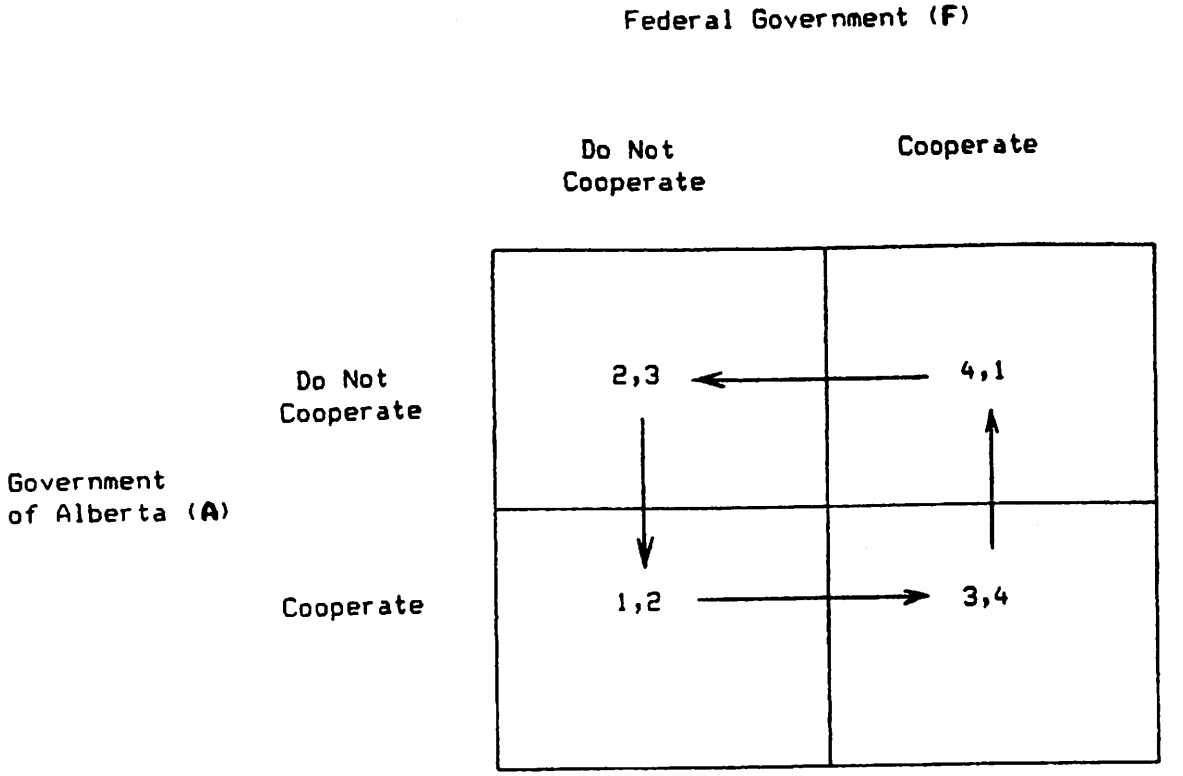
(Figure 2 here)

column player.[19] The ordinal payoffs in each cell for **A** and **F**, respectively, are derived from the percentage shares of revenue that appear in Table 1. For example, mutual cooperation, the fourth cell, is based on the Canada-Alberta Agreement: second-best (3) for Alberta and best (4) for the federal government. (The arrows that appear will be explained at a later point.)

Although the strategic form of the game that appears in Figure 2 is useful as a summary of the four basic outcomes, the cells (and payoffs) in

FIGURE 2

THE GAME IN STRATEGIC FORM WITH RANK-ORDERED PAYOFFS



that matrix are derived from different time periods. For example, A's noncooperative strategy has a different content before and after announcement of the NEP. Prior to Ottawa's initiative, Alberta's C' strategy referred to an effort to seize economic rents from energy resources, namely, the July Proposals. After the advent of the Program, C' meant retaliation against the NEP. To clarify the meaning of each choice, it may be helpful to put the sequence of play in diagrammatic form.

Figures 3a-d cover the four stages of the game, with the payoffs in

(Figures 3a-d here)

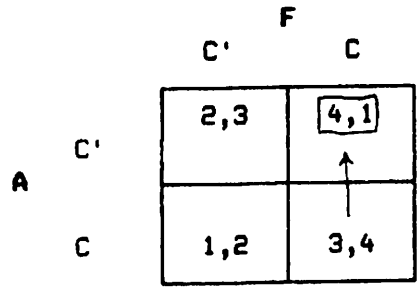
each matrix corresponding to the underlying, long-term preferences displayed by Figure 2. The arrows show movement, with the boxed outcome being the one at the end of a given stage. In phase (a), A departs from mutual cooperation (which, at this point, refers to relative autonomy for the energy sector) and intervenes with the July Proposals. F responds to A's choice of C' in phase (b) with announcement of the NEP, its version of C' at that stage. At that point, A could retaliate or cooperate with F's initiative. Since A chose to retaliate on three fronts (i.e., supply restrictions, delay of projects and a court challenge), the players end up in the cell of mutual noncooperation at the conclusion of stage (b).

Phase (c) shows joint noncooperation. Prior to negotiations in earnest during the summer of 1981, each side tried to outlast the other. Finally, stage (d) reveals movement to a mutually cooperative outcome. The diagram indicates that A moved first, with F responding, reflecting the stronger bargaining position occupied by Ottawa.

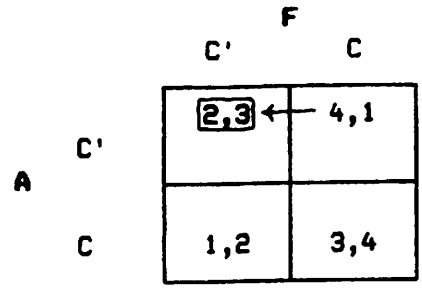
Figure 3

Matrices Representing the Sequential Game

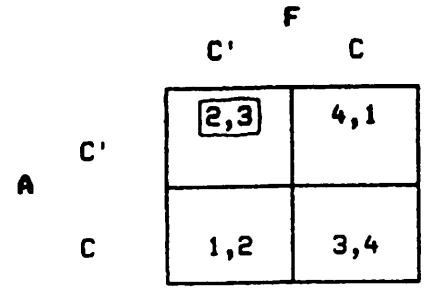
Phase (a): Alberta's July Proposals, prior to Ottawa's response



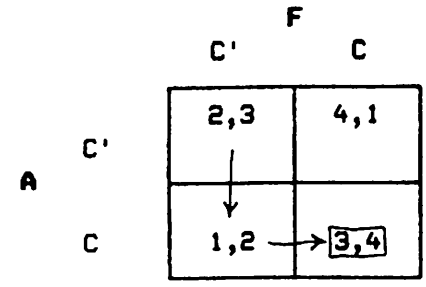
Phase (b): Ottawa's NEP and Alberta's retaliation



Phase (c): stalemate, prior to negotiations



Phase (d): Canada/Alberta Agreement, resulting from negotiations



The movement revealed by Figures 3a-d is summarized by the arrows in Figure 2, the latter being easier to use in the analysis of strategic interaction. From A's payoffs in Figure 2, it is clear that non-cooperation is a dominant strategy; regardless of F's choice, A can do better by not cooperating. Thus F's best strategy also is non-cooperation; this produces the second-best rather than worst payoff, 3 versus 1. Mutual non-cooperation constitutes a Nash equilibrium because neither player has an incentive to depart from it unilaterally. For example, if A switched to cooperation, that would reduce its payoff to the worst level, 1.

Although mutual non-cooperation is a Nash equilibrium, it also is unsatisfactory on grounds of efficiency. Joint cooperation is preferable for both players; how, then, can it be obtained? The Alberta/Ottawa rivalry over energy revenues had a sequence of play, not simply a "one shot" matching of strategies. Brams and Hessel (1984: 25) have described the rules of play for a sequential game such as this one:[20]

1. Both players simultaneously choose strategies, thereby defining an initial outcome of the game.
2. Once at an initial outcome, either player can unilaterally switch his strategy and change that outcome to a subsequent outcome in the row or column in which the initial outcome lies.
3. The other player can respond by unilaterally switching his strategy, thereby moving the game to a new outcome.
4. These strictly alternating moves continue until the player with the next move chooses not to switch his strategy. When

this happens, the game terminates, and the outcome so reached is the final outcome.

Since the sequential game allows for altered strategies after the initial selections, rational choice transcends a static or myopic equilibrium concept such as that of Nash. As Brams and Wittman (1981) noted, somewhat different rationality postulates are appropriate for sequential play.

First, nonmyopic rationality determines strategic choice. Each rival is able to anticipate how the other is motivated to respond to a given move. Neither will depart from a position "if the move leads to a final outcome which does not improve his payoff (rank)." Obviously, neither player would move from his best outcome. For the other outcomes, a "backward induction" process would occur; given available moves and countermoves, departure from a given point would be appropriate only if that ultimately would lead to a superior final outcome (Brams and Hessel 1984: 26).

Second, each player anticipates a "single play of the game". Thus when a player expects that movement from a position will result in an inferior final outcome, "he will stop, and the resulting [i.e., present] outcome will be a final outcome; otherwise, he will continue to move" (Brams and Hessel 1984: 26). The objective of play is to locate a nonmyopic, as opposed to Nash, equilibrium.

Figure 2 reveals a cycle of play that does not produce a nonmyopic equilibrium. Even with (3,4) as the starting point, one of the players still has an incentive to pursue a better outcome: (4,1), favouring A. But F will switch to non-cooperation, in order to escape its worst outcome, producing (2,3). Although A then would have to face (1,2) if it moved again, pursuit

of (3,4) still would be feasible by making that choice. At (1,2), F obviously would prefer to move to (3,4), its ideal point, thus completing the cycle illustrated by the arrows in the figure. Hence this game is one of 37 among the total of 78 2x2 ordinal games which do not have a nonmyopic equilibrium.

This result creates a paradox: (3,4) is superior to (2,3) but appears to be inaccessible. However, there is another process through which the preferred outcome may be achieved. Perhaps one player will face the same type of game again, but with a different adversary. If both parties (and other, potential future players) are aware of that, then the player returning to the game must be concerned with its bargaining reputation. Following Brams and Hessel (1984: 27), the returning player is called the threatener, and the non-returning player is called the threatenee. The threatener may, through use of a threat, be able to break the deadlock:

> The threatener can make his threat credible by ignoring what he would lose in the short run if he were forced to carry it out (we assume there is always a cost to both threatener and threatenee associated with the former's carrying out a threat) and instead focusing on the long-run value that a carried-out threat would have in enhancing the credibility of the threatener's future threats in repeated plays of the game. . . . Insofar as the threatener establishes his credibility by carrying out threats this credibility will plausibly extend to repeated plays of different games (Brams and Hessel 1984: 27).

Within the context of a specific game, a threat also may be able to induce movement by the "threatenee", if the latter is convinced of the threatener's resolve. Thus even a game without a nonmyopic equilibrium may result in an enduring and relatively Pareto-efficient outcome.

Although the game over energy revenues triggered by the NEP is assumed to be self-contained, federal-provincial bargaining over economic rents continues to this day. The federal government had to think about the reputational effects of its play, because the next provincial adversary would be watching. Ottawa therefore had the potential to play the role of threatener in this game.

Brams and Hessel (1984: 29) have established two conditions for credibility of a threat designed to produce a specific outcome, such as (3,4) in Figure 2. If the threatener wants to obtain a certain outcome, (a_{ij}, f_{ij}), with i representing the row and j the column, then it must deter the adversary from leaving (a_{ij}, f_{ij}) once there. The first condition for credibility is that the threat is <u>real</u>. A threat by F to terminate the game at an outcome $(a_{mn}, f_{mn}) \neq (a_{ij}, f_{ij})$ is real if and only if its implementation worsens the outcome for A. The second condition is that of a <u>rational</u> threat, which occurs if and only if successful deterrence of A at (a_{ij}, f_{ij}) improves F's outcome.

Brams and Hessel (1984: 33) have developed an algorithm which can be used to determine whether the game at issue has a threat outcome. For the column player, F, the algorithm proceeds as follows, with (a_{ij}, f_{ij}) representing the payoffs to A and F at row i, column j:

1. Locate $f_{ij} = 4$. This occurs at (a_{22}, f_{22}).
2. Since $a_{22} \neq 4$, **A** and **F** do not have a mutually best outcome; a threat therefore is required to obtain f_{22}.
3. Since $a_{22} \neq 1$, a threat to induce f_{22} is feasible because **A** might end up with something worse than a_{22}.
4. Find (a_{mn}, f_{mn}) such that $(a_{mn}, f_{mn}) < (a_{22}, f_{22})$. This occurs at either (a_{11}, f_{11}) or (a_{21}, f_{21}).
5. Since $n \neq j$, in each instance, and $a_{mn} = 2$ at (a_{11}, f_{11}); (a_{22}, f_{22}), i.e., (3,4) is the deterrent threat outcome for **F**.

This result means that, given its concern for future reputation, the Federal Government eventually could obtain the preferred outcome, (3,4), preventing an indefinite cycle within the game matrix.

Regarding the specific nature of the threat, rationality dictates that **F** can deter non-cooperation by **A** in the game if and only if an outcome strictly inferior to (3,4) exists. This is true of both (1,2) and (2,3). Player **F** can effectively threaten not to cooperate, forcing **A** to accept the second-worst outcome, while **F** does somewhat better at (2,3), the stalemate. The inferior outcome at (2,3) for **F**, relative to (3,4), is assumed to be "the price he is willing to pay in any single play of a game to ensure the credibility of his threat so that it is not viewed as empty (i.e., a bluff) in future games" (Brams and Hessel 1984: 30). Of course, if F's commitment to non-cooperation is convincing, then that cost will not have to be absorbed, because **A** will accept mutual cooperation as the final outcome.

For the sake of argument, suppose that **A** also had some concern about its bargaining reputation, suggesting that it might seek to occupy the role

of threatener. The payoff structure, however, does not provide A with the same opportunity possessed by F. If A threatens non-cooperation, F can enforce (1,2), as in the previous example. If A destabilizes the game by wavering between its two strategies, F still can institute (1,2) or (2,3), each of which is more painful for A. In sum, the fundamental problem for A in issuing a threat to F, given the payoff matrix, ultimately is one of credibility.

One objection that might be raised to the preceding analysis pertains to its complexity. Since the game is observable in its moves, meaning that the players can see the implications of switching strategies, cooperation might be expected to emerge naturally: Alberta possessed oil and natural gas, Ottawa had a majority in Parliament, and each side could benefit from a stable arrangement concerning energy production, pricing and taxation. Furthermore, each player in a sequential game such as that played by A and F can make as many moves as necessary, provided that resolution is achieved in a given period; this factor should reinforce the tendency toward cooperation. Why, then, is a complicated and coercively-oriented framework of analysis needed to explain an outcome that would appear to be natural?

First, the intergovernmental game of rent distribution took place within the greater national conflict over the degree of centralization in confederation. With different positions on that issue, the two levels of government had anything but a tendency toward cooperation. While the Governments of Alberta and Canada understood that a settlement could be mutually beneficial, the deadlock over energy rent distribution symbolized the deeper conflict. Cooperation, as noted earlier, emerged only after a test of wills.

Second, the number of moves or "experimentation" in a sequential game is limited by political reality. Rapidly changing strategic choices are impractical for governments, because the voting public (with help from the media) would interpret that behaviour as indecision and lack of leadership. Once announced, policies cannot be discarded in quick succession, even if— in the abstract - that would facilitate cooperation.

The result of the Canada-Alberta game over energy revenues is consistent with the exercise of threat power in a sequential game. Trudeau and Lalonde played the role of "threatener", with Lougheed and Leitch as "threatenee", in a game that lacked a nonmyopic equilibrium. However, Ottawa as threatener could bring about the most desired outcome — a Pareto-superior compromise — through a real and rational threat. By continuing the stalemate, Trudeau and Lalonde made the situation worse for their rivals, while the coercion of Alberta — if it ultimately produced a compromise — would improve the outcome from the federal point of view. Taken together, these conditions made the threat faced by Alberta both real and rational. Since, by contrast, the game's structure did not permit Alberta to play the role of threatener, it is not surprising that Ottawa obtained its most preferred outcome.

It is interesting to note that a different approach toward measurement of payoffs would change the matrix in Figure 2. Uslaner (1989: 174) used data from Helliwell and McRae (1981: 17) on per capita rents from oil and gas, comparing Albertans to Canadians outside of Alberta. He also used absolute rent values, as opposed to shares. Figure 4 displays the matrix

(Figure 4 here)

obtained by Uslaner using that approach. In this version of the game, Ottawa has a dominant strategy of non-cooperation (labeled "Defect" in Uslaner's matrix). Uslaner then observed that

> Alberta's conditionally best strategy, given Canada's, is to cooperate -- leading to the predicted outcome of the NEP. . . . However, Alberta did not simply capitulate. This perspective on the confrontation misses the mark because the game is more fruitfully viewed as involving bargaining. Certainly the two parties spent many hours behind closed doors working out a compromise.

The matrix in Figure 4, however, suggests a different result then the one displayed by Figure 2. If Alberta defects in order to achieve (4,1), Ottawa will move to (1,2), in order to escape its worst outcome. Alberta then has to switch to a defect strategy, because it prefers (2,4) to (1,2). However, mutual cooperation (3,3) is better than either of those options; a non-myopic Alberta therefore would prefer not to set the game in motion. From Ottawa's point of view, choosing the defect strategy is ideal; Alberta is left with a choice between (1,2) and (2,4). Thus the difficulty with the measurement scheme underlying Figure 4 is this: How can the ultimate choice of the compromise -- which happens to be the Nash solution, based on Figure 4 (Uslaner 1989: 176) -- be explained, given the advantage that Ottawa enjoyed in the game?

Each measurement scheme, to conclude, may pose some problems. Figure 2 entails that Ottawa prefer mutual non-cooperation to the NEP. While that

FIGURE 4

THE GAME IN STRATEGIC FORM, BASED ON ABSOLUTE PAYOFFS

		Federal Government (F)	
		Do Not Cooperate	Cooperate
Government of Alberta (A)	Do Not Cooperate	1,2	4,1
	Cooperate	2,4	3,3

Source: Adapted from Uslaner (1989a: 176).

might be explained in terms of the need for a stalemate prior to a mutually beneficial compromise -- as opposed to a federal victory that might stand in the way of future efforts toward a constitution -- the point is hardly self-evident. Figure 4 appears to give a decisive advantage to Ottawa, because the stalemate is worse for Alberta and, to break out, the latter would have to accept (2,4). It did not.

Conclusion

Having completed the game-theoretic analysis,, it is appropriate to review what has been accomplished and suggest directions for further research. One interesting aspect of the game-theoretic analysis is its independence from interpretations based strictly on personalities. For example, the stalemate could be explained superficially in terms of "stubborn" or "self-destructive" leaders. But the same figures participated in the successful negotiations that led up to the Canada-Alberta Agreement. The unfolding of the entire process of bargaining can be explained more convincingly through reference to the structure of the situation as a sequential, quasi-cooperative, variable-sum game. Although personal characteristics of leaders do matter, economy of explanation suggests that complexity should be added only as necessary. In sum, much of the bargaining over energy revenues can be accounted for by the strategic structure of intergovernmental relations.

With respect to the application of game theory to observed instances of bargaining, the present study represents a departure from purely formal treatments. Unrealistic assumptions, such as a single round of play or pursuit of a myopic equilibrium point, have been relaxed. Instead,

bargaining in a real case has been investigated, using available information on preferences, strategies and outcomes to assess the explanatory power of a sequential framework of analysis. Given the apparent success of that approach, other intergovernmental rivalries in Canada and elsewhere over economic rents could be investigated in a similar fashion.[21]

Turning more specifically to energy as an issue, there have been some interesting developments in recent years. From the election of the Mulroney government in September 1984, until the signing of the Western Accord in March 1985, a new round of intergovernmental bargaining occurred. The Accord, along with an Atlantic Accord signed in February of the same year between the federal government and Newfoundland, "essentially dismantled the remnants of the NEP" (Helliwell et al. 1986: 344). The provisions within these agreements, especially those for deregulation of the energy industry, marked the final erosion of the foundations upon which the NEP had been built.

More precisely, the Western Accord was signed between the federal government and the governments of British Columbia, Alberta and Saskatchewan on March 28, 1985. It purported to resolve controversies over issues of pricing and revenue sharing which had existed since the mid-1970s and crystallized in 1980. In order to stimulate investment and job creation in the energy sector, the Accord deregulated pricing and exposed the energy sector to market forces (Pollard 1986: 169).[22] The Accord marked the first time in more than two decades that the price of domestic, crude oil would be determined in direct reaction to international markets. This remarkable federal withdrawal from all areas of the oil and gas industry bears out the assertion by some observers that the Accord "marked the end of an era in

Canadian energy policy" (Helliwell et al. 1986: 342). For that reason alone it would be interesting to conduct a game-theoretic analysis of the bargaining that led to the 1985 Accords.

Aside from the division of economic rents based on energy and other resources, other areas of policy might be understood better through a game-theoretic analysis. For example, n-person game theory could be used to model the process of bargaining over the 1982 Constitution and the Meech Lake Accord. The players would include Ottawa, the provinces and possibly others. In sum, given the level of performance already demonstrated, a research program based on the principles of rational choice should be taken seriously as a future direction for the study of comparative and Canadian politics.

Notes

1. For an effective study of the politics surrounding the NEP, see Doern and Toner (1985).

2. For a general assessment of NEP-related energy politics that compares interpretations based on pluralism, Marxism and state autonomy, see James and Michelin (1989).

3. Uslaner (1989a), in an authoritative study of energy politics in the US, also applied a game-theoretic analysis to Canada's NEP and its aftermath, although he did not adopt the framework of a sequential threat game. James (1989), using solution concepts derived from cooperative game theory, analyzed the distribution of economic rents from energy resources to levels of government within Canada. However, he focused on the results, as opposed to the process, of intergovernmental bargaining.

4. Excellent introductions to rational choice may be found in Frohlich and Oppenheimer (1978), Mueller (1979) and McLean (1987). More advanced applications of the approach appear in any issue of Public Choice.

5. A basic introduction to game theory may be obtained from Davis (1983); more advanced treatments include Friedman (1986) and Shubik (1982). An early and highly influential application of game theory, focusing on international politics, appears in Schelling (1960).

6. The following description of the Alberta proposals is based on Scarfe (1981: 11).

7. Uslaner's (1989b) study of voting patterns in the 1980 election supports the position that energy policy played an important role in determining the outcome: "What seems to have occurred in 1980 was that the energy issue mobilized strong supporters of each party above and beyond the effects of party I.D. and party leader evaluations."

8. This claim is made by Doern and Toner (1985: 44). They also suggest that the Alberta Government believed that the federal Liberals "would soon be preoccupied with many issues other than energy". The Albertans knew that the Trudeau Government intended to tie the NEP to the plan to patriate the Constitution; in fact, when signing the 1981 Agreement, Lougheed made a point of stating that it had not altered his opposition to Ottawa's patriation plan (Globe and Mail: 3 September 1981: 11). The Albertans hoped that the retaliation would delay implementation of the NEP long enough that the federal Liberals would have to drop the energy issue in order to succeed with the constitutional initiative.

9. The full statement of the Program appears in Energy, Mines and Resources Canada (1980).

10. Scarfe (1981: 11) summed up the general reaction within Alberta to the federal initiatives:

Perhaps it is understandable why so many Western Canadians, and not just those resident in Alberta, are angered and bewildered by the Lalonde energy policy and the MacEachen budget, and why the oil and gas producing industry is considering drastic retrenchment of its activities. For the energy program contained in the budget is an affront to our economic intelligence, and an attack on our regional interests.

11. A Globe and Mail (1 November 1980: 1) report described the confidence of Federal Energy Minister Lalonde that Canada would have little problem maintaining her oil supplies despite Alberta's retaliatory actions. Doern and Toner (1985: 312) suggest that this confidence was not misplaced, because Alberta's retaliation was basically ineffective and the federal bargaining position actually had improved since the retaliation started. Helliwell and McRae (1981, 1982) have demonstrated that, economically, the retaliation tactics of Alberta harmed the provincial economy more than that of Canada. This is one reason why Alberta faced more pressure than Ottawa to return to the bargaining table.

12. The following description of the Agreement is taken from the Globe and Mail (2 September 1981: 1).

13. The federal government insisted (in writing) that such a NGGLT could be levied, but established 0% as the initial level; of course, the adversaries also set boundaries for any taxation changes during the

life of the Agreement. Helliwell and McRae (1982: 16) have described the Incremental Oil Revenue Tax (IORT) as follows: "[It] is to be levied at 50 per cent of the incremental revenues on old oil. These revenues are equal to production of old oil times the difference between theold oil price and the price established in the NEP, after subtracting the provincial royalties from both prices"

14. Uslaner (1989a: 178) also concludes in favour of a two-person game, implicitly noting the role of other actors such as interest groups: "we can readily model events as a two-person (two-party) game. Cleavages reinforce each other so that the bargaining model is easier to depict."

15. According to Milne (1986: 79), Lalonde did not have to "worry about the required level of federal bureaucratic support for this initiative... with senior officials from both Finance and Energy (the so-called ENFIN group, including Mickey Cohen, Ian Stewart, Ed Clark and George Tough, with Michael Pitfield and Bob Rabinovitch) later working together in support of different elements of the program, with direct input from Bill Hopper, the experienced head of Petro-Canada, and his vice-president, Joel Bell, there was little likelihood of serious bureaucratic resistance to the policy."

16. Uslaner (1989a: 174) has compared rent shares for Albertans to those of Canadians outside of Alberta, as computed by Helliwell and McRae (1981: 17), rather than looking at the rents accruing directly to the governments. However, for present purposes, that would build in an

undesired element of pure conflict to assessment of the rivalry. In the sequential game, Ottawa also had a long-term interest in every province's degree of satisfaction with the result. Although it wanted to limit Alberta's revenues, an extreme outcome would spell a virtual end to further national integration. To incorporate this federal priority, it is appropriate to look at overall revenues. Given the nature of the data generated by Helliwell and McRae, that entails a comparison of federal-provincial rents.

17. Helliwell and McRae (1982: 16) also estimated the impact of a fifth scenario, described as "what would happen under the agreements if world oil prices remain constant, in real terms, after 1981 instead of increasing at 2 per cent until 2000 as assumed in the other cases." Since the emphasis in the present study is on the perceptions held in 1980-81, the fifth scenario will not be considered further.

18. Another aspect concerns the comparability of statistics. Other sources, such as Gorbet (1980) or Copithorne, et al. (1985), do not provide data on the complete set of outcomes.

19. The game corresponds to #63 in the listing provided by Brams (1977) and #47 in Rapoport and Guyer (1966).

20. These rules originally appeared in Brams and Wittman (1981).

21. Examples would include the division of revenues from potash and hydroelectric power produced in Saskatchewan and Newfoundland, respectively (Bushnell 1980; Copithorne 1979). Sulphur in Alberta and pulpwood in British Columbia are two other instances (Laforest 1973); further examples are plentiful.

22. The Accord called for the deregulation of domestic crude oil prices as of 1 June 1985, effectively dismantling the complex, two-tier pricing system which had been established by the 1981 Agreement. It marked the end of the Petroleum Compensation Charge (PCC) and the Oil Export Charge (OEC). The Accord also removed all transportation subsidies in the energy sector and every control on short-term oil exports (Helliwell et al. 1986: 344). Furthermore, it eliminated the Incremental Oil Revenue Tax (IORT) and the NGGLT. Although already at zero and thus not major concerns of the negotiators, the removal of these taxes had symbolic importance. The Accord also saw the phasing out of the Petroleum Incentives Payments (PIP), which Alberta followed up with termination of its own, similar program (Helliwell et al. 1986: 344).

References

Brams, Steven J. (1977) "Deception in 2x2 Games", Journal of Peace Science 2: 171-203.

---------, and Marek P. Hessel. (1984) "Threat Power in Sequential Games", International Studies Quarterly 28: 23-44.

---------, and Donald Wittman. (1981) "Nonmyopic Equilibria in 2x2 Games", Conflict Management and Peace Science 6: 39-62.

Bushnell, S.I. (1980) "The Control of Natural Resources through the Trade and Commerce Power and Property Rights", Canadian Public Policy 6: 313-324.

Copithorne, Lawrence. (1979) "Natural Resources and Regional Disparities: A Skeptical View", Canadian Public Policy 5: 181-194.

---------, Alan MacFadeyn, and Bruce Bell. (1985) "Revenue Sharing and the Efficient Valuation of Natural Resources", Canadian Public Policy 11: 465-478.

Courchene, Thomas J., and James P. Melvin. (1980) "Energy Revenues: Consequences for the Rest of Canada", Canadian Public Policy 6: 192-204.

Davis, Morton D. (1983) Game Theory: A Nontechnical Introduction. rev. ed. New York: Basic Books.

Doern, G. Bruce, and Glen Toner. (1985) The Politics of Energy: The Development and Implementation of the NEP. Toronto: Methuen.

Energy, Mines and Resources Canada. (1980) The National Energy Program Ottawa: 1980.

Friedman, James W. (1986) Game Theory with Applications to Economics. New York and Oxford: Oxford University Press.

Frohlich, Norman, and Joe A. Oppenheimer. (1978) Modern Political Economy. Englewood Cliffs, N.J.: Prentice-Hall.

Globe and Mail, national edition.

Gorbert, F.W. (1980) "Energy Self-Sufficiency: A Realistic and Desirable Goal?", Canadian Public Policy 6: 472-480.

Grant, John. (1983) "Foreign Investment: Turning Off and Turning On", Canadian Public Policy 9: 32-36.

Helliwell, John F., and Robert N. McRae. (1981) "The National Energy Conflict", Canadian Public Policy 7: 15-23.

---------, ----------. (1982) "Resolving the Energy Conflict: From the National Energy Program to the Energy Agreements", Candian Public Policy 8: 14-23.

----------, et al. (1986) "The Western Accord and Lower World Oil Prices", Canadian Public Policy 12: 341-355.

James, Patrick. (1989) "The Canadian National Energy Program and Its Aftermath: A Game-theoretic Analysis", Canadian Public Policy, forthcoming.

----------, and Robert Michelin. (1989) "The Canadian National Energy Program and Its Aftermath: Perspectives on an Era of Confrontation". American Review of Canadian Studies 19: 59-81.

Laforest, Gerald V. (1973) "Jurisdiction over Natural Resources: Provincial and Federal", in Philippe Crabbé and Irene M. Spry, eds., Natural Resource Development in Canada: Multi-Disciplinary Seminar. Ottawa: University of Ottawa Press.

MacLean's

McLean, Iain. (1987) Public Choice: An Introduction. Oxford Basil Blackwell.

Milne, David. (1986) Tug of War: Ottawa and the Provinces Under Trudeau and Mulroney. Toronto: James Lorimer and Company.

Mueller, Dennis C. (1979) Public Choice. Cambridge: Cambridge University Press.

Nordlinger, Eric A. (1981) On the Autonomy of the Democratic State. Cambridge: Harvard University Press.

Norrie, Kenneth. (1984) "Energy, Canadian Federalism and the West". Publius 14: 79-91.

Pollard, Bruce G. (1986) "Canadian Energy Policy in 1985: Toward a Renewed Federalism?", Publius 16: 163-174.

Rapoport, Anatol, and M. Guyer. (1966) "A Taxonomy of 2x2 Games", General Systems: Yearbook of the Society for General Systems Research 13: 195-201.

Ruitenbeek, Jack. (1985) "Economics of In-Situ Oilsands Production: Some Implications for Public Policy", Canadian Public Policy 11:407-414.

Scarfe, Brian L. (1981) "The Federal Budget and Energy Program, October 28th, 1980: A Review", Canadian Public Policy 7: 1-14.

Schelling, Thomas C. (1960) The Strategy of Conflict. Cambridge: Harvard University Press.

Shubik, Martin. (1982) Game Theory in the Social Sciences: Concepts and Solutions. Cambridge: MIT Press.

Simeon, Richard. (1980) "Natural Resource Revenues and Canadian Federalism: A Survey of the Issues", Canadian Public Policy 6: 182-191.

Sproule-Jones, Mark. (1982) "Public Choice Theory and Natural Resources: Methodological Explication and Critique", American Political Science Review 76: 790-804.

Uslaner, Eric M. (1989a) Shale Barrel Politics: Energy and Legislative Leadership. Stanford, California: Stanford University Press.

_____. (1989b) "Looking Forward and Looking Backward: Prospective and Retrospective Voting in the 1980 Federal Election in Canada", British Journal of Political Science 19, forthcoming.