A REEVALUATION OF ECONOMIC MODELS OF CANADIAN TARIFF DETERMINATION

by

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ABSTRACT

Recent empirical studies of trade barrier determination have utilized several models in attempts to explain variations in the levels or variations in changes in the levels of protection provided to industries by government. This study briefly reviews and critiques those theoretical models, proposes a more firmly grounded theoretical approach and assesses it against Canada's mid 1960's tariff structure.

The analysis is organized into three major sections. The first reviews eight distinct theoretical approaches inherent in existing empirical work. These approaches fall into two categories: economic models, in which trade policy results from the interplay between voters pursuing selfish economic interests, and a democratically elected government pursuing reelection; and non-economic models in which policy seems to result from the autonomous abilities of government or perhaps from broader, less selfish conceptions of individual political behavior. The review suggests that while non-economic models receive considerable empirical support, they suffer from serious theoretical weaknesses. Economic models, on the other hand, are somewhat better developed but lack strong empirical support.

The second section of the analysis attempts to more carefully scrutinize the fundamental theoretical background supporting economic models and to develop a more sophisticated economic approach. In this

section, a simple collective decision rule model of the tariff determination process is developed. This model assumes that individual voters pursue preceived selfish economic interests regarding tariff policy as determined from a simple partial equilibrium conception of the effects of a tariff. Six hypotheses regarding Canada's cross sectional tariff structure are derived from this approach.

The third section deals with the specification of these hypotheses and their empirical evaluation. Multiple regression analysis based on ordinary least squares estimates is employed on a sample of 69 Canadian manufacturing industries. Overall the model receives stronger empirical support than any previous Canadian study - both in its basic specification and in three alternative specifications. Hypotheses regarding the influence of import competition, average tariffs on industry inputs and the strength of union representation on industry tariff structures perform particularly well. Other hypotheses concerning traditional concepts of interest group formation and industry voting strength, however, were not supported.

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CHAPTER I

INTRODUCTION

Since the mid 1970's several studies have attempted to examine the relevance of various political and economic characteristics to differences in the level of import protection provided by government to industries. This empirical work has been described as part of a renewed interest by economists in the political economy of protectionism;[1] a subject which has evolved out of the apparent inability of neoclassical trade theory to explain why governments implement trade policies which do not seem to be Pareto efficient.[2] Previous studies have utilized several different models of trade barrier determination and many different democratic countries, including Canada,[3] the United States,[4] the United Kingdom,[5] Sweden,[6] Japan,[7] Germany,[8] and Australia[9] have been examined. Though some empirical trends have been discovered through these efforts, little consensus of opinion has yet emerged concerning the nature of the political process determining trade policy.[10]

The theoretical basis of many studies in this area is rooted in both trade theory, which has been used to examine individual economic interests, and the literature of public choice theory, which has been used to explain how the interests of individuals can be translated into public policy. Public choice concepts include hypotheses concerning voting costs, interest groups and political pressure, and the public choice approach to government decision making tends to view government as having little autonomy from the interests of its electorate. Public

choice theory also resembles the main body of neoclassical economics in that it is based on a concept of man as a selfish, rational, egotistic utility maximizer and it views political decisions as having their basis in the actions and interactions of individuals.[11]

Other studies, however, seem to be centred around more autonomous conceptions of state action or possibly broader characterizations of individual political behavior. In addition, many studies based on public choice and trade theory concepts of trade barrier determination tend to include other hypotheses concerning autonomous state action or broader conceptions of individual behavior to, perhaps, support the lagging explanatory power of their more economic determinants. For example, many models of trade barrier determination are based on or include hypotheses concerning the state as "a balancer of equities"[12] or as being subject to historical influences[13] or as naturally giving preference to certain industries. Some also include factors such as nationalism as strong explanatory influences.[14] Most of these concepts provide difficulties when included in trade barrier determination models because, while public choice explanations of the actions of government

> "...tend to devote considerable time to describing how a particular individualistic or social objective associated with protection is actually translated into political action..."

other autonomous or non-economic determinants tend to be provided without much description of the political process by which they are conceived and translated into policy or how they interact with other determinants.[15]

There are two main objectives of this study: the first is to examine the fundamental theoretical background surrounding economic

approaches to trade barrier determination - that is, approaches based on narrow public choice concepts of government decision making and on the concept of individuals pursuing their own selfish economic interests. Such an examination is worthwhile given the apparent limitations in the explanatory power of existing economic models. The second objective is to look for empirical support for a more firmly grounded economic approach in Canada's cross-sectional tariff structure once divorced from non-economic hypotheses.

The context in which the empirical model will be applied is the determination of Canadian tariff barriers during the mid 1960's. This time period was chosen because the 1960's were a period of relative economic stability but, more importantly, because tariff policy during that period was probably the prime vehicle of government for supplying protection from import competition. During later periods the implementation of Kennedy and Tokyo rounds of multilateral tariff reductions, as well as stronger motivation by governments to utilize non-tariff barriers,[16] probably reduced the reliability of tariffs as a measure of government protection. During earlier periods data availability limits the possibilities for analysis.

The study is organized into five chapters: Chapter II discusses previous empirical models of trade barrier determination; Chapter III looks at the theoretical basis of the selfish economic approach and outlines several hypotheses for empirical examination; Chapter IV outlines the empirical model and its results, and Chapter V summarizes and presents conclusions.

Chapter I Footnotes

1. Baldwin (1982) p.263

2. Baldwin (1982) p.263

3. Caves (1976), Helleiner (1977), Saunders (1980; 1979), Jones and Laudadio (1984)

4. McPherson (1972), Cheh (1974), Pincus (1975), Fieleke (1976), Baldwin (1981), Ray (1981, 1981a), Lavergne (1983)

5. Cable and Rebelo (1980)

6. Lundberg (1981)

7. Shouda (1980)

8. Riedel (1977), Gliesmann and Weiss (1980)

9. Anderson (1978), Conybeare (1978)

10. Baldwin (1984) p.574

11. Mueller (1981) p.1

12. Caves (1976)

13. Lavergne (1983)

14. Caves (1976), Lavergne (1983)

15. This is not meant to imply that non-economic determinants are unimportant to the determination of some tariffs, only that the theoretical basis of non-economic determinants is often not well developed and, hence, could detract from an evaluation of economic determinants.

16. See Baldwin (1984a), for example.

CHAPTER II

AN OVERVIEW OF EMPIRICAL MODELS OF TRADE BARRIER DETERMINATION

Existing empirical studies of trade barrier determination have attempted to verify hypotheses concerning differences in the levels, or changes in the levels, of industry protection. The standard empirical method used in these studies is multiple regression analysis applied on cross-sectional industry data. Empirical models utilize proxy measures of various political and economic characteristics of industries as independent variables[1] and different measures of industry protection, including nominal and effective tariff rates, changes in nominal tariff levels and various indexes of non-tariff barriers as dependent variables. As previously mentioned, almost all studies claim empirical support; however, it is sometimes difficult to determine whether the supported empirical models actually represent distinct theories.

Previous reviews of the empirical literature have outlined approximately eight separate views or models of trade barrier determination[2]. These eight models can be divided into two distinct categories: economic models and non-economic models. The economic models, like the main body of neoclassical economics, are loosely based on an interaction between elected officials and individuals pursuing selfish short term economic interests. The determination of trade barriers in these models is the result of a bargaining process between government and its voters[3]. The non-economic models, on the other hand, are those where trade policy seems to result from the autonomous abilities of government, or perhaps from broader, less selfish

conceptions of individual political behaviour. Particular studies often combine more than one model but, for purposes of exposition, the different approaches can be examined separately.

2.1 Non-Economic Models of Trade Barrier Determination

There have been approximately six non-economic models of trade barrier determination presented in the literature. Short descriptions are as follows.

The Adjustment Assistance Model

This approach was formulated by Cheh[4] to explain changes in United States tariff levels occuring over the Kennedy round multilateral tariff reductions. Cheh hypothesized that government attempts to minimize the short term adjustment costs to labour in determining what level of tariff reduction an industry should receive or the level of increase it might deserve if threatened by import competition. To test the hypothesis Cheh utilized proxy independent variables which he believed reflected the short term labour adjustment difficulties of an industry. These variables included the percentage of unskilled workers in industries, the percentage of workers over 45 years of age, the industry's labour-output coefficient, the proportion of industry workers located in rural areas and the initial pre-period height of the tariff protecting the industry. The dependent variable was, of course the United States Kennedy round nominal tariff change. All of the independent variables except the industry growth rate were anticipated to be negatively correlated with the magnitude of the tariff reduction.

The Equity Concerns Model

The equity concerns model is proposed in studies by Fieleke[5] and Constantopoulos[6] who focus on the hypothesis that government attempts to insure that low income workers are not adversely affected by economic change resulting from import competition. As proxies for the low income labour content of industries, studies utilize variables such as the proportion of unskilled workers in the industry, the average wage level and the industries labour output ratio. The proportion of unskilled labour in an industry is hypothesized to be positively correlated with the level of protection while the other variables are seen to be negatively correlated. Nominal tariffs were used as the dependent variable.

The Historical Influences Model

The historical influences model was formulated by Lavergne[7] as part of a hybrid approach to trade barrier determination. Lavergne hypothesized that governments are reluctant to change tariff levels once they have been introduced either because they are reluctant to tamper with established property rights (i.e. the tariff once enforced) or because they are unwilling to create the administrative and other social costs which might accompany change[8]. To evaluate this hypothesis Lavergne utilizes historical levels of industry protection as an independent variable in his regressions. These variables are anticipated to be positively signed with various measures of protection. He utilizes nominal and effective tariff levels and tariff changes as well as non-tariff barrier indexes as dependent variables.

The International Bargaining Model

The international bargaining model was offered by Helleiner[9] as part of another hybrid explanation of trade barrier determination. Helleiner views less developed countries as having "not much to bargain with" in multilateral trade negotiations which he sees as a key determinant of tariff determination[10]. Helleiner, therefore, predicts that the tariff structures of developed countries should be biased against products which less developed countries have a comparative advantage in producing. Helleiner believed that less developed countries have a comparative advantage in the production of unskilled labour intensive products and in the production of goods from industries characterized by low economies of scale. He uses average wage levels and an economies of scale variable to test his hypothesis. Effective tariff rates are used as a dependent variable. Helleiner's model, however, did not receive credible empirical support[11]. In more recent work on United States tariffs, Lavergne[12] did find some statistical significance for the international bargaining approach but utilized the share of less developed country exports in U.S. imports as the relevant independent variable.

The National Policy Model

The national policy model was developed by Caves[9] and applies specifically to the determination of Canadian tariffs. The collective nationalistic preferences of Canadian voters are seen as the motivating force behind this model. These preferences include the need for a "balanced" economy with all major industries represented, preferences for high value added industries, high prestige industries and industries with high middle class job content[14].

To test this model Caves used variables such as the ratio of industry value added per worker in Canada relative to that in the United States (RPR), the fraction of non-production workers in an industry's total labour force multiplied by average compensation per non-production worker (NPC), value added in industries divided by value of shipments (VRT), value added per worker (VPW) and the growth rate of industry shipments (GRO) as independent variables. RPR is seen to be positively correlated with an industries need for protection given the nationalistic preference for a balanced economy, NPC is predicted to be positively correlated with levels of protection and represents a proxy for middle class job content, VRT and VPW are seen as proxies for industry value added and are hypothesized to be positively correlated with tariff levels while GRO represents an industries growth potential which is a proxy for prestige and hence is seen to be positively signed. Caves used both effective and nominal tariffs as dependent variables but did not receive significant support for this approach.

The Comparative Cost Model

The comparative cost model has been promoted in studies by Lavergne[15] and Ray[16] as a component of hybrid models. The approach also closely resembles Cave's equity concerns hypothesis, which is used to support his interest group model. This approach predicts that tariffs should be relatively high in industries in which a country has a comparative cost disadvantage. There are two reasons for this hypothesis: first, competitive export oriented industries have less incentive to try and obtain protection from import competition; and

second, concern about an over-reliance on imports in certain product areas will tend to make government more sympathetic to the concerns of industries characterized by comparative disadvantage traits[17]. Independent variables used to proxy the comparative disadvantage of industries include, the proportion of unskilled workers in the industry labour force and import market share, which are hypothesized to be positively correlated with the level of protection - as well as the industries' labour-output co-efficent, export share, and the industry average wage which are seen to be negatively correlated with industry protection.

A summary table of the empirical results concerning non-economic models of tariff determination is provided in Table 1[18]. With the exception of the national policy model, all of the non-economic approaches to tariff determination receive significant empirical support[19]. Many of the models, however, utilize the same or at least highly correlated empirical characteristics and predict the same empirical sign. This has caused Baldwin to remark that:

> "It is difficult at this stage of the empirical testing to determine the relative explanatory power of the different models[20]."

Examination of the theoretical bases of the different non-economic appoaches, however, brings out a more fundamental concern; that is, do the five supported non-economic models represent distinct well developed theories of trade barrier determination or are they merely alternative means of categorizing similar empirical phenomena?

Consider first the adjustment cost and the equity concerns models. The hypotheses evaluated through these models could be derived from theory viewing government as having some autonomous ability and will

TABLE 1
Non Economic Models of Tariff Determination
Expected Relationships

Industry Characteristics:	Adjustment Assistance	Equity Concerns	Historical Influences	International Bargaining	National Policy	Comparative Cost	Actual Relationship
Growth Rate	Negative				Positive		Negative
Labour Output Coefficient	Positive	Positive				Positive	(a) Positive
Proportion of Unskilled Workers		Positive				Positive	(a) Positive
Age of Workers	Positive						Positive
Proportion of Work Force in Rural Areas	Positive						Positive
Average Wage	Negative	Negative				Negative	(a) Negative
Extent of Imports from LDC's				Positive			(a) Positive
Export Share						Negative	(a) Negative
Change in Import Share						Postive	Positive
Historical Protection Levels			Positive				(a) Positive
Relative Productivity					Positive	Positive	Positive
Value Added Relative to Shipments					Positive		Positive
Value Added Per Worker					Positive		Positive & Negative

(a) Indicates significance at the 90% level.

separate from that of the electorate; or, by assuming that voters have strong altruistic preferences. Actual studies, however, do not provide enough theoretical background to the models to consider them as representative of competing theories. Cheh's work, for example, devotes two sentences to outlining his theoretical hypothesis. With other non-economic models similar criticism can be made. The historical influences approach is too vague to describe why or how administrative costs and property rights influence decision making and the comparative cost model is unclear on the process through which comparative disadvantage factors affect policy decisions. These studies also fail to explain how non-economic characteristics interact with other more selfish determinants of voter behaviour.

None of this criticism is important if the objective of such work is simply to discover empirical correlations; however, it is difficult to move beyond that and state that such work represents a test of competing theories - especially if the empirical phenomena accounted for can be explained within a more firmly grounded economic framework. Examination of existing economic models, however, shows that they too suffer from major theoretical and empirical problems.

2.2 The Economic Models

There are two models of trade barrier determination in the economic category. These models are by far the most prevalent in the literature and both are loosely drawn from standard economic and public choice theory. They are the "adding machine model" and the "interest group model." Brief descriptions are as follows.

The Adding Machine Model

The adding machine model was developed and named by Caves[15] and is drawn from the work of public choice theorists like Downs[21], Buchanan and Tullock[22] and Breton[23] who examine the determination of public policy in the context of a political market place. The principal hypothesis behind the adding machine model is that governments attempt to provide policies which satisfy the preferences of the largest number of geographically disbursed voters. Caves provided two conflicting explanations of what direction the interests of the majority of voters should take in regard to the tariff policy.

The first explanation is derived from the Heckscher-Ohlin general equilibrium model of international trade. It splits individual interests regarding tariffs along factor ownership lines and assumes that costless majority voting determines policy. Caves purports that wage income is:

> "...less concentrated among individuals than non-wage income and we, therefore, expect that the more labour intensive production processes will win the highest rates of tariff protection[24]."

Caves utilized value added per worker as an inverse empirical measure of labour intensity but found the results regarding this hypothesis to be inconclusive.

The alternative adding machine model proposed that any given tariff is harmful to the interests of the general public but benefits individuals whose incomes are closely connected to the industry receiving protection. In this explanation, Caves assumes, however, that the losses by those not connected with the industry are small and that "threshold effects" are involved - that is, while consumers do not benefit from protection, they either fail to perceive their losses or

find it unprofitable to organize to avoid them[25]. Industry voting strength, then, is the key to obtaining protection.

To test his approach, Caves focuses on variables which reflect industry decentralization - variables he believed were the best proxies for industry voting strength (i.e. the more decentralized the industry the greater the number of electoral ridings it influences). These variables include the four firm concentration ratio and the percentage of employees located outside of Ontario and Quebec. The dependent variables used are nominal and effective Canadian tariff levels. Curiously, Caves does not utilize industry employees as an independent variable which would seem to be a direct measure of voting strength because he believes[26] that the calcuation of industry tariff levels, which involves the weighting of commodity tariffs by outputs, undermines the usefulness of employment variables. Other studies, however, have obtained significant results using employment variables[27] and there is no reason to believe that the weighting process produces inordinate bias.

The Interest Group Model

The interest group model is largely derived from the work of Mancur Olson[28] on public goods and the theory of groups. It has been applied in the empirical literature in varying forms in over fourteen studies[29]. A fundamental assumption underlying this approach is that costs like information and voting costs, and costs of redistributing income exist within the political market place which determines trade policy[30]. For this reason trade policies adopted by democratic governments may not reflect the views of the majority of their voters

but will more fully reflect the interests of certain individuals who are effective in forming or utilizing groups to overcome the costs of expressing a common political interest.

In Olson's Logic of Collective Action, several factors are described which complicate traditional interest group theory[31]. Consideration of these factors allows one to divide interest groups into two categories: voluntary interest groups and institutional interest groups. Voluntary interest groups refer to small groups organized to lobby for one particular collective good - protection from import competition. Institutional interest groups refer to larger groups such as unions, professional associations or industry lobbies that exist quite separate from protection issues. Key characteristics of institutional interest groups which separate them from voluntary groups are: first, the funds for lobbying for protection may originate from other sources than a direct charge on the pocket book of the individual member; and second, that individual members may have little choice on whether or not to pay the costs of industry lobbying.

In previous empirical work, few studies have looked at the influence of institutional interest groups on levels of protection - probably because of the difficulty in quantifying institutional interest group behaviour. Studies that do include institutional interest group factors look at the effect of worker unionization within industries on trade barrier determination. The data and choice of empirical variables utilized in these studies, however, are somewhat questionable and the empirical results have been disappointing[32].

Factors influencing the ability of industries to form voluntary interest groups, on the other hand, have been well examined. In voluntary interest group studies, the decisions of the individuals to organize interest groups are based on the anticipated individual costs and benefits of doing so. Interest group lobbying provides an effective means of expressing individual policy preferences to government but because the benefits from influencing government policy, are generally non-excludable (i.e. once a tariff is imposed all domestic firms will benefit) each individual also has an incentive to avoid bearing his share of the cost of influencing the political process if he believes that others with the same political interest will continue to bear these costs. This is the free rider problem and it is of crucial importance to hypotheses concerning the political effectiveness of this type of organization.

When the number of individuals with a common interest regarding trade policy is small and the benefits of influencing the political process are large and unevenly distributed, the formation of effective voluntary interest groups will more readily take place than when there are many members and the benefits are evenly distributed. This is because the size and distribution of potential benefits positively influences the incentive of individual members to lobby. The number of individuals, on the other hand, affects each individual's incentive to shirk costs and hence aggravates the free rider problem.

The most common variables used in empirical work to measure the difficulty facing individuals in forming effective voluntary interest groups are the number of firms in an industry and industry concentration ratios. Other variables included in some studies are size of industry

output, buyer concentration, and geographic concentration. Output levels are seen to reflect the size of potential gains to an industry from obtaining protection and are anticipated to be positivly correlated to levels of protection. Buyer concentration is thought to reflect the level of active political resistance to protection and hence is expected to be negatively signed. Finally, geographic concentration is suggested by Pincus[33] to be positively signed and to reflect low geographic costs of organization while Brock and Magee[34], on the other hand, argue that it should be negatively signed to reflect influence on a larger number of elected representatives and hence on policial party positions.

Empirical results regarding the interest group and adding machine models have been mixed. Results concerning firm and geographic concentration variables vary in sign from study to study, though most studies are characterized by low levels of significance. Employment variables and variables characterizing the number of firms, on the other hand, are usually correctly signed and relatively significant. In addition to the ambiguity of empirical results[35], however, there are several theoretical weaknesses which either do not allow these models to explain empirical phenomena associated with the non-economic approaches or which provide too naive a view of the mechanisms determining trade policy.

Most interest group studies, for example, in addition to ignoring the role of institutional interest groups, do not adequately describe the forces motivating individual voters to try and express their political preferences. Some studies have suggested that potential industry rents accruing to protected firm owners provide the incentive

for interest group formation[36]. Such a rationale, however, is not sufficient to explain why industry workers would wish to take part in lobbying or why, other things being equal, low wage uncompetitive industries seem to be favoured by protection. The adding machine model and the concept of "threshold effects,' on the other hand, provide too simplistic a view of the weighting of individual policy preferences when one considers the wide variety of professional lobbying groups and the large sum of money they spent trying to influence the opinions of government.

In view of the full range of empirical and theoretical considerations, then, neither of the economic models performs very well. Still, in comparison to the non-economic models, the economic approaches seem to be considerably better developed theoretically. The question therefore arises as to whether or not an economic approach can be modified to more fully explain the political economic process of trade barrier determination. Examination of this problem will be the objective of the next chapter.

Chapter II Footnotes

1. As many of the theoretical determinants of trade policy are unobservable, studies are usually forced to make use of instrumental variables to proxy for them . Industry concentration, for example is used as a proxy for ease of interest group formation.

2. In an extensive review of the empirical literature, R. E. Baldwin has outlined at least 7 basic models (see Baldwin (1984) pp. 572). In this overview an eighth, the national policy model, has been added to more fully reflect models used in Canadian literature. Throughout this section we adhere fairly tightly to Baldwin's classification system.

3. Baldwin (1984) pp. 576 - 577.

4. Cheh (1974). This approach is also utilized by Reidel (1977) but with much less significant results.

5. Fieleke (1976).

6. Constantopolous (1974).

7. Lavergne (1983) pp. 41.

8. Lavergne (1983 pp. 41

9. Helliener (1977).

10. Helliener (1977) pp. 318.

11. Helliener then proposed that the inconclusive results were consistant with the hypothesis that transnational enterprises were a major influence on tariff determination (Helliener (1977) pp. 325.

12. Lavergne (1983).

13. Caves (1976).

14. Caves (1976) pp. 289 - 291.

15. Caves (1976) pp. 289 - 291.

16. Ray (1981, 1981a).

17. Lavergne (1983).

18. Table 1 is derived from Baldwin (1984) pp. 579 with appropriate adjustments made for the inclusion of the national policy model.

19. Baldwin (1984) pp. 581.

20. Baldwin (1984) pp. 581

21. Downs (1957).

22. Buchanan and Tullock (1968).

23. Breton (1974).

24. Caves (1976) pp. 283.

25. Caves (1976) pp. 283

26. Caves Op. Cit. pp. 284

27. Reidel (1974).

28. Olson (1965).

29 Studies which have used the interest group model include Caves (1976), Helleinier (1977), Pincus (1974), Pincus (1977), Saunders (1978), Saunders (1980), Tharakan (1980), Cable and Rebelo (1980), Glisman and Weiss (1980) Ray (19801) Ray (1981a) Jones and Laudadio (N.D.), Jones and Laudadio (1984), Lavergne (1983).

30. Baldwin (1982) (1984); Pincus (1974).

31. Factors mentioned by Olson include compulsory group membership, jointness of supply and group provision of non-collective goods.

32. Jones and Laudadio (1984), for example, utilized the percentage of worker's in an industry covered by collective bargaining agreements as a unionization variable. This data, however, is derived from an incomplete survey and is not a perfect match to the percentage of union workers in the industry.

33. Pincus (1976).

34. Brock and Magee (1978).

35. Anderson and Baldwin (1981); Baldwin (1984).

36. Caves (1976) pp. 286.

CHAPTER III

THE ECONOMIC APPROACH RECONSIDERED

In this chapter the fundamental theoretical background supporting economic models of trade barrier determination is more closely scrutinized. The objective of this examination is to clarify the explanatory capability of such a framework and to derive several hypotheses for testing against Canada's mid 1960's cross sectional tariff structure. A consideration of particular interest will be whether or not an economic approach can explain empirical phenomena accounted for in many studies by the non-economic models.

In this discussion tariffs will, for simplicity, be assumed to represent government's only vehicle for providing protection from import competition and tariff levels will be assumed to evolve from an interaction between voters pursuing selfish economic interests and a government which supplies policy on a single issue basis in order to maximize its probability of re-election. Viewing the policial system in this simplified manner allows one to consider protection from import competition as the result from a collective decision rule among a nation's voters[1]. This collective decision rule approach is broadly consistant with models of the supply of government services presented in the public choice literature by authors like Downs[2] and Breton[3], but does not deal with many complicating factors considered in broader public choice models such as multiple issues, the selection of government policy tools, other political goals besides re-election, or logrolling phenomina[4].

From an instrumental perspective, this simple model may be useful in isolating the fundamental determents of tariff protection even though it cannot account for the full range and complexity of political relations in the Canadian decision-making process. It is felt that because tariff issues are of crucial importance to certain key groups of voters, governments may act as if such a simple decision making mechanism applied. Precedent for this approach in the trade policy area has already been offered in recent theoretical articles by Hillman[5], Baldwin[6] and Mayer[7]. The framework is especially useful for discussion of cross sectional differences in the level of industry protection in that it allows the process of trade barrier determination to be broken into two components: discussion of individual interests regarding tariff policy and discussion of factors affecting the transmission or weighting of those interests through the political process.

3.1 Individual Interests Regarding Tariff Policy

A useful starting point for discussion of individual economic interests regarding tariff policy, is to describe how individual welfare is affected by the imposition of a tariff. Theory purports that a tariff can affect individual welfare through an increase in the domestic market price of a commodity. A price increase alters individual welfare in two ways: by changing the price vectors individuals face when choosing consumption bundles and by possibly altering their income. These relationships can be described by an indirect utility function of the form:

$$U^i = f[P(t), Y(t)]$$

where U^i represents an individual's maximum attainable utility level;

$P(_t)$ denotes the price vector facing the individual, which is a function of the commodity tariff vector;

and $Y(_t)$ denotes individual income which is also a function of the commodity tariff vector[8].

The welfare change to an individual from a change in a particular tariff is given by

$$\frac{dU^i}{dt_j} = \frac{dU^i}{dP(t)} \frac{dP(t)}{dt_j} + \frac{dU^i}{dY(t)} \frac{dY(t)}{dt_j}$$

If $\frac{dU^i}{dt_j} > 0$ then the individual will want to increase t^j; however, if $\frac{dU^i}{dt_j} < 0$ the individual will want to reduce t_j. The sign and magnitude of $\frac{dU^i}{dt_j}$, in turn, depend on the sign and magnitude of $\frac{dU^i}{dP(t)} \frac{dP(t)}{dt_j}$ and $\frac{du^i}{dY(t)} \frac{dY(t)}{dt_j}$ which can be called the tariff induced price and income effects on welfare.

The price effect will be negatively related to changes in commodity tariffs for all individuals, but assuming that an individual consumes many commodities and no one commodity dominates his consumption patterns, the magnitude of these changes are likely to be small for any single tariff. The magnitude and direction of changes in individual welfare from a tariff induced change in incomes and the net impact of the tariff on the individual, however, are not so certain. These will differ from individual to individual depending on circumstances such as factor endowments, technology, factor substitutability and industry structure. Prediction of individual interests in regard to tariff policy, therefore, heavily depends on underlying assumptions regarding the structure of the economy and on the effects of international trade.

3.1.1 General Equilibrium Models and Perceived Individual Interests

The Heckscher-Ohlin trade model is a simple general equilibrium framework which has been used to define how individual voters perceive their interests regarding tariff policy.

The Stolper-Samuelson theorem derived from this model tells us that an increase in the price of a commodity will result in a greater than proportionate increase in the return to the factor of production which is used intensively in the production of that comodity and a decline in the return to the non-intensively utilized factor of production. Several economists since Caves have argued[9] that the Stolper-Samuelson theorem, when combined with information about the factor ownership distribution, provides a basis for dividing individual interests regarding tariff policy along factor ownership lines.

Baldwin has pointed out, however, that in a Heckscher-Ohlin world of single factor ownership and under certain assumptions regarding the collective decision rule determining tariff levels,[10] international trade would easily be voted out of existence for most western democracies which seem to be abundant in capital but have more owners of labour. Such an extreme prediction is clearly influenced by the simplicity of Baldwin's assumptions regarding the political process; however, it does question the validity of the Stolper-Samuelson theorem as a rationale for individual economic interests regarding tariff policy. Additional criticism has been provided in more generalized theoretical work which has demonstrated that "cost of living considerations" - that is, the tariff induced price effects on individual welfare re-emerge if any of the major assumptions surrounding the Hechscher-Ohlin model do not hold[11].

Recent theoretical work by Mayer has attempted to re-establish the importance of the factor ownership distribution within the Heckscher-Ohlin framework by incorporating the possibility of dual factor ownership as well as "cost of living considerations". Mayer demonstrates that in a world where costless majority voting determines tariff policy and where the capital-labour endowment ratios of most voters are less than the capital labour endowment ratio of the nation as a whole,

> "one would expect a built-in tendency towards the protection of labour's interests through subsidies on capital intensive imports or tariffs on labour intensive imports."[12]

Mayer shows that the extent of this tendency in his model is governed by the difference between the capital-labour endowment ratio of the median voter and that of the nation as a whole and, therefore, the Heckscher-Ohlin framework need not result in the extreme consequences predicted by Baldwin. He suggests that because the Heckscher-Ohlin framework is considered as a useful model of the long-term production structures it should still be considered useful long-term explanation of factor interests.

Unfortunately, despite the theoretical sophistication of Mayers' results the Heckscher-Ohlin framework is still a very simple model and a growing body of empirical work in addition to that presented by Caves has suggested that "factor content is not an extremely important determinent of protection[13]." Indeed Magee's study of industry lobbying behaviour concerning the 1973 United States Trade Act[14] goes as far as

to suggest that the lobbying behaviour of capital and labour appears quite sector specific. In view of the empirical evidence, it would seem that we must look elsewhere to obtain a more pertinent explanation of factor interests.

An alternative general equilibrium approach has been attempted by Mayer through the use of multi-sector specific factor model. In this explanation the objective is to describe how in the presence of uniform voting costs across all individuals a minority of voters can become a majority on one particular tariff issue[15].

His first step is to demonstrate that the direction and magnitude of individual gains or losses in the multi-sector model depends on factor ownership and on the factor bias[16] of the tariff induced change in prices. If the tariff induced price change is biased towards or neutral towards labour the specific factor owner in the industry receiving protection will unambiguously benefit from protection while all other specific factor owners in other industries will unambiguously lose. Moreover, the magnitude of the benefits to the specific factor owner in the protected industry in Mayer's model will be greater than the magnitude of the loses to other specific factor owners or to people who own only labour.

Mayer then suggests that if policy is determined by majority voting and if high voting costs exclude many individuals with less at stake from political participation, the specific factor owners in industries where the tariff induced price change is neutral or biased towards labour, may be successful in their quest for protection.

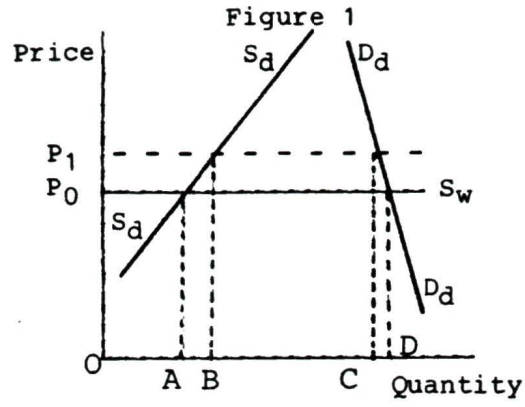
The difficulty of utilizing this approach as a basis for individual positions regarding tariff policy is, however, that voter interests are not clearly divided in all circumstances and it would take an unrealistically large amount of information for voters to determine their interests before policies were implemented. These requirements would include such areas as knowledge of product and factor endowments throughout the economy. If voters did not have a clear conception of their interests and if government enacted legislation which was detrimental to the welfare of the majority, there is no assurance that voters would recognize the decrease in their welfare as being connected to the harmful legislation. In other words government would no longer be accountable for its policies.

3.1.2 The Partial Equilibrium Appoach

An alternate approach to assuming that individuals pursue their actual economic interests and then attempting to define those interests through general equilibrium models is to assume that most individuals pursue their perceived interests as based upon a simple partial equilibrium conception of the effects of tariff policies. The rationale for this approach is derived from the observation that what should be important to the determination of policy is not what individual interests actually are, but what voters perceive them to be. If most voters percieve only the partial equilibrium affects of a tariff, partial equilibrium considerations are more likely to affect their behaviour and decisions regarding tariff policy. Such an approach is touched on in many interest group studies but does not seem to have received adequate theoretical development.

The partial equilibrium effects of imposing a tariff on a commodity which is produced by a competitive domestic industry as well as by import suppliers is outlined in figure 1 where Sd and Dd are the domestic market supply and demand curves and Sw is the world market supply curve.

Figure 1



Introduction of a tariff raises the domestic market price of a commodity from P_o to P_1. This in turn increases domestic market production from OA to OB and reduces domestic market consumption of OD to OC. For most individuals whose income is not directly associated with the industry receiving protection, the imposition of a tariff, if perceived at all, is likely to be seen as negatively affecting welfare through an increase in the commodity price. As previously noted, however, the magnitude of any individual's loss is likely to be small. For an individual whose income is largely derived from employment or an ownership interest in the industry, the imposition of the tariff is likely to be viewed favourably but the magnitude of personal gains will differ, depending on circumstances surrounding the industry and according to the nature of his income association.

Simple microeconomic theory suggests that the short term consequences to a perfectly competitive industry from obtaining protection from import competition will be the generation of a quasi-rent, most of which will accrue to the owners of existing domestic firms. Over time, however, this quasi-rent will be dissipated among new industry entrants and increasing factor costs. In such circumstances, labour may not substantially benefit from protection if its supply curve is elastic at higher price levels and the benefits to firm owners will be temporary at best.

If, on the other hand, there is a serious threat of import competition facing the domestic industry and firms are forced to absorb substantial losses, loss minimization will provide a strong incentive for firm owners to lobby for protection but, in addition, industry workers will also have strong incentive to lobby. The basis of this argument is that given the existence of high costs of temporary unemployment[17] or the existence of involuntary unemployment, the economic welfare of workers becomes strongly dependent on the prosperity of the industry which employs them[18].

Assuming that individual voters act according to these perceived partial equilibrium interests regarding tariff policy, then one can make two predictions regarding their lobbying behaviour; first, that individual interests towards tariff policy will be closely divided along industry association lines rather than along the lines of the factor ownership distribution and second, that there is stronger incentive, other things being equal, for more individuals directly associated with an industry to lobby for protection when the industry is threatened by import competition than when it is not.

The major difficulty of dividing individual interests along these lines, however, is still that for any particular tariff the number of individuals who will be opposed to its introduction will likely be greater than the number of individuals who are in favour. Following Mayer[19], then, one must assume that voting costs exist and affect the ability of some individuals to express their political preferences if policy is directed towards government's perception of the median voters' interests as is necessary under a collective decision rule framework.

3.2 Voting Costs and The Transmission of Interests into Policy

The term "voting costs" will be used here to refer loosely to the costs incurred by individuals in expressing their political preferences to government[20]. This includes not only the costs associated with the use of the ballot box but, on a more continuous basis, any expression of preference, including public protests, letters to politicians or political meetings, which is used by government to monitor or base policy decisions. Two consequences of introducing voting costs into this simple collective decision rule approach are: first, the perceived net benefits to individuals from expressing their political preferences will be changed and second, the free rider problem can become an important factor affecting policy decisions.

It is self-evident that the introduction of voting costs reduces the net benefits to individuals from voting over a situation where no such costs exist. Voting costs may result, therefore, in the abstenance of some individuals from expressing their political views because bearing the costs of political participation would leave them in a poorer welfare position than not bearing them. As a result of the

abstenance of such individuals, government's perception of the median voters' interests and hence the direction of policy, will be more strongly weighted towards the interests of the remaining voters. Such is the situation described in Caves' version of the adding machine model where consumer interests lie dormant and industry voting strength becomes the predominant factor determining policy.

The introduction of voting costs, however, necessarily creates the potential for the free rider problem if the benefits from government policy decisions are non-excludable but the costs of associated with obtaining those policy decisions among voters with a common interest are not enforceable. The free rider problem can further distort government's perception of voter interests through two effects; first, it creates the incentive for the individuals not to incur the costs of political participation even though they might be left in a better welfare position from incurring such costs[21] and second, it raises the costs per individual within a common interest group in successfully lobbying for protection over the situation where no free rider problem exists. It is needless to say, therefore, that effective voluntary or institutional interest groups which do not suffer from the free rider problem force a heavier weighting of their members' preferences in government policy decisions.

In reference to previous Canadian studies of tariff barrier determination, a distinction has often been made between the adding machine model which does not take the free rider problem into consideration and interest group models which do. Within our collective decision rule framework, however, it is apparent that such a distinction

is an artificial one. Interest group and voting strength considerations can be complementary factors affecting policy decisions rather than competing. Taken together, voting costs and free rider effects provide a strong theoretical rational for government policy decisions to favour the protection of industries even though such policy decisions may not be in the interests of the majority of the citizens.

3.3 Hypotheses of Empirical Interest

To summarize our arguments regarding the partial equilibrium approach to individual interests and voting costs on the collective decision rule model, three important themes concerning Canada's cross sectional tariff structure can be discerned.

The first is that the magnitude of gains or losses to individual industry workers or owners will be very important in determining the level of protection provided to an industry. It has already been argued that because of the existence of voting costs and the small individual gains or losses involved, consumers have little incentive to lobby for protection and their interests will, in general, be poorly reflected. Similarly, differences in the magnitude of individual gains or losses on the part of industry concerns affect the level of protection that different industry interests will receive.

An obvious example of this incentive theme is the hypothesis that industries which are export oriented and hence unlikely to incur substantial benefits from protection of domestic markets will not receive high levels of protection from government. Owners and workers in such industries will realize that protection of the domestic market is unlikely to increase their welfare and may, in fact, cause a long

term decline as a result of foreign retaliation. They are therefore less likely to lobby for protection.

Another example is the hypothesis that the threat of import competiion to an industry in its domestic market will influence the level of protection it receives. This hypothesis is derived from our observation that both workers and firm owners have stronger incentive to lobby for protection if there is a real threat facing the existance of the industry over the situation where no threat exists.

The second theme of our theoretical framework is that differences in the ability of industry workers and owners to overcome the costs of lobbying government through the use of interest groups will have important affects for the inter-industry pattern of tariff protection. Two hypotheses can be drawn from this theoretical discussion: the first is that differences in the ability of industries to form voluntary interest groups may be reflected in levels of tarrif protection; the second is that differences in the level of representation of industries by institutional interest groups will affect the cross sectional pattern of protection.

An additional hypothesis which combines both incentive and voting cost characteristics is that industries which suffer from high levels of protection on their inputs will be effective in obtaining protection on their outputs. This hypothesis follows from the arguement that when a tariff is placed on an industry's inputs, the result is artificial increase in the cost of production and hence a decrease in industry profitability. This decrease in industry welfare provides an incentive for industry members to lobby government. In approaching government,

however, industry members have the option of opposing the input tariff or of asking for increased protection on their outputs in order to offset the input tariff. If the industry chooses to lobby against the input tariff it may well face opposition from a well organized highly motivated industry lobby and hence incur substantial costs from political opposition. If, on the other hand, it lobbies for protection on its outputs, the political resistance will likely be less well organized and motivated and therefore the voting costs to the industry are likely to be less substantial.

The third theme of our approach is simply that size of industry, in terms of the number of voters it represents, is likely to have an effect on inter-industry differences in the level of protection. It is therefore hypothesized that industries which represent large groups of highly motivated voters, other factors being equal, should be more effective at obtaining protection than industries which represent small groups of voters. Such a prediction should be tempered, however, with the observation that industry voting strength may only become a truely significant factor when the industry is threatened by import competition. Without such circumstances, the majority of individuals associated with a particular industry may have little incentive to lobby.

In total, the aforementioned framework would seem to provide a fairly cohesive explanation of the determinants of tarriff protection - an explanation based soley on economic and simple public choice concepts. The six hypothesis described as representing this framework are by no means an all inclusive list of all possible hypotheses which

could be drawn, but should be sufficient to provide a useful empirical investigation of this approach. It is to that task which we now turn.

Chapter III Footnotes

1. Mayer (1984) pp. 970

2. Downs (1957)

3. Breton (1974)

4. Discussion of such complicating factors can be found in Breton (1974) and Lloyd and Falvey (1984) or Meuller (1979).

5. Hillman (1982).

6. Baldwin (1982).

7. Mayer (1984).

8. Such a framework is utilized by Mayer (1984).

9. Lavergne (1983) pp. 85.

10. Baldwin (1982) pp. 268n.

11. Ruffin and Jones (1977) pp.337.

12. Mayer (1984)

13. Hartigan (1981) pp.148

14. Magee (1984).

15. Mayer (1984) pp. 978.

16. Ruffin and Jones (1977) define unbasedness as follows:
"Commodity j is considered unbiased or neutral with respect to labour if a rise in pj (the commodity price) raises the money wage by the same relative amount as the average of all factor prices".

17. A similar argument is made in Anderson and Baldwin (1981).

18. A new rationale for the existence of involuntary unemployment has been provided in the theoretical literature on the efficiency wage hypothesis . A review of the efficiency wage hypothesis is provided by Yellin (1984).

19. Mayer (1984).

20. This definition is similar to that used by Mayer (1984).

21. This view of the free rider problem is consistent with the framework provided by Peltzman (1976).

CHAPTER IV

THE EMPIRICAL MODEL AND RESULTS

The previous chapter outlined six theoretical hypotheses concerning Canada's cross-sectional pattern of tariff protection which are consistant with our simple partial equilibrium-collective decision rule framework. They were:

1. The greater the degree of export orientation of an industry the lower the level of protection.
2. The greater the threat of import competition to an industry, the greater the level of protection.
3. The higher the level of protection on an industries inputs, the higher the level of protection on its outputs.
4. The greater an industry's ability to form voluntary interest groups the higher the level of protection it will receive.
5. The less capable an industry is in utilizing institutional interest groups the lower the level of protection.
6. The larger an industry in terms of highly motivated voters, the higher its level of tariff protection.

This chapter deals with the empirical specification of these hypotheses and their evaluation against Canada's cross sectional tariff structure.

4.1 The Model

The basic model chosen to evaluate the six hypothesis is as follows:

NT = f (AIT, VOS66, EMP66, EX66, IMPCHAN, PR66, H, COS, UT)

where:

NT = output weighted nominal tariff level

AIT = average weighted duty on industry inputs

VOS66 = value of industry shipments

EMP66 = industry employment

EX66 = value of industry exports

IMPCHAN = ratio of industry imports to domestic market shipments in 1966, minus the ratio of industry imports to domestic market.

PR66 = industry profitability

H = Herfindal index of industry concentration

COS = number of firms in the industry

UT = the total membership of unions which represent industry workers

Nominal tariff levels (NT) where chosen as the dependent variable for this empirical work because nominal tariffs are the policies for which government is accountable to the electorate as a whole. This choice goes against arguments made in several studies[1] for the use of effective rates, but is by no means unprecedented[2]. Effective tariff considerations should have impact on the tariff determination process but this impact will occur through the lobbying efforts of industry advocates in the manner outlined by hypothesis (3) above. For this reason, AIT, the average weighted input tariff was included as an independent variable with an expected positive sign. As a practical observation, it should be noted that average weighted input tariffs are simply the difference between effective and nominal rates. Therefore,

if effective tariff levels are really no different than the specification we have prescribed, the coefficient of the variable AIT should not be significantly different from 1, if, however, nominal rates are a better measure we should be able to reject this null hypothesis.

Hypotheses (1), and (2) which represent the incentive theme in our theoretical framework are accounted for in this model by the inclusion of the variables EX66, PR66 and IMPCHAN. EX66 is a simple measure of the export dependence of an industry and is predicted to be negatively signed. PR66 and IMPCHAN are included in an attempt to account for the threat of import competition to an industry. PR66 is defined as net profit in the year 1966 and is consistant with the definitions described in the Dominion Bureau of Statistic's Corporate Financial Statistics for the year 1966. IMPCHAN is a simple measure of the charge in import market share between the years 1961 and 1966. The combination of increasing import market share and low levels of industry profitability is considered to be one way of characterizing a threat to an industry from import competition. A negative sign is therefore predicted for PR66 and a positive one for IMPCHAN.

Hypothesis (4) concerning the ability of industries to form voluntary interest groups in lobbying for protection is accounted for in the model by the inclusion of VOS, H, and COS as independent variables. These variables are standard in studies utilizing the interest group model. The larger an industry's output and the fewer and more concentrated its' firms, the less significant the free rider problem is to industry lobbying efforts. Therefore, postive signs are predicted for VOS66 and H and a negative one is predicted for COS.

Hypothesis (5) regarding an industry's ability to utilize institutional interest groups is included in the model by the provision of UT, a measure of an industry's ability to utilize unions. The difference between the way industry unionization is characterized in this study from previous ones is that this study views the total number of workers in unions representing an industry in 1967, rather than the number of unionized workers in the industry, as the relevant measure of lobbying strength. This view follows from the proposition that the major factor affecting a union's political influence is likely to be the collective voting strength of all its members, rather than the number of members in the industry the union chooses to represent. We, therefore, expect that UT will be positively signed.

Finally, hypothesis (6) regarding an industry's voting strength is accounted for by the inclusion of EMP66, the actual number of individuals employed by the industry in 1966. This variable was considered to be the most direct measure of an industry's voting strength and is anticipated to be positively connected with level of protection.

The data sample on which the empirical model is evaluated consists of 69 Canadian manufacturing industries, roughly matching the SIC concordance utilized in the Dominion of Statistics Publication Corporation Financial Statistics for 1966. With the exception of Motor Vehicles and Parts Manufacturers, which were excluded due to the

TABLE 2

LIST OF EXPECTED VARIABLE SIGNS

Variable	Expected Sign
AIT	+
VOS66	+
EMP66	+
EX66	-
IMPCHAN	+
PR66	-
H	+
COS	-
UT	+

non-quantifiable influence of the Auto Pact on industry trade, and distilleries, breweries, wineries and tobacco, which were excluded due to the serious impact of non-tariff barriers (i.e. provincial liquor board practices), all industries were chosen solely on the basis of data availability. A description of variables and sources is provided in Appendix 1.

4.2 The Results

Table 3 provides a summary of ordinary least squares estimation results for the basic model. The most striking feature of all the regressions is the correct sign and strong significance of the variable AIT. In addition to AIT, the variables EX66 and UT are correctly signed and have t statistics which are significant at the 99% level in two tailed tests. IMPCHAN is correctly signed and significant at the 99% level in all regressions but (7) (where it falls to the 90% level) and PR66 is correctly signed and significant at the 99% level in all regressions but (1), (2), and (4), (where significance also drops to the 90% level). Of the remaining variables, EMP66 is correctly signed in all regressions but is not significant, while VOS, COS and H are not significiant and usually incorrectly signed in all regressions.

Examination of the simple partial correlation co-efficient matrix (see Appendix 2) of the variables did not suggest that multicolinearity was a major problem while Bartlett and Goldfield-Quandt tests on VOS66 did not suggest that heteroscedasticity was a significant influence. Examination of adjusted R2 and F statistics against those of all previous Canadian studies (see Appendix 3), showed that the model performs better against these measures than other Canadian models.

Table 3
Ordinary Least Squares Results For the Basic Model

Dependent Variable Nominal Tariffs	Intercept	AIT	VOS66	EMP66	EX66	IMPCHAN	PR66	H	COS	UT	R^2	R^2 Adj.	F
(1)	11.7081 (6.68)	.5222 (9.58)	-.2391E-02 -(1.08)	.2216E-04 (0.57)	-.1231E-01 (-3.32)	3.0540 (2.08)	-.3796E-01 (-1.81)	-.6096E-01 (0.84)	.1888E-02 (1.05)	.1050E-02 (2.14)	.6900	.6427	14.59
(2)	10.9350 (7.35)	.5230 (9.62)	-.2493E-02 (-1.13)	.2228E-04 (1.18)	-.1213E-01 (-3.28)	3.0130 (2.06	-.2080E-01 (-1.77)		.1774E-02 (1.18)	.4775E-05 (2.38)	.6863	.6444	16.41
(3)	11.1421 (7.52)	.5222 (9.57)	-.1103E-02 (-.58)	.1749E-04 (.45)	-.1275E-01 (-3.47)	3.1170 (2.12)	-.4463E-01 (2.25)			.4789E-05 (2.40)	.6789	.6421	18.42
(4)	12.0506 (7.35)	.5168 (9.68)	-.2004E-02 (-.95)		-.1264E-01 (-3.46)	3.1371 (2.16)	-.3883E-01 (-1.87)	-.6110E-01 -(.85)	.1779E-02 (1.00)	1074E-04 (2.21)	.6882	.6466	16.55
(5)	11.6273 (7.37)	.5303 (10.31)			-.1363E-01 (-3.90)	2.9862 (2.07)	-.5082E-01 (-3.09)	-.6499E-01 (-.90)	.8791E-03 (.58)	.1056E-04 (2.18)	.6835	.6471	18.81
(6)	11.4421 (6.59)	.5338 (9.97)		.9649E-05 (.26)	-.1357E-01 (-3.85)	2.9371 (2.00)	-.5140E-01 (-3.07)	-.6525E-01 (-.90)	.8512E-03 (.56)	1044E-04 (2.13)	.6838	.6417	16.22
(7)	12.9812 (11.47)	.5186 (9.53)		.1899E-04 (.51)	-.1136E-01 (-3.22)	2.552 (1.72)	-.5215E-01 (-3.03)				.6471	.6190	23.10
(8)	11.0901 (9.39)	.5258 (10.42)			-.1343E-01 (-3.87)	3.0633 (2.15)	-.5026E-01 (-3.07)			.1158E-04 (2.45)	.6766	.6510	26.36
(9)	10.8701 7.76	.5299 (10.06)		.1091E-04 (.30)	-.1336E-01 (-3.82)	3.0069 (2.08)	-.5093E-01 (-3.08)			.1144E-04 (2.40)	.6771	.6459	21.67
(10)	11.800 (6.61)	.5003 (9.24)	-.4800E-02 (-2.66)	.2778E-04 (.7131)	-.1450E-01 (-4.06)	2.950 (1.97)		-.5416E-01 (-.73)	.2917E-02 (1.68)	.1081E-04 (2.17)	.6727	.6290	15.41

Interpretation of the statistical results suggests that of the theoretical hypothesis outlined in the previous chapter, those dealing with unionization, the threat of import competition, export orientation and input tariff levels would seem to receive strong statistical support. In addition, a one tailed hypothesis test on the coefficient of the AIT variable revealed it to be significantly less than 1 at the 99% level, thus supporting our view that nominal tariffs are a more appropriate dependent variable. Results dealing with unionization and import competition and results concerning choice of dependent variable represent substantially new empirical findings. The results for export orientation confirm those found by Ray[3], Saunders[4] and others while the results concerning the significance of input duty levels are similar to those found by Pincus[5] and Jones and Laudadio[6].

Low levels of significance and wrong signs for the voluntary interest group variables VOS66, H and COS bring into question traditional hypotheses about the importance of voluntary interest groups for tariff determination. Two possible explanations for this lack of support which are consistant with an economic approach are that the free rider problem is not of major significance to the determination of trade policy; or, that institutional interest groups such as unions have largely supplanted the role of voluntary issue specific interest groups in tariff lobbying. In retrospect, the prevalence of permanent multipurpose industry associations in almost every area of manufacturing would seem to undermine the rational for voluntary interest group formation. In addition, the strong significance of industry unionization tends to support the hypothesis that such institutional

interest groups are a more potent influence on tariff determination. For these reasons, it suggested that though interest groups are significant in overcoming the costs of lobbying, these groups take a different form than that described in previous literature.

Finally, the general insignificance of the remaining variable, EMP66, suggests that voting strength not be major a influences on tariff determination, though the results concerning EMP must be tempered by theoretical and empirical concerns regarding its use.

4.3 Some Alternative Specifications

In an attempt to more rigourously evaluate these empirical findings some additional specifications of the model were tested. The first of these was a specification which used the ratio of exports to industry shipments (EXSH) and the ratio of profits to industry shipments (PRSH) instead of total industry exports (EX66) and total industry profits (PR66). This specification was included because it was felt that the size of industry output might be affecting our results concerning EX66 and PR66.

Table 4 provides a summary of the results of this alternative specification. Overall, even stronger support is provided for our hypotheses regarding input tariffs, export orientation, import competition and unionization. The results concerning voting strength and two of the three voluntary interest group variables (H and COS), however, remain insignificant. The remaining voluntary interest group variable, VOS66, is significant but is incorrectly signed.

Table 4
Alternative Specification - Export and Profit Variables

Dependent Variable Nominal Tariffs	Intercept	AIT	VOS66	EMP66	EXSH	IMPCHAN	PRSH	H	COS	UT	R^2	R^2 Adj.	F
(1)	15.385 (8.79)	.4333 (9.26)	-.5076E-02 (-3.38)	.8411E-05 (.23)	-19.847 (-5.07)	3.0651 (2.22)	-34.472 (-2.17)	-.6281E-01 (-.92)	.2125E-02 (1.30)	.1065E-04 (2.32)	.7286	.6872	17.6
(2)	15.2860 (10.65)	.4224 (9.14)	-.4050E-02 (3.07)	.1976E-05 (.54)	-20.506 (-5.32)	3.0900 (2.22)	-41.129-01 (-2.67)			.4526E-05 (2.52)	.7154	.6827	21.9

TABLE 5
Alternative Specification Results for the Import Competition Hypotheses

Dependent Variable Nominal Tariffs	Intercept	AIT	VOS66	EMP66	EX66	IMPCHAN	PRO	RPR	H	COS	UT	R^2	R^2 Adj.	Sample Size
(1)	14.547 (2.10)	.4875 (9.26)	-.9740E-03 (-.40)	-.6011E-05 (-.14)	-.1869E-01 (-4.78)	.8678 (1.98)	-56.212 (-2.29)		-.5895E-01 (-.83)	.6566E-03 (.34)	.6898E-05 (1.34)	.6894	.6535	69
(2)	4.96 (1.07)	.5660 (7.32)	-.2006 (.7500)	.1212 (.2328)	-.2000E-01 (-3.68)	.6535 (1.89)		.3789E-01 (1.49)	.2537E-01 (.2310)	.1651E-02 (.8197)	.1357E-04 (1.83)	.7135	.6376	44

Two other alternative specifications focused on a more rigourous evaluation of the import competition hypothesis. These involved the pairing of the change in import share variable with two other indices of the international competitive strength of Canadian industry: relative productivity of United States industry compared with the Canada (RPR) and output per production worker (PRO). It was hypothesized that Canadian industries suffering from import competition would likely be ones in which productivity compared to the United States was relatively low. The other alternative specification assumes that the industries in Canada which are threatened by import competition will be those in which output per worker is low[7]. Though it was felt that these two specifications are not as accurate as the IMPCHAN-PR66 specification, significant results could add to robustness of the import competition hypothesis.

Table 5 provides a summary of the two alternative specifications. In the regression which included RPR, only 44 observations could be utilized due to data availability problems. Nevertheless, all of the variables utilized in the basic specification including IMPCHAN maintain fairly high levels of significance. RPR itself, however, is correctly signed but only significant at the 75% level. In the regression where PRO is used, all the variables maintain their significance except UT, which falls to the 75% level. PRO is, of course, significant at the 99% level.

These results, then, tend to confirm the general findings drawn from the basic model.

Chapter IV Footnotes

1. Lavergne (1983) provides an overview of discussion in this area.

2. Pincus (1974), (1977), Jones and Laudadio (1984) Helleiner (1977) Caves (1976) among others have used nominal rates in their empirical work.

3. Ray (1981, 1981a).

4. Saunders (1980).

5. Pincus (1974)

6. Jones and Laudadio (1984).

7. In an attempt to more rigorously evaluate the voluntary interest group hypothesis two interest group variables were constructed to measure the concentration and lobbying strength of industry members within the unions which represent them. One of those variables was the percentage of unionized industry workers in the two largest unions which represented them; the other was unionized industry workers as a percentage of total union membership. It is hypothesized that if industry workers were concentrated into a few unions and that if they were a large fraction of the unions' total membership, unions representing industry would more aggressively lobby for protection. The statistical results regarding these hypotheses, however, were insignificant.

8. Note that RPR has also been used to support comparative cost studies and that the labour output coefficient has been used to support the adjustment assistance and equity concerns models, as well as, the comparative cost model.

CHAPTER V

SUMMARY AND CONCLUSIONS

This study has had two major objectives: clarification of the theoretical background surrounding economic views of trade barrier determination and empirical evaluation of several hypotheses drawn from a particular economic approach.

An overview of previous empirical models pointed out that several, which have received significant empirical support, lack the theoretical depth necessary to be competing theories. Other models, which appear to be more firmly based in economic and public choice concepts did not appear to perform well empirically. Closer consideration of the theoretical background to these economic models, however, suggested that an economic approach had much wider ranging explanatory capabilities than those described in previous studies. This led to the evaluation of several hypotheses concerning Canada's cross-sectional tariff structure which were drawn from a more firmly grounded economic view.

Ordinary least squares estimates of the basic and alternative models used to specify these hypotheses, lent strong support to the better developed economic approach. The results suggest that union representation, the threat of import competition, export orientation and the average weighted industry input tariff are all extremely important tariff determinants. Empirical examination also suggested that nominal tariff levels rather than effective rates are a better choice of nominal dependent variable.

The results concerning unionization and average input duties are of particular importance. The unionization results seem to directly contradict Jones' and Laudadio's findings that "...unionized workers do not favour protection and are effective pressure groups; or that unskilled non-unionized labour is being protected and unions are not effective pressure groups."[1] The strong results concerning average weighted input duties, on the other hand, perhaps provide some insight into the escalating tariff structures which characterize most Western industrialized countries.

The insignificance of results concerning voluntary interest group variables (VOS66, H and COS), are not inconsistent with an economic approach to tariff determination but tend to discredit the role of voluntary interest groups as a significant lobbying force. The results concerning our voting strength measure, EMP66, though apparently a weak point in the support for our economic framework, could be caused by data problems with this measure; or by a strong divergence in the behavior of industry employees when an industry is not threatened by import competition.

In total, this research suggests that further empirical and theoretical work in this area offers considerable potential. Definition of the role and functioning of institutional interest groups in the tariff determination process and examination of the demand for tariff protection as a response to import competition - not a general rent seeking instrument - needs to be undertaken. In addition, further work should concentrate on a more thorough examination of the perceptions of

individual voters regarding tariff policy and on more complex characterizations of the Canadian political process. Through such efforts economists may someday be able to more firmly predict the impact of prescribed trade policies on the political system in addition to their general economic effects.

CHAPTER V FOOTNOTES

1. Jones and Laudadio (1984), pp. 705.

BIBLIOGRAPHY

1. Anderson, K. "The Political Market for Government Assistance to Australian Manufacturing Industries," Economic Record 56 (153): pp. 132-44, 1980.

2. Anderson, K and R.E. Baldwin, "The Political Market for Protection in Industrial Countries: Empirical Evidence," World Bank Staff Working Paper No. 492, 1981.

3. Baldwin, R.E. "The Political Economy of Postwar U.S. Trade Policy." Bulletin, 1976-4, New York Graduate School of Business Administration, Centre for the Study of Financial Institutions, 1976.

4. Baldwin, R.E. "The Political Economy of Protectionism." In Import Competition and Response, pp. 263-94. Edited by J.N. Bhagwati. The University of Chicago Press, 1982.

5. Baldwin, R.E. "Trade Policies in Developed Countries." In Handbook of International Economics, Volume 1. Edited by R.W. Jones and P.B. Kenen. North Holland Publishing Company, 1984.

6. Baldwin, R.E. "The Changing Nature of U.S. Trade Policy Since World War II." In The Structure and Evolution of Recent U.S. Trade Policy, pp. 5-32. Edited by R.E. Baldwin and A.O. Krueger. The University of Chicago Press, 1984(a).

7. Breton, A. The Economic Theory of Representative Government. Aldine Publishing Company, 1974.

8. Brock, W.A. and S.P. Magee. "The Economics of Special-Interest Politics: The Case of the Tariff." American Economic Review, Vol. 68 (2), pp. 246-50, 1978.

9. Buchanin, J. and G. Tullock. The Calculus of Consent. University of Michigan Press, 1962.

10. Buchanin, J. and G. Tullock. The Demand and Supply of Public Goods. Rand McNally Press, 1968.

11. Cable, V. and I. Rebelo. "Britain's Pattern of Specialization in Manufactured Goods With Developing Countries and Trade Protection." World Bank Staff Working Paper No. 425, Washington, D.C. October, 1980.

12. Canada Department of Consumer and Corporate Affairs, Concentration in the Manufacturing Industries of Canada, Ottawa, Information Canada, 1971.

13. Canada, Department of Industry Trade and Commerce, Comparative Tables of Principal Statistics and Ratios for Selected Manufacturing Industries, Canada and the United States, 1963, 1967 and 1970, Ottawa, 1974.

14. Canada, Dominion Bureau of Statistics, Corporate Financial Statistics, Catalogue No. 61207, 1966.

15. Canada, Dominion Bureau of Statistics, Manufacturing Industries of Canada, Catalogue No. 31203, 1966.

16. Canada, Statistics Canada, Industrial Organization and Concentration in the Manufacturing Mining and Logging Industries, Catalogue No. 31514, 1968.

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

18. Caves, R.E. and R. Jones. World Trade and Payments: An Introduction. Little and Brown, 1981.

19. Cheh, J.H. "United States Concessions in the Kennedy Round and Short-Run Labour Adjustment Costs." Journal of International Economics, Vol. 4, 1974.

20. Constantopoulos, M. "Labour Protection in Western Europe." European Economic Review, Vol. 5, pp. 313-329, 1974.

21. Conybeare, J. "Public Policy and the Australian Tariff Structure." Australian Journal of Management, Vol. 3, pp. 49-63, 1978.

22. Corden, W.M. The Theory of Protection. Clarendon Press, 1971.

23. Dixit, A.K. and V. Norman. Theory of International Trade. Cambridge University Press, 1980.

24. Downs, A. An Economic Theory of Democracy. Harper and Row, 1957.

25. Fieleke, N. "The Tariff Structure for Manufacturing Industries in the United States: A Test of Some Traditional Explanations." Columbia Journal of World Business, Vol. 11(4), pp. 98-104, 1976.

26. Findlay, R. and S. Wellisz. "Endogenous Tariffs, the Political Economy of Trade Restrictions and Welfare". In Import Competition and Response. Edited by J.N. Bhagwati. University of Chicago Press, 1982.

27. Glismann, H.H. and F.D. Weiss (1980). "Evidence on the Political Economy of Protection in Germany." World Bank Staff Working Paper No. 427, Washington, D.C., 1980.

28. Hartigan, J.C. "Does Factor Content Determine Protection." Southern Economic Journal, pp. 1180-87, 1982.

29. Hillman, A.L. "Declining Industries and Protectionist Motives." American Economic Review, Vol. 72, pp. 1180-87, 1982.

30. Hellenier, G.K. "The Political Economy of Canada's Tariff Structure: An Alternative Model." Canadian Journal of Economics, Vol. 10(2), pp. 318-26, 1977.

31. Johnson, H.G. Aspects of the Theory of Tariffs. George Allen and Unwin Ltd., London, 1971.

32. Jones, J.C.H. and L. Ladadio. "Organized Labour, Regional Political Bias and the Canadian Tariff Structure." Relations Industrielles, Vol. 39(4), pp. 695-709, 1984.

33. Jones, J.C.H. and L. Laudadio. "The Canadian Tariff Structure and Models of Political Choice." University of Victoria, Mimeo, N.D.

34. Jones, R. and R. Ruffin. "Protection and Real Wages: The Neoclassical Ambiguity." Journal of Economic Theory, Vol. 14, pp. 337-348, 1977.

35. Koustoyiannis, A. Modern Microeconomics. The MacMillan Press, 1975.

36. Kindleberger, C.P. "Government and International Trade." Essays in International Finance, No. 129, Department of Economics, Princeton University, 1978.

37. Lavergne, R.P. The Political Economy of U.S. Tariffs: An Empirical Analysis. Academic Press, 1983.

38. Loyd, P.J. and R. Falvey. "The Choice of Instrument of Industry Protection." Research Paper No. 106, University of Melbourne, Department of Economics, 1984.

39. Lundberg, L. "Determinants of the Structure of Tariff Protection in Sweden." Paper presented to the World Bank Workshop on Market Penetration into Industrial Countries, Brussels, November 14-16, 1980.

40. Magee, S.P. "Three Simple Tests of the Stolper Samuelson Theorem." pp. 138-53. in Issues in International Economics. Edited by P. Oppenheimer, Oriel Press, London, 1980.

41. Mayer, W. "Endogenous Tariff Formation." American Economic Review, Vol. 74(5), pp. 970-85, 1984.

42. Melvin, J. and B. Wilkinson. "Effective Protection in the Canadian Economy." Economic Council of Canada, Special Study No. 9. Ottawa: Queen's Printer, 1968.

43. Mueller, D.C. "Public Choice: A Survey." Journal of Economic Literature, Vol. 19(2), pp. 395-433, 1976.

44. Mueller, D.C. Public Choice. Cambridge University Press, 1979.

45. Olson, M. The Logic of Collective Action: Public Goods and the Theory of Groups. Harvard University Press, 1965.

46. Peltzman, S. "Towards a More General Theory of Regulation." Journal of Law and Economics, Vol. 19, pp. 211-240.

47. Pincus, J. "Pressure Groups and the Pattern of Tariffs." Journal of Political Economy, Vol. 83, pp. 757-78, 1974.

48. Pincus, J. Pressure Groups and Politics in Antebellum Tariffs. Columbia University Press, 1977.

49. Pindyke, R.S. and D.L. Rubinfeld. Econometric Models and Economic Forecasts. McGraw-Hill Book Company, 1976.

50. Ray, E.J. "The Determinants of Tariff and Non-Tariff Trade Restrictions in the United States." Journal of Political Economy, Vol. 89(1), pp. 105-21, 1981.

51. Ray, E.J. "Tariff and Non-Tariff Barriers to Trade in the United States and Abroad." The Review of Economics and Statistics,, Vol. 63(2), pp. 161-68, 1981.

52. Reidel, J. "Tariff Concessions in the Kennedy Round and the Structure of Tariff Protection in West Germany: An Econometric Assessment." Journal of International Economics, Vol. 7(2), pp. 133-43, 1977.

53. Shouda, Y. "A Quantitative Analysis of Protection in Japan." Mimeo, Japan Economic Research Centre, 1980.

54. Saunders, R.S. "The Determinants of the Productivity of Canadian Manufacturing Industries Relative to that of Counterpart Industries in the United States." Unpublished PhD Dissertation, Harvard University, 1978.

55. Saunders, R.S. "The Political Economy of Effective Protection in Canada's Manufacturing Sector." Canadian Journal of Economics, Vol. 13(2), pp. 340-48, 1980.

56. Stigler, G.J. "Free Riders and Collective Action." Bell Journal of Economics and Management Science, Vol. 5(2), pp. 58-73, 1974.

57. Tharakan, P.X.M. "Political Economy of Protectionism in Belgium." World Bank Staff Working Paper No. 431, Washington, D.C., 1980.

58. Yellen, J.J. "Efficiency Wage Models and Unemployment." American Economic Review: Papers and Proceedings of the Ninety-Seventh Annual Meeting, May, 1984.

APPENDIX 1

VARIABLE DEFINITIONS AND DATA SOURCES

Variable	Definition and Source
NT	Nominal output weighted tariffs, 1963. Source: Melvin and Wilkinson (1968).
VOS66	Total value of industry shipments and related income (1966). Source: Canada, Dominion Bureau of Statistics Cat. No. 31203 (1966).
COS	Number of establishments. Source: Ibid.
EMP66	Number of production and non-production Workers. Source Ibid.
AIT	Average weighted input duty: derived from estimates of effective and nominal output weighted tariff rates. Source: Melvin and Wilkinson (1968).
EX66	Industry exports, 1960. Source: Cansim Main Base, accessed via Central Statistical Bureau; British Columbia Ministry of Industry and Small Business Development, Government of British Columbia.
IMPCHAN	Imports relative to domestic market shipments in 1966 minus imports relative to domestic market shipments in 1961. Source: Cansim Main Base and Canada, Dominion Bureau of Statistics Cat. No. 31203 (1966).
PR66	Net Profit, 1966. Source: Canada (1966).
H	Herfindal index for value of industry shipments, 1965. Source: Canada (1971).
UT	Total number of members in unions representing an industry. Source: Aggregated from unpublished data, Central Analytical Services Division, Department of Labour Ottawa, Ontario, K1A 0J2.

Appendix 2

Simple Partial Correlation Coefficient Matrix

NT1	1.000									
AIT	.537	1.000								
VOS66	-.395	.100	1.000							
EMP66	-.158	-.248	.273	1.000						
EX66	-.291	.391	.645	-.017	1.000					
IMPCHAN	.032	.027	.248	.143	.158	1.000				
PR66	-.306	.354	.745	.063	.744	.200	1.000			
H	-.043	.049	.120	.011	.154	.019	-.123	1.000		
COS	-.064	.147	.387	.130	.025	.137	.324	-.129	1.000	
UT	.004	.001	.184	.090	.262	-.071	.165	-.246	.036	1.000
	NT1	AIT	VOS66	EMP66	EX66	IMPCHAN	PR66	H	COS	UT

Appendix 3
Summary of Results From Previous Canadian Studies

Independent	Helliener				Caves (4 strongest equations)					Saunders (OLS Results)		Jones and Laudadio (4 strongest equations)			
Proprietorial Income												Negative	Negative	(b) Negative	(b) Negative
Output												(a) Negative	(b) Negative		
Output (Squared)												Positive	Positive		
Average Duty on Inputs												(a) Positive	(b) Positive		
Inverse of Number of Dutiable Inputs												(a) Negative	(b) Negative		
Scale Economies	Negative	Negative	Negative	Negative	Negative	(b) Negative		(a) Negative	(b) Negative	(b) Negative	Negative				
Value Added Per Worker	(a) Negative		(a) Negative					Positive							
Average Wage		(a) Negative		(a) Negative									(a) Negative	(a) Negative	(a) Negative
Non-Wage Component of Value Added		Negative		Negative											
Geographic Concentration												Positive			
Concentration of Shipments	Positive	Positive	Positive	Positive	(b) Negative	(b) Negative		(b) Negative	Negative	Positive		(a) Negative	Negative	Negative	Negative
Proportion of Workers in Small Firms	Negative	Positive	Negative	Positive											
Natural Resource Intensity	Negative	Negative	Negative	(b) Negative											
Buyer Concentration					Negative										
Growth Rates										Positive	Positive				
Transport Costs					(a) Negative	(a) Negative		(b) Negative	(b) Negative	Negative	Negative				
Industry Specialization Ratio															

Appendix 3 Continued

Percentage of Employees Located Outside of Ontario and Quebec								Negative					(c) Negative	(a) Negative	(a) Negative
Percentage of Production Workers									Positive						
Value Added Divided by Shipments					Positive	Positive			Positive						
Relative Labour Productivity with United States					Positive	Positive			Positive	(a) Negative	(a) Negative			(b) Positive	(b) Positive
Labour Output Coefficient										(b) Positive	(b) Positive			(a) Positive	(a) Positive
Exports										Negative	Negative				
Fraction of Shipments Controlled by Foreigners											Positive		Negative		
Unionization															Negative
Number of Establishments												Negative	Negative	Negative	Negative
Dependent Variable	Nominal Tariffs	Nominal Tariffs	Nominal Tariffs	Nominal Tariffs	Nominal Tariffs	Effective Tariffs		Effective Tariffs	Nominal Tariffs	Effective Tariffs	Effective Tariffs	Nominal Tariffs	Nominal Tariffs	Nominal Tariffs	Nominal Tariffs
Number of Observations	87	87	87	87	29-35	29-35		29-35	29-35	84	84	56	56	56	56
R2 Adjusted	.15	.30	.18	.33	N/A	N/A		N/A	N/A	.36	.35	.57	.61	.59	.58
F	2.9	5.8	3.5	6.5	5.9	5.07		4.46	4.27	N/A	N/A	102.2	9.8	12.2	10.4

The letters (a) and (b) indicate significance at the 99 and 90 percent level respectively for two tailed tests.

APPENDIX 4

SUMMARY OF INDUSTRIES IN THE DATA SAMPLE

1960 SIC NO.	INDUSTRY
101,103	Meat Products
105, 107	Dairy Products
111	Fish Products
112	Fruit and Vegetable Canneries
123 - 125	Grain Mills
128, 129	Bakery Products
131, 133, 135, 139	Other Food Products
141	Soft Drinks
261, 263, 269	Rubber Products
172 - 179	Leather Products
183, 193, 197	Cotten and Woolen Textiles
201	Synthetic Textiles
211 - 216, 218, 219,	Other Primary Textiles
221, 223, 229	Other Textile Products
231	Hosiery Mills
239	Other Knitting Mills
242 - 249	Clothing Industries
251	Sawmills
252	Veneer and Plywood Manufacturers
254	Plaining Mills
256	Wooden Boxe Manufacturers
258	Coffins and Casket Manufacturers
261, 268	Household Furniture
264	Office Furniture

1960 SIC NO.	INDUSTRY
266	Other Furniture
271	Pulp and Paper
273	Paper Boxes and Bags
272, 274	Other Paper Products
286 - 289	Printing Publishing and Engraving
291 - 292	Iron and Steel
294	Iron Foundries
295 - 298	Smelting and Refining
301	Boiler and Plate Manufacturing
302	Structural Steel
303	Ornamental Ironworks
304	Metal stamping
305	Wire and Wire Products
306	Hardware and Tools
307	Heating Equipment
308	Machine Shops
309	Miscellaneous Products
311	Agricultural Implements
316	Commercial Refrigeration
315, 318	Other Machinery
321	Aircraft and Parts
324	Truck Bodies
326 - 329	Miscellaneous Transportation
331	Small Appliances
332	Major Appliances
334	Radio and Telecommunication Equipment

1960 SIC NO.	INDUSTRY
335	Other Communications Equipment
336	Industrial Electrical Equipment
337	Battery Manufacturers
338, 339	Miscellaneous Electrical Equipment
341	Cement Manufacturers
347	Concrete Manufacturers
348	Ready Mix
351	Clay Products
356	Glass and Glass Products
365	Petrolium Refineries
369	Other Petrolium and Coal Products
372	Fertilizers
374	Pharmaceuticals
375	Paint and Varnish
376	Soap and Cleansing Compounds
377	Toilet Preparations
378	Industrial Chemicals
383	Broom, Brush and Mop
393	Sporting Goods and Toys

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A REEVALUATION OF ECONOMIC MODELS

OF CANADIAN TARIFF DETERMINATION

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