UNIVERSITY OF CALGARY

Endogenous Protection and Persistence

of Canada's National Policy Tariff

by

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ABSTRACT

This thesis investigates the political economy determination of tariff protection in Canadian manufacturing industries. Known as 'endogenous protection' theory, this established vein of international trade economics and political theory in essence endogenizes the formation of barriers to trade. The determinants of tariff barriers protecting domestic industries are examined in two separate time frames, one being the National Policy tariffs of 1879 and the other taking place some 45 years later. Also, the hypothesis that inter-industry tariff patterns exhibit persistence effects is tested against these two periods. The results show that certain key characteristics of industrial sectors explain the higher amounts of tariff protection these Canadian manufacturers received. This is due to a combination of government policy and the strength and organization of their industries. As well, the study finds a high level of persistence in the structure of tariffs across industries between the two periods.

DEDICATION

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To my wife, Serenity.

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CHAPTER ONE: INTRODUCTION

The purpose of this thesis is to examine the determinants of the structure of tariffs across industries in Canada in 1881 and 1925. The questions posed and answered in this study are whether the inter-industry pattern of protection in the National Policy tariff was influenced by the structural characteristics of industries and whether this pattern persisted over time. Tariff design is often taken as exogenous in studies of international trade issues and commercial policy. Yet when neoclassical trade theories are modified to include political variables, this makes commercial policy endogenous. This thesis uses an endogenous protection model to test the significance of interest group pressure and government social concern in influencing the design of Canadian manufacturing tariffs in the two individual years and to examine the role of persistence in the tariff structure over the 45 year period. This analysis is important not only because it applies this empirical procedure to a unique Canadian case study but because typically in these studies only a single year is used. From the econometric analysis presented here, it is expected that a better understanding of the origins and continuation of Canadian manufacturing protection can be realized.

This thesis looks at the determinants of industrial tariffs at a time (1881) when there was a shift from a primarily revenue-based tariff to a protectionist tariff. Trade policy that is focused on distributional, rather than efficiency considerations, can be viewed as a device for income transfers to preferred groups in society. Protectionism is a form of public assistance. A generalized aim of this research is to probe the question of why many industries receive trade protection from the government and why some industries receive

more protection than others. K.W. Taylor (1939: 1) looked at Canadian commercial policy in 1939 and appropriately described the use of the tariff as a policy based on redistribution among industries and factors:

The prime purpose of a protective duty is to reduce or to exclude the importations of a commodity, to reserve a larger part or all of the home market for the domestic producers, and either by increasing the scale of production or by raising the internal price, or both, to make production more profitable and thus benefit the owners of capital and labour employed in that industry. That customs duties do not always achieve all these results is not through lack of intention.

This thesis extends the econometric analysis to 1925 to examine the determinants of the tariff structure 45 years later and to analyze the extent of protection. Previous studies of Canada's pattern of protection assume that the tariff structure and many of its determinants were constant over long periods of time. Caves (1976) defends his analysis of the tariff structure in the 1960s by arguing that Canada's tariff structure was virtually unchanged for almost a century (1879 to 1963), although he concedes that there is no systematic evidence that this is true. The current knowledge of Canadian trade policy provides no answers.

The framework of the thesis is as follows. Chapter 2 outlines the theories of endogenous protection and the persistence of protection. In Chapter 3, an empirical background is provided and the data explained. This includes a discussion of the sources and construction of the variables used in the regressions. Chapter 4 presents the results of the econometric analysis on the 1881 tariff structure associated with Canada's National Policy. This chapter also includes an overview of Canadian tariff policy at that time. Chapter 5 continues the Canadian trade policy overview for the 50 years after the National Policy and presents the results of a series of regressions examining the 1925 tariff structure for evidence of endogenous protection and persistence effects. Chapter 6 outlines the conclusions from this work and discusses possible extensions.

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CHAPTER TWO: THEORY

2.0 Introduction

The political economy literature on trade policy covers the many issues that encompass the interaction of politics with international trade. This literature arises from the essential paradox of trade: why we almost universally observe trade barriers when theory suggests instead that free trade is optimal (i.e., aggregate welfare maximizing) under most circumstances?¹ In their findings, the explanation that is offered is that trade barriers are set in political contexts in which the maximization of economic efficiency is not the primary objective. Because economic studies in this area take into account the political circumstances under which commercial policy is formed instead of just taking it as a given, this literature has been termed the study of 'endogenous' trade policy, or more in line with the essential aim of most such policies, 'endogenous protection'.

Many topics for economic research are contained under the banner of endogenous protection. These include cross-sectional analyses of the determinants of industry trade protection, investigations of trade law enactments, attempts to discriminate between the Heckscher-Ohlin model and the Ricardo-Viner (specific factors) model on the basis of observations of sector vs. class cleavages in trade legislation support, studies of preferential trade agreements, trade and foreign direct investment, administered protection, and timeseries studies of the aggregate pattern of tariffs. This thesis looks at the first topic, the study of the inter-industry determinants of the pattern of protection. By examining different periods of time this topic can also be expanded to cover the persistence of industry

¹ The theory is based on the assumption of a small, decentralized, competitive economy with constant returns to scale.

protection. An appropriate beginning would be to review the relevant theories on these topics.

This chapter summarizes the theoretical literature on endogenous protection and protection persistence, from the perspective of the marked differences that we observe between sectors in the level of import protection provided. To simplify matters, when the term 'endogenous protection' is used in future it refers to this specific topic.

2.1 Background on the Theory of Endogenous Protection

Political economy models of endogenous protection relate to the market for trade assistance among self-interested agents. This market is characterized by the demand (by firms) and supply (by government) of political favours. Most of the models in this literature take as their basis either the demand or supply side, using the actions of the agents on that side as their explanation for the observed pattern of protection. A few theoretical models have also been conceived that link the demand and supply sides to form an integrated theory of trade policy determination.

The set of one-sided theoretical frameworks that model endogenous trade policy have various explanations for the observed pattern of protection among industries, including strength of special-interest groups, altruism on the part of politicians, industry realignment, and vote maximization on the part of public representatives.² The models can easily be grouped into those emphasizing societal theories and those that deal with statebased motives. Societal theories attribute patterns in the level of protection to variations in

 $^{^{2}}$ Gawande and Krishna (2003: 1) describe these as 'theoretical conjectures', because their informal explanation of protection patterns is less rigorous than those of inclusive theoretical models that deliver specific and empirically testable predictions.

the intensity of demands made by pressure groups, whereas statist theories focus on the motivation of policymakers from the perspective of national interest and domestic institutions. This terminology is borrowed from the political science literature.

2.1.1 Societal Models

Interest Group – The interest group model is the most popular model in the endogenous protection literature, because it takes as its basis a concept dear to the heart of economics – that of the self-interested, rationally-behaving individual. If a large part of an individual's income has the potential to be affected by trade policy, their economic selfinterest becomes the basis for rent-seeking activities focused on garnering political assistance. These efforts can range from simply voting in elections to more complex groupings of similar individuals in a lobbying organization. The intention is to coordinate their lobbying activity, in terms of contributions, collective message, and greater voice, to better exercise influence over government policy-making. It is also plausible that in the case of small or unclear personal income consequences, a social welfare function may guide an individual to support less self-interested concerns, such as income redistribution. The interest-group theory makes the assumption that government plays a passive role, doling out protection in direct relation to the size of demands. Groups of agents engaged in joint-lobbying are the decision-making unit in this analysis. Those groups best able to organize and lobby for assistance are given the highest levels of industry protection.

Olson (1965: 144) was among the first to probe the interactions of societal agents, in particular politicians, voters, and lobby groups. His primer on the formation and

incentives of lobby groups served as 'the' reference for work on the interest group hypothesis. Of special significance was his notion of the 'diffuse costs, concentrated benefits' rationale for the formation of such groups. His argument here was that the organization of a cohesive group would be easier: with fewer members; in more concentrated sectors of the economy; with more similar participants; and with greater external threats. These factors still form the basis for empirical tests of political models based on the interest group concept.

2.1.2 Statist Models

On the other side, we have various models that are focused on government behaviour. This collection of theories explains inter-industry variations in protection by appealing to the state's role as suppliers of trade policy. The state is now the decisionmaking unit. These models, which were broadly identified by Baldwin (1989) in his *Social Concern* approach, are often motivated by the visible interest of public officials in the welfare of particular social and economic groups or by their desire to promote national and international goals. The public supports these goals, even though it may not be in their selfinterest to do so, because they are guided by a social welfare function that is then conveyed to government to espouse. These models can collectively be seen as identifying the various legitimate reasons why government officials have an interest in trade policy matters.

Adjustment Cost – Also termed the Status Quo model, this approach exposited by Lavergne (1983) emphasizes the recognition (and/or policy uncertainty) by government officials that deviations from existing conditions can be potentially damaging to large

subsections of their electorate. Protectionist policies can be used to minimize adjustment costs resulting from import competition, especially for those workers who are more vulnerable because of age and skill level. Policy based on adjustment costs may also be persistent over time.

Adding-Machine – This model of political behaviour is attributed to Caves (1976). He hypothesized that governments act only to maximize their probability of re-election. Politically important industries are those with the largest number of votes and those that are spread out geographically, and these industries receive the most protection as a form of public assistance.

Comparative Costs – In this approach, the export intensity of an industry is the focal point. The idea is that policy makers may not protect industries for which exports are relatively important for fear of retaliation from trading partners. Likewise, industries that are export-successful would not desire (and government would therefore not need to grant) trade protection because these industries have a comparative advantage regardless of tariff policy.

Social Change – This approach embraces a variety of government objectives, which range from social justice, unemployment alleviation, redirection of the national economy, etc. The aim of trade protection may be to promote relative increases in the standard of living of the lowest income groups. Along a different line, Caves' National Policy model (1976) is an example of a government attempting to redirect the economy toward industrialization through trade policy. His simple model forms a valuable starting point for the analysis in this thesis.

Foreign Policy – This model highlights the determination of policy as contingent upon external trade negotiations. In this case, factors like foreign direct investment and the relationship of developing nations relative to developed nations play a role.

2.1.3 Integrated Models

The informal models aforementioned have been criticized for their inability to deliver specific, empirically testable predictions. This stimulated the creation of a variety of integrated models that sought to remedy this. These 'second-generation' models are often based on more rigorous micro-foundations and take into account both the demand and supply aspects of endogenous protection.

First, an integrated model that postulated a voter-determined trade policy mechanism was proposed by Mayer (1984). With a standard two-sector, two-factor Heckscher-Ohlin model, he showed that majority voting on tariff preferences should lead to an equilibrium tariff that reflects the median voter's single-peaked preferences. A tariff on labour-intensive imports would be chosen if the median voter's capital-labour ownership ratio is lower than the mean ownership ratio in the country. In this case, a small industry would probably fail to get tariff protection because their interests would not be aligned with the majority. Adjusted to a multi-sector, factor-specific model, Mayer asserted that even with majority voting a small industry could receive tariff protection if there were substantial voting costs. The vote system in his model can be by ballot, or via lobbying a public representative who chooses policies that reflect majority opinion. Criticisms of Mayer's model question the presence of single-peaked preferences on a full menu of tariff choices in elections dealing with redistributive trade policies (Magee, et al. 1989: 73).

Second, Grossman and Helpman (1994) developed a model that explains the equilibrium structure of trade protection as a function of political contributions made by industry lobbies to an incumbent government. Their model assumes that commercial policy is determined by the political support of an already-elected government, rather than by electoral competition among candidates as in Mayer's theory. Specifically, interest groups bid for protection with contributions, and self-interested politicians set policy to maximize their own utility as a function of the total funds collected and the welfare of voters (which helps them get re-elected). This theory is described succinctly in their comments (Grossman and Helpman 1994: 833):

In representative democracies, governments shape trade policy in response not only to the concerns of the general electorate, but also to the pressures applied by special interests. Interest groups participate in the political process in order to influence policy outcomes. Politicians respond to the incentives they face, trading off the financial and other support that comes from heeding the interest groups' demands against the alienation of voters that may result from the implementation of socially costly policies.

The most notable result of their hypothesis is that the power of an individual pressure group, and hence the height of protection for their industry, is a function of only two factors, one being the import penetration ratio – which essentially measures an industry's stakes from protection. A low import penetration ratio delivers high protection, because specific-factor owners benefit greatly from the tariff-increased price, while at the same time there is only a minor social cost when the volume of imports is already low,

implying negligible opposition from consumers (Grossman and Helpman 1994: 842). The second variable to emerge as important in their model is the elasticity of import demand, with a high elasticity indicating a large deadweight loss from protection and a government that is more averse to the consequences of protecting those industries, similar to the Ramsey pricing scheme. Empirical analysis of this model requires estimates for these two variables as well as the assignment of an indicator variable for whether or not an industry is politically organized.

2.2 Model Selection

In deciding which of the theoretical approaches on which to base the empirics in this thesis, it is useful to look at the evaluation of both in the literature. First, there have been criticisms of the one-sided theoretical frameworks of the interest group model and social concern models. Problems with the commonly-used empirical assessments of these models have been noted by Posner (1974) and Grossman and Helpman (1995). Namely, that the endogenous protection theory is not 'tight' enough to stand up to testing, with variables that are open to interpretation. They note that there is no alternative hypothesis offered and there is ambiguity about the signing of some of the regression coefficients.³ Posner states, "At best it is a list of criteria relevant to predicting whether an industry will obtain favourable legislation. It is not a coherent theory yielding unambiguous and therefore testable hypotheses." (1974: 349)

³ Grossman and Helpman (1995: 705) further point out that first, everything but the kitchen sink is thrown in to help explain the level of protection, and each regressor only loosely resembles some theoretical concept, while at the same time different interpretations can be ascribed to the same regressor. Second, many collinear variables explain the same thing, so it is impossible to give meaning to a coefficient. Third, almost all studies use OLS, despite the fact that levels of protection clearly influence many supposedly exogenous right-hand side variables. Fourth, all of the studies take place in a domestic vacuum, assuming that international interdependence and foreign industry conditions are unimportant.

Yet the integrated approaches have also encountered problems in empirical study. The Mayer voter-determination model makes testing exceptionally problematic because it requires information on the median voter's characteristics on a sectoral basis. The G-H hypothesis, on the other hand, has been asserted to be valid using non-tariff barriers from the United States and other countries, but issues have arisen. Gawande and Krishna (2003: 20) note that empirical studies have found the weight that the government places on campaign contributions relative to welfare maximization to be very small. This would suggest that the government doesn't care about the main avenue for policy participation posited by the G-H model and "casts doubt on the value of viewing trade policy determination through this political economy lens". Moreover, in the empirical studies they referred to, the overall levels of contributions that were used to assign the indicator variable for political organization were miniscule relative to the level of trade barriers.

It is interesting that Grether, et al. (2001: 348) state that institutional context on the supply side of the market (for trade protection) is not very important in deciding which political economy model to look at. Furthermore, a paper by Helpman (1995) shows that the predictions from the political economy literature are quite robust to model selection, using for example the political support function, direct or representative democracy, the tariff formation model, or the influence-driven approach. If this is true, it is not necessary to distinguish between competing models when discussing the predictions of certain variables in political economy contexts. Since there are obvious limitations in attempting to empirically discriminate between competing endogenous protection models, and furthermore because there are various routes through which economic actors and

government engage each other, such an attempt - and there have been many such attempts in the literature - could miss some crucial determinants of protection levels.

Indeed, this same point was raised and validated in a recent paper that tested an extended G-H model, where the extension was composed of a number of 'additional' regressors postulated from endogenous protection theory (Gawande and Bandyopadhyay 2000: 146). The addition of these regressors yielded many significant coefficients and an improved fit compared to the strict G-H model. Also of note, in comparing their extended model to the strict G-H model, the authors found that an Akaike criterion favoured the larger model while a Schwartz criterion, which penalizes additional regressors severely, favoured the smaller (2000: 148). This may have been because they included an unduly large number of regressors (k=26) in their extended specification. While not definitive, this suggests that at a minimum, the G-H model may not fully account for the role of political organization and government social concern in determining trade policy.

2.3 Background on the Theory of Protection Persistence

It is easily recognized that protective trade policies benefit certain societal groups while simultaneously burdening others. It is also a reasonable supposition that advantaged groups, i.e. those receiving higher relative protection in the current period, desire to preserve that assistance in future periods. In addition, governments may wish to continue protection for politically-important groups. If successful, this means that current levels of protection determine, to some extent, future levels of protection. This section explores the theoretical literature on trade policy persistence effects.

Theories that seek to explain why industry protection persists long after the initial conditions that brought about that protection are gone are not as well-developed as the rest of the endogenous protection literature. Rodrik (1995: 1479) has commented that "There are practically no models in the literature that deal with this issue of persistence, and very few that can account for it". This is despite the fact that the persistence of protection is one of the most robust empirical regularities in the political economy of trade. In general, the theoretical literature takes the view that current protection alters the incentives of agents, which then feeds back into their lobbying behaviour for future protection in a sort of dynamic linkage.

Lavergne (1983: 36) provides a convenient starting point. He considers a strict equilibrium approach of the tariff structure, but notes that it is possible for tariffs to be independent of the values of various structural determinants at any one point in time. A 'sticky' tariff structure may not adjust quickly over time in response to changes in the relative influence of the underlying variables. Given this, historical values of the structural determinants may be important, as is the fact that the resistance to change may vary industry by industry. The factors that explain the different degrees of resistance to change among industries form the linkages that can lead to persistence.

A few linkages have been introduced in the literature. They include asymmetric welfare weights, multilateral negotiations, switching costs, adjustment costs, and price uncertainty combined with ownership of sector-specific human capital. Almost all of the

linkages deal in some way with declining industries. In fact, a declining industry assumption often seems to be a necessary precondition for protection persistence.

At a minimum, agents may place a greater welfare weight on the removal of an entitlement than on a gain of the same magnitude. This asymmetric attitude causes them to exert more effort in maintaining a protective policy than they put into getting it implemented. Baldwin (1989: 120) indicates that this intensity of lobbying when faced with imminent losses of income may partly explain why declining industries are given more protection. Lavergne (1983: 41) suggests that status-quo privileges such as tariff protection tend to become "rights", and that the removal of such rights is consciously avoided by politicians that wish to be re-elected.

Another possibility is that current patterns of protection were largely determined by major changes implemented in early protectionist periods to assist declining sectors and then were preserved by formula-based multilateral negotiations (Greenaway and Milner 1988: 409). The use of tariff-cutting formulas and exceptions lists in these negotiations can have the effect of preserving certain industries' tariff levels (Lavergne 1983: 42).

Yet another group of models suggest that agents' costly actions to take advantage of a public policy increase their willingness to pay for that policy, which is translated into extra political pressure and an increased likelihood the policy is retained in future periods. Coate and Morris (1999: 1332) argue it is 'switching costs' that drive the phenomena of persistence. In their model, a firm decides to operate in one of two sectors and a government decides which sector to give a beneficial public policy. The relationship between the firm's initial switching cost and its valuation of the policy, and hence its bribe, determines the result in period one. If the policy is implemented the firm moves to or stays in the subsidized sector. Persistence arises because the firm's location decision increases its willingness to pay for the policy, causing it to be implemented in future periods. Brainard and Verdier (1994: 586), on the other hand, suggest that the linkage behind persistent protection is the interaction between 'increasing adjustment costs' and lobbying. Higher protection reduces the need for costly adjustment, and since adjustment and lobbying for trade protection are substitutes, current non-adjustment increases the intensity of future lobbying activity. As a result, the level of tariffs is an increasing function of previous tariffs and declining industries never fully adjust.

In the long run however, industries may not be able to trade off adjustment costs with lobbying. Hathaway (1998: 576) explains that after a trade barrier reduction, an industry might actually lobby less for protection, despite increased import penetration, because it is pushed into adjustment by a more competitive market. With adjustment, an industry becomes more capital intensive and more involved in international trade, lowering the benefit to lobbying. It is also smaller in size and has an obviously reduced success rate, thereby diminishing its perceived chances of success from lobbying. This leads to a long run trend of diminishing protection for the industry with little or no lobbying, an opposite prediction from other models of protection persistence.

Finally, not all economists believe that protection persistence models must resort to the questionable assumption of increasing costs of adjustment. Magee (2002: 758) shows that tariff persistence can arise if producers are uncertain about future prices, own a sector-specific skill that depreciates if they exit the industry, and if lobbying success increases

with industry size. With a high initial tariff, producers remain in their industry to safeguard their managerial skills and their industry declines more slowly. The higher relative industry size means it has more lobbying success and receives a higher tariff than it would have if it had lower initial tariff protection.

Various models have been presented that account for persistence using different dynamic linkages. If tariff structures actually do remain quite rigid over time, then a straight equilibrium endogenous protection approach that assumes quick adjustment between industry structure and tariff policy may not stand up to empirical testing well. In such a case, it would not be unexpected if one period's tariff structure had little relation to the structural determinants from that same period. Instead, resolution might be found by looking at earlier periods of tariff history. It is possible that in taking into account previous tariff levels, a more complete picture of protection determination can be attained. It is also possible that tariff changes may be more readily explainable than tariff levels. These are items that are explored in Chapter Five of this thesis.

CHAPTER THREE: EMPIRICS AND DATA

3.0 Introduction

This chapter first summarizes the empirical literature on endogenous protection and protection persistence in cross-industry datasets. Next, it presents the original Canadian datasets used for this study's empirical analysis of 1881 and 1925 tariff rates, identifying the sources, methods of collection and computation of variables. Some preliminary findings based on inspection of the data are then addressed.

3.1 Background on the Empirics of Endogenous Protection

The theories that have been posited in the endogenous protection literature have been the subject of many empirical studies by economists seeking to understand the reasons why governments discriminate between different industries using trade policies. Consistent with the disparate collection of theoretical models, these studies have employed various specifications to identify how tariffs and other trade restrictions are determined in the political arena. Part of the reason for this is that an undisputed theory of domestic politics does not exist, as there are many routes through which citizens and policy makers interact. As well economists have had to resort, as they often do, to using proxy measures in place of suitably refined and disaggregated statistics to test the key variables identified by deductive reasoning. Often these proxies are called into question, as they can be interpreted as supporting more than one competing hypothesis. That said, the empirical literature generally finds that certain variables are consistently important and similarly signed, while other variables are more often in disagreement. Table 1 breaks down the econometric results of a selection of endogenous protection studies by concentrating on the more frequently posited explanatory variables. The table is by no means comprehensive but can be considered indicative of the literature.⁴

The most consistently signed and significant explanatory variables have generally been seller concentration, buyer concentration (often reversed as consumer good production – consumer lobbies are generally not organized), seller number of firms (usually proxied by establishments), employment, export intensity, unskilled, earnings, and labour intensity. These variables have been found to have strong correlations to trade policy wherever and whenever it is determined. Other variables such as scale, geographic concentration, industry growth, import penetration, change in import penetration, value added per worker and the capital-labour ratio have shown mixed results.

3.2 Background on the Empirics of Protection Persistence

The persistence of protection is seen as one of the most robust empirical regularities in the political economy of trade. Numerous empirical studies have found that industries with historically high levels of protection resist trade liberalization attempts more successfully and receive greater protection than do traditionally low-tariff industries. In a broad study of endogenous protection motives, Lavergne (1983) found that the dominant factor in his tests was the tendency for the status quo to be maintained. The tariff structure from 1930 was found to be the most important predictor of US tariffs in the 1964 and 1972 periods (pre- and post- Kennedy Round), and even for those of 1979 (post-Tokyo Round).

⁴ This level of detail is probably sufficient as there are a number of useful surveys that discuss empirical papers focused on endogenous protection that can be referenced if more detail is elected. Surveys have been published by Gawande and Krishna, Leamer and Levinsohn, Magee, and Rodrik.

He also found that tariffs saw the most substantial declines in those industries with the highest proportion of specific duties in 1930. His explanation was that the resistance to changing the status quo was weakest where specific duties exist, because inflation would reduce the *ad valorem* equivalents of such duties regardless of government action (Lavergne 1983: 164).

Several other authors have echoed these findings including Magee, Brock and Young (1989), Hayford and Pasurka (1992), and Baack and Ray (1983). The latter two studies are of special interest because they used historical datasets. In the second study, the authors found that the Smoot-Hawley tariff structure of 1930 was positively and significantly related to Fordney-McCumber tariff levels from 1923. They regressed the change in tariff rates from 1923-1930 on the 1923 tariff structure plus changes in structural variables from 1923-1930. The Fordney-McCumber tariff levels exerted the most influence on the tariff rate changes, while changes in labour intensity, value added, and employment levels also seem to have had an effect. Other than the obvious explanation of inertia effects in the setting of tariffs, as in Lavergne (1983), their reasoning was that the factors explaining the tariff structure may simply have changed slowly over time (Hayford and Pasurka 1992: 43). In the last paper, US tariff cuts in the trade liberalizing 1870-1910 period were found to be greatest for fast growth industries (in terms of value added), presumably because as they developed strong comparative advantages the profitability of their lobbying efforts used to maintain protection diminished (Baack and Ray 1983: 86). Both studies found a negative relationship between changes in value added and tariff rate

changes, suggesting that low industry growth creates lobbying incentives for higher protection, but that high growth removes these incentives.

3.3 Timeframe Studied

Existing studies have predominantly used datasets from relatively recent time periods, i.e. the 1960s through 1990s. Very few papers in the literature have examined data from prior decades. One of the earliest authors in this literature was Pincus (1975). His paper coincidentally also looked at the earliest time period: the US tariff circa 1824. As for Canadian work, Caves (1976) made the earliest published contribution that looked at this country, with a dataset circa 1963. Helleiner (1977) and Saunders (1980), the only other empirical papers that looked at Canadian data, proposed alternative explanations of industry protection patterns in the 1960s by way of response to Caves' work.

Looking further back in time for answers can be valuable. For one, our current system includes complex groupings of tariffs and non-tariff barriers, and studying tariffs alone in a world known to have significant non-tariff barriers (NTBs) to trade may lead to inaccurate measures of protection. Using a dataset from a time frame when tariffs constituted the primary means available to government for protecting industry reduces this issue.⁵ As well, the process of tariff negotiation and of drafting tariffs is often largely a matter of reforming existing tariff rates on the books. Thus, an explanation of protection across industries that relies solely on current industry conditions misses the prior factors

⁵ This is not to say that non-tariff barriers did not exist in this early time period in Canada's history. Certain government policies worked to reduce the importation of American goods. For example, railway policies in as far as differences in gauge between Canada and the US are concerned, as well as the 'Crow Rates' of 1897, which reduced Canadian Pacific Railway freight rates on eastbound grain and westbound settlers' effects, may well have represented substantial non-tariff barriers to trade.

that may have influenced tariff design. And so, looking back toward the inception of a tariff becomes useful.

In Canada, the first tariffs were introduced quite early, but it was not until the MacDonald government introduced the National Policy of 1879 that a tariff code designed specifically with protectionist intent was drafted. Prior to this the tariff had mainly been a revenue instrument, an emphasis that shifted because of economic and trade circumstances in the late 1870's. So while an earlier system of differential duties was present, the National Policy tariff comprises a unique testbed for examining the question of endogenous protection. Furthermore, if the set of initial conditions that produced a particular tariff pattern can be identified, then it becomes possible to also analyze why that pattern persists long after the initial conditions have diminished.

Next, to study the persistence question, a dataset was taken from 1925, a year that was chosen for a few reasons. First, being positioned in the interwar years, it has the advantage of escaping the distortion in export and import data that occurred during the war years. Second, since the historical accounts tell that the tariff schedule was not radically altered after 1879, it is possible that the minor adjustments that did take place amounted to tariff 'fine-tuning' adopted for the benefit of interest groups lobbying the incumbent government. Thus the tariff schedule in 1925 may have been tailored even more to industry demands than it was in 1879. Third, major reforms were made to the Canadian tariff in 1930 in response to the passing of the Smoot-Hawley tariffs by the United States. The countervailing duties enacted in 1930 were of a retaliatory nature and not protective in purpose, as then-prime minister Bennett so pointedly noted, rates "made in the United

States could not be a basis for effective protection to Canadian industry" (McDiarmid 1946: 274). For these reasons, the year 1925 has merits for its remarkable stability at a time when tariff walls were beginning to rise around the globe.

Conversely, one of the biggest drawbacks to using 1925 in a static analysis is that there may be an endogeneity problem. If the tariff structure was determined in 1879, with only minor changes thereafter, then an attempt to have 1925 industry variables explain tariff levels created in 1881 will have to deal with this econometric impasse. The tariff level prevailing in an industry will have had more than adequate time (~50 years) to affect the industry's structure. A relatively high or even prohibitive tariff in an industrial sector might staunch the flow of competing imports into Canada, thereby boosting that industry's employment and production, and causing the average wage to rise as labour owners appropriated some of the accrued rents (as per the Stolper-Samuelson Theorem). Yet endogenous protection theory suggests that industry size and average wage affects the lobbying technology and the desire of politicians to reward an industry with protection in the form of high tariffs. Thus it might be expected that a static analysis of 1925 would not give robust results, while tests that take into account the 1881 dataset would yield stronger findings.

3.4 Review of Data for 1881 and 1925 Empirical Analysis

To conduct empirical tests of endogenous protection, two sets of variables are necessary. The first is the level of protection granted to an industry by government, which in this thesis is the average *ad valorem* tariff rate on imports that compete with the domestic industry's products. The other set of variables are industry characteristics that are used to explain the levels of protection. In the next sections, this dataset is described and some initial conclusions discussed.

3.4.1 1881 Tariff Rates

It has only been in the last 30 years that economic researchers have begun compiling sufficiently-detailed data on industrial protection in order to better understand the effects of trade policy. As for Canadian data, there have been a few published attempts (known to this author). Melvin and Wilkinson (1968) initiated the first study of industrial tariff rates, calculating nominal and effective rates of protection; Wilkinson and Norrie (1975) followed with a different method of tariff-weighting and a look at the rates of return to capital in protected industries; Conlon (1985) compared Australia and Canada when it came to the inter-relationship of tariff rates and transportation costs; the Department of Finance compiled estimates of tariff rates by industry and commodity for an evaluation of CUSTA (Lester and Morehen 1988); and the Canadian International Trade Tribunal sponsored a study (Gibberd 1994) that calculated rates of protection before and after the CUSTA implementation. All five studies calculated rates of protection for recent time periods, with various years from 1961 through 1992. Developing industry-aggregated tariff rates for the earlier periods studied in this thesis is then an essential first step.

To build such a dataset, commodity-level protection measures are collected and then aggregated up to the industry level. For this time period, an annual volume of trade data was published by the Dominion Bureau of Statistics' (DBS) Department of Trade and Commerce (*Tables of the Trade and Navigation of the Province of Canada* 1881). This volume enumerates by commodity/article the following information: rate of duty levied, quantity and value of goods imported, quantity and value of goods entered for home consumption, and the amount of duty collected. The levied rates include specific duties (e.g., 18 cts per lb.), *ad valorem* duties (e.g., 20 p.c.), and compound duties (e.g., each \$25 and 15 p.c.).

Individual articles were grouped according to industry based on a DBS classification scheme from 1928 (*Classification of Industries* 1928). Then, for each article an *ad valorem* equivalent tariff rate was found by dividing the amount of duty collected by the value of imports 'entered for home consumption' of that article. Individual article tariff rates were computed up to the industry level by applying weights based on the value of imports.⁶

The appropriateness of various tariff weighting schemes has been an issue in empirical work before. Import weights, production weights, consumption weights and hybrid weighting have been used, and the industry average tariff can vary based on this decision. The Melvin and Wilkinson, Conlon, and Gibberd studies employed import weighting, while the Wilkinson and Norrie study used production weighting. Weighting by the value of imports tends, on average, to underestimate the degree of protection granted because the tariffs that are most effective in restricting imports, which are generally the highest, get the lowest weights. On the other hand, production weighting may overstate the degree of protection because of the existence of unnecessary tariffs on the exportable goods

⁶ This is equivalent to dividing the sum of 'duty collected' in an industry by the sum of 'value of imports' in that industry.

of internationally competitive industries. In this case, production weighting is not possible since value of production figures for 1881 are only available for industries, not individual articles, as detailed 'Input-Output' tables are needed for this weighting procedure.

The DBS trade report used to calculate the tariff rates was from fiscal year ended June 30th, 1881. This year, not 1879, was chosen because the regressors are from the 1880-1881 census and the LHS variable should not predate the RHS variables. As it turns out, the National Policy tariffs had an associated implementation lag. Many of the new tariff rates did not come into effect until after March 10th, 1880, almost one year after the National Policy budget was introduced in Parliament. As such, I am assuming exogeneity/constancy of the regressors and the effects of them on these calculated tariff rates during the intervening time period. For these reasons the use of the 1881 fiscal year import data for calculation of National Policy tariff rates is appropriate.

There were 150 industries for which an aggregated tariff rate could be calculated. An additional seventeen industries were omitted because no imported commodities were listed that matched these industries.

The 1881 tariff rates are sorted from highest to lowest and depicted in Figure 1. The highest tariff rates are associated with the Distilleries (141%), Chicory Kilns (78%), Native Wine making (72%), and Tobacco working (60%) industries. Other high industry figures include Vinegar Factories (60%) and Sugar Refineries (48%). The top tariffs seem to be reserved for goods with price inelastic demand, probably for revenue purposes or due to moral justifications, i.e. heavy taxation on 'sin' products. As well, the majority of the tariffs at or above 30% relate to finished /consumer products. It is also noticeable that the rate

schedule exhibits a stepped appearance, with tariffs generally grouped into consistentlyapplied and similar levels.

3.4.2 1925 Tariff Rates

The dependent variable for the persistence study is calculated from commodity import data compiled by the DBS (*Trade of Canada (Imports for Consumption and Exports*) 1926). The commodity data is recorded in terms of value of dutiable imports, duty collected and value of free imports. The numbers were again aggregated up to the industry level using the DBS' classification system (*Classification of Industries* 1928). Primary 'extractive' industries (farming, fishing, mining, and forestry) were not incorporated, even though the import dataset included commodities produced by extractive activities. These are often free imports and industry data was not available in the Census that was comparable to the manufacturing data. The average *ad valorem* equivalent tariff for each industry was then calculated by weighting individual tariff rates by the value of imports for that commodity. Using the DBS classification scheme gives us a list of average tariff rates for 157 industries. An additional twelve industries were omitted because imported commodities could not be ascribed to their industry.

The 1925 tariff rates are sorted from highest to lowest and depicted in Figure 2. Unlike the 1881 tariff schedule, this dataset does exhibit a steady, progressive decline across industries. Possible reasons for this include minor manipulations of the tariff code in the years after the National Policy, as well as changes in the prices of commodities to which specific and compound duties were subject, thereby changing the *ad valorem* equivalent rate. Of the outliers, the Stereotyping/Electrotyping industry's 244% tariff is a data error and was excluded, while the tariffs on the Cigar /Cigarette industry (111%), Distilleries (62%), Wine /Grape Juice industry (58%) and on Tobacco manufacturers (43%) seem consistent with the pursuit of demand inelastic goods for high import taxation. Other top tariffs include Sugar Refineries and Motion Pictures, each at around 37%.

3.4.3 1881 Industry Structural Characteristics

Data on Canadian industry characteristics during this time period is found solely in the decennial censuses conducted by the federal government. A 'Census of Canada' was taken in 1870-71 and another in 1880-81. At first glance this seems problematic. Variables taken from the 1871 Census may not be indicative of the industries that shaped the National Policy because they predate the policy, while those from 1881 may be affected by the tariff in an endogenous manner. However, on the premise that the aggregated industry characteristics undergo only minor relative variation from year to year and tariff-caused changes would not have had time to manifest themselves yet (especially given the associated implementation lag), the short span between 1879 and 1881 should not have many differences. The 1881 Census was therefore used to construct industry variables (*Census of Canada, Second* 1881).

Out of 167 industries listed in the industry data, 17 were omitted because trade data was absent, as noted above. Some of these omitted industries actually belong to the service sector (dentistry and photographic galleries), while others were simply not enumerated in
the National Policy tariff. It may be that they were not traded, or that if they did trade, they were imported in insufficient amounts to be listed separately. The seventeen omitted industries, with some industry characteristics, are listed in Table 2.

These industries were a minor part of the 1881 Canadian economy, constituting only one percent of the total value of articles produced. And in comparing their characteristics to the averages for all industries, none of the omitted industries stand out as above average in all categories. There seems no reason why their absence would bias my results.

It is also worth noting that there were a few unreported industries in the industry data. There was no mention of Slaughtering and Meatpacking in the Census of Manufactures, despite it being an important and protected industry at this time. While much slaughtering occurred directly on the farm, there was a growing meatpacking industry, a fact that the Census industry definitions did not account for. Other absent industries included Linen Goods, Machinery, Molasses, Non-ferrous Metal Smelting, Tea, and Toilet Preparations. In these cases, competing imports in these categories were grouped under Miscellaneous Wares.

For each industry, the following data was available: number of establishments, hands employed (divided into men, women, boy, and girl subsections, with the age division being 16 years), yearly wages, value of raw materials, value of articles produced, and capital invested. Regional divisions of hands employed and value of articles produced for each of the eight regions in Canada were also available. Additionally, industry data from the 1871 Census was gathered to enable industry growth rates to be calculated (*Census of Canada, First* 1871). The same classification of industries existed between the two censuses, with only nine extra industries (Bellows, Fuses, Lead Pipe, Plumbago, Railway Cars, Sand Paper, School Slate, Smut Machines, and Turpentine), which either were no longer in existence by 1881 or had been subsumed into other industry groups.

Finally, 1881 export data was gathered from DBS trade statistics (*Tables of the Trade and Navigation of the Province of Canada* 1881). This dataset of quantity and value of exports enumerated by individual articles is very similar to the import data, although in terms of itemized commodities the import data is far more detailed. A comparable procedure was followed for grouping articles into industries to come up with the total value of exports for each industry.

This dataset was then used to create explanatory variables for the regressions. The variables are listed in Table 6, along with an explanation of their construction and units of measurement. Table 7 presents the expected sign for each variable under each model and descriptive statistics. The variables in this table are arranged according to two main model groupings, societal effects and statist effects. Some variables show up in two or more models, but may have different signs. These explanatory variables are described in Sections 3.4.5 and 3.4.6.

3.4.4 1925 Industry Structural Characteristics

Industry characteristics are found in the 'Census of Canada' taken in 1920 and the limited 'Census of Manufactures' from 1925. The 1925 Census was used to construct industry variables for the standalone endogenous protection tests as well as the persistence tests (*The Manufacturing Industries of Canada* 1925).

There were 157 usable industries listed in the census data. An additional twelve industries were omitted because trade data was absent, as noted above, they were either not traded, or if they did trade, they were imported in insufficient amounts to be listed separately. The twelve omitted industries, with some industry characteristics, are listed in Table 3.

These omitted industries made up a relatively minor part of the 1925 Canadian economy, only a few percent of the total value of articles produced, of which the Electric Power and Light industry dominates. In comparing their characteristics to the averages for all industries, only the Electric Power and Light industry stands out as above average. Of these omitted industries, Dying, Cleaning and Laundry Work is actually a service industry and the Electric Power and Light industry is a utility, both of which had little or no tradable elements in the traditional sense. Their absence should not bias my results.

For each industry, the following data was available: number of establishments, hands employed (divided into salaried employees and wage-earners, and then further divided into male and female totals), yearly salaries and wages, cost of materials, value of products, and capital invested, as well as regional divisions of hands employed for each of the now nine provinces of Canada and the total number of workers under the age of 16. The regional divisions and under-16 workforce are derived from the Occupations section of the Census and cover only 112 industries, which further reduces the usable dataset.

Next, industry data from the 1920 Census was gathered to enable industry growth rates to be calculated (*Census of Canada, Sixth* 1921). The same classification of industries existed between the two censuses, with only two industries (Wood Preservation and Motion Pictures) no longer listed in 1925 and seven other industries (Batting, Excelsior, Cement products, Clay products, Lime, Salt, and Fountain Pens) that were not listed in 1920.

Finally, 1925 export data was gathered from the same volume as the import data (*Trade of Canada (Imports for Consumption and Exports*) 1926). This dataset of quantity and value of exports enumerated by individual articles is similar to the import data, but in terms of itemized commodities the import data is more detailed. A comparable procedure was followed for grouping articles into industries to come up with the total value of exports for each industry.

This dataset was used to create explanatory variables for the 1925 regressions. The variables are listed in Table 6, along with an explanation of their construction and units of measurement. Table 8 presents the expected sign for each variable under each model and descriptive statistics. The variables in this table are arranged according to two main model groupings, societal models and statist models. Some variables show up in two or more models, but may have different signs. In the next sections, these explanatory variables are categorized for clearer description and analysis.

3.4.5 Societal Variables

The first main grouping contains societal variables under the interest group model. This set of determinants of whether or not an industry is protected relates to an industry's ability to organize to lobby policy-makers for protection. Corresponding to the costs and benefits of organization are a series of proxy variables, factors that may discourage/ encourage an industry from coordinating its lobbying activity.

The free-rider problem as outlined by Olson (1965) is critical. A lower 'seller number of firms' can alleviate the free-rider problem in coordinating a lobby, enabling high protection. The number of *establishments* in an industry is a proxy measure for the number of firms, something not collected in the Census. As a firm may own several manufacturing establishments, this variable will overestimate the number of firms in the industry. The variable is scaled by the value of production to allow relative comparison across industries.

The free-rider effect can also be circumvented if production is concentrated within a few firms, regardless of the total number of firms in the industry. Concentration ratios are not available for this time period, so this effect is proxied by scale (although it can be said that a better term for this measure would be size), with high scale associated with high tariffs. *Scale* is calculated as value added per establishment.

On the buyer side, we can distinguish between buyers of intermediate goods and purchasers of finished/ consumer goods, both of which lobby against increased protection. Consumers though, are a larger more diffuse group and should, according to the interest group theory, have a reduced ability to resist the protective efforts that would raise the price of their consumption products. As a result of this free-rider problem, anti-protection lobbying may not materialize for some industries. On the other hand, there may be significant anti-protection lobbying by large firms in manufacturing sectors that use another industry's output as an intermediate or raw production input. Hence industries producing *consumer goods*, with a dummy variable value of 1, should be able to attain higher levels of protection. The DBS classification scheme categorizes industries which produce consumer goods and those which make producer (intermediate) goods, enabling a complete mapping of industries.

The next two variables are concerned with external pressures on firms to organize, which can be heightened if an industry is growing slowly/shrinking, or if facing substantial competition from imports. *Industry growth* is measured as the growth in shipments between 1871 and 1881, and between 1920 and 1925. It is negatively related to protection levels. As for import competition, industries facing substantial pressure from cheaper imports lobby for protection far more vigorously than industries whose comparative advantage is so great that they are unopposed in the domestic market. In this case, high *import penetration* is associated with high levels of protection. Note however, that in the Grossman and Helpman model, high import penetration leads to lower levels of protection because of strenuous opposition by consumers to new or raised tariffs and minimal lobbying by specific factors.

The final variable in this grouping is *geographic concentration*. High concentration in a region impedes free-riding and leads to higher protection through ease of lobbying. Conversely, industries that are more geographically dispersed across provinces may be less able to organize, particularly in an era when travel across Canada was costly, long and demanding. Distance also provides natural protection, and as such there is less need of tariff protection if an industry is widely dispersed across the country. The variable is calculated as in Trefler (1993: 157) for each industry, as the sum of the absolute value of the difference between production and population shares.

geogconc = $\sum_{j=1}^{8} |(Q_{ij}/\sum_{j=1}^{8}Q_{ij}) - (POP_{j}/\sum_{j=1}^{8}POP_{j})|$, where Q represents the value of shipments in the *i*th industry, and POP represents population of the *j*th province.

This index is a useful summary measure of the degree of concentration of a variable. If production in an industry is located in each province in exact proportion to provincial population, then there is no tendency toward concentration in that industry, and the index is given a value of zero. The index reaches its maximum (extreme bound of 2) when all production in an industry is located in the province with the smallest population share.

3.4.6 Statist Variables

Whereas the previous section dealt with the demand for protection as interest groups influence the setting of tariff rates through lobbying, this section deals with the state's role as a supplier of protection, for which various motivations are attributed to the policy-maker. This second main grouping contains statist variables under the adjustment cost/ status quo, adding-machine, comparative advantage, and social change models.

The concern of government on issues relating to industry disadvantage, re-election, and economic realignment is critical, and during this time period tariff policy was a useful instrument for achieving these goals. Raising protection levels for industries that employ a high degree of unskilled labour could be based on a desire to support these workers, recognizing their high adjustment costs to international competition... or motivated by a desire to effect social change, much like a minimum wage would do. The *unskilled* variable is measured as the percentage of employees under the age of 16 in each industry.⁷

For re-election purposes, a government may look at geographically dispersed sectors as potentially valuable industries for electoral vote-gathering purposes (Caves 1976). The hypothesis is that they may actually be more attractive in terms of vote-buying to politicians, who would grant them higher protection. This implies a negative relationship between *geographic concentration* and protection levels.

In terms of comparative advantage, the competitive situation that an industry has with respect to foreign industry is an important determinant of the protection level granted it by government. In industries with strong export activity, the need for protection is low. Industries with high *export intensity* should not require protection because they do not face competing imports or because, with intra-industry trade, import tariffs might provoke undesired foreign retaliation.

Somewhat related to unskilled is the yearly average *earnings* of employees in an industry. A government motivated by social concern objectives or redistribution goals seeks to protect industries with lower wages.

The *capital-labour ratio* is another factor that may indicate an industry in need of assistance by government. In terms of an economic realignment policy, an industry that uses capital relatively intensely could be granted assistance because of the spin-off effects that might ensue from increasing the significance of such industries. The National Policy of

⁷ This is an easily-available measure of skill level from Census data, however there is recognition that age of workforce (under-16 percentage) may not correlate with skill level in every industry.

1879 may have been motivated by such an objective. Certainly, this protectionist policy had the effect of increasing capital inflows from American companies seeking to jump the tariff wall, thus creating an extremely important branch-plant phenomenon in Canada. Whether or not this was the specific intent of the Macdonald government is another matter and one which this variable would not capture unless these follow-on capital inflows went chiefly to industries with high capital-labour ratios in 1879. This variable is measured as the ratio of total capital stock to number of employees.⁸

Additionally, there is the *labour intensity* of an industry, which is calculated as the sum of wage and salary expenditures (payroll) divided by industry shipments. High labouruse sectors may be less efficient, and therefore need more protection.

The past performance of an industry in terms of worker-specific effects merits consideration as well, and can be measured by their *earnings growth* between 1871 and 1881, and between 1920 and 1925. A low or negative growth rate could cause the government to act to assist injured industries so that its workers do not suffer from deleterious adjustment costs.

Finally, sector-specific dummy variables can be used to test for the possibility that policy-makers placed greater significance on certain major groups of industries. The groupings used for both 1881 and 1925 were industries whose output consisted of: *textile*; *wood/paper*; *metal/electric*; *chemical*; *mineral*; and *miscellaneous* goods. The omitted category is industries whose inputs were agriculturally-derived.

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⁸ The total capital stock as collected by the DBS consists of *fixed capital*, comprising land, buildings, machinery and tools, and *working capital*, comprising materials and supplies on hand, finished products, stocks in process, and cash, trading and operating accounts, etc.

CHAPTER FOUR: NATIONAL POLICY TARIFF

4.0 Introduction

Canada's first significant protectionist commercial policy was the 'National Policy' tariff, introduced by the Macdonald-led Conservatives in 1879. The current chapter examines the relationship between Canadian industrial structure and this protective tariff, focusing specifically on the interaction of manufacturers and politicians. The event study begins with a background on historical conditions and Canada's tariff structure around this time. An empirical analysis that tests for endogenous protection motives in the determination of these tariff rates follows, with the findings discussed in the last section.

4.1 Background

In examining the status of commercial policy in this period, there are a number of factors that should be considered. The first is whether the tariff would be used by the government solely for revenue raising or if it could be customized as a protective instrument. A second related factor is the reciprocity versus protection debate. The third consideration is the level of organization of manufacturing interests. Associated with this is the question of how open was the Canadian government and civil bureaucracy to input from manufacturers? These questions are important because they frame the politics of commercial policy during this period and give us an understanding of the forces that shaped the National Policy legislation. Once these pieces are in place, we can proceed with an empirical analysis of whether an endogenous protection relationship between industry and government is supported by data from this period.

4.1.1 Developments in Canadian Commercial Policy

In the mid-to-late nineteenth century, it is clear that the various agents in the Canada economy often looked to commercial policy to facilitate their ambitions. Manufacturers sought an open market in which to sell their production but cared little if that market was in Canada, Great Britain or the United States. The government required customs duties as an essential revenue instrument. Both sets of agents wanted economic development and prosperity. Consumers, on the other hand, preferred low prices for the goods they purchased but also recognized the need for business development and associated employment growth as Canada industrialized. The interactions between these agents produced a few different policy prescriptions. The status quo policy was a small, revenuemotivated tariff; however the idea of protection was nascent. Additionally, the desire for a U.S. market for Canadian products meant that free trade was often in conflict with protection.

Prior to Confederation, the British North American colonies maintained separate 'revenue' tariffs that were, at least early on, subject to approval by the British Parliament.⁹ A new trend developed with the Cayley and Galt tariffs of 1858/1859, which were tuned somewhat to include a small amount of 'incidental protection', even though they were ostensibly drafted for revenue purposes only. This happened as manufacturers in Ontario encouraged policy makers in the colony of Canada (which had achieved responsible government 12 years prior) to enact the tariffs... despite the expressed disapproval of the

⁹ See Table 4 for an abbreviated history of tariff developments in Canada, summarized from J. Harvey Perry's *Taxes, Tariffs & Subsidies* (1955: 575-616).

British. As a result, import duties on manufactured goods rose from an average of 10 percent to about 20 percent (McDiarmid 1946: 76).

However, in 1867 the average tariff rate was lowered to 15 percent in the first tariff legislation of the newly-confederated Dominion of Canada. This was a compromise made by the industrializing interests of the provinces of central Canada aimed at appeasing the relatively lower-tariff Maritime colonies who were desirous of free trade. Not to be dismissed, Maritime leaders and commercial interests saw Confederation, though reluctantly, as vital to opening wider markets for their timber and fisheries as the natural protection offered by transportation costs was coming down. The advent of the iron steamship sped up ocean travel from New York and St. Lawrence ports and railway travel continued to progress, so the Maritimes were losing their natural advantage of proximity to Europe and Northeast US markets (McDiarmid 1946: 128-129).

Protectionist arguments were secondary to the need for government revenue even in the early post-confederation period. On average, customs duties provided 70 percent of the total revenues of the provinces. With the large transportation development debts assumed by the Dominion, the tariff revenue that came from growing capital imports was essential to the government's nation-building objective. This called for a modest tariff that produced the necessary revenue stream but didn't completely staunch the flow of imports. In 1870 revenue requirements dictated the introduction of a flat 5 percent surtax onto all existing duties, though this had to be repealed in 1871 due to popular discontent.

Thus, commercial policy immediately post-1867 consisted of a customs tariff that fulfilled revenue first, with protection mainly neglected. McDiarmid (1946: 141) comments

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that this was because few industries were dependent on protection for survival and the Atlantic provinces remained opposed to sharing the burden of a protective policy. It was not until a depression in the late 1870's that export-deprived manufacturers from central Canada began making inroads with the government with their arguments for protection.

Another reason for the introduction of higher tariffs in 1879 was the failure of Canada to reach satisfactory trade terms with the United States (McLean 1895: 23). Government commercial policy was fixated on reciprocity: reciprocity, a term not in common usage today, represents a mutual, negotiated withdrawal of some or all of the trade barriers between two countries. In 1866, after the end of a limited free trade program under the Reciprocity Treaty, Canadian representatives made no less than four attempts to renew reciprocal-trade relations with Washington but were rebuffed each time. Industry initially supported the Canadian government in their attempts. The consensus view among businessmen was that open access to the US market would be preferable to highly protective tariffs at home. And yet, to Canadian manufacturers, free trade was not necessarily inconsistent with the notion of erecting high barriers to trade: both could create a stable market for their products.

In the mid-1870s, a prolonged stagnation of the Canadian economy reinforced the argument that the Dominion needed a commercial policy that offered genuine protection for industry. Manufacturers took up this call and some in Parliament responded.

The opposition, led by John A. Macdonald, repeatedly petitioned for a readjustment of the tariff so as to offer protection to manufacturers. In speeches in 1876, 1877 and 1878, Macdonald acquainted voters with his 'National Policy'. He argued that this policy would eliminate the unemployment situation in Canada, thereby retaining the thousands of his skilled countrymen who would otherwise expatriate themselves. It would restore prosperity to struggling industries and promote inter-provincial trade patterns, and would prevent Canada from being a dumping ground for cheap American manufactures. Lastly, he argued that retaliatory tariffs were the best way to secure an eventual reciprocity of trade with the United States: "It is only by closing our doors, and by cutting them out of our markets, that they will open theirs to us." (Annett 1948: 16)

Macdonald's opposition motions in Parliament were consistently defeated by the Mackenzie Liberals. Yet in the general election of 1879, the Conservative leader's National Policy electoral platform secured his party control of the House. As the new prime minister, Macdonald reiterated that the National Policy would entail, "a judicious readjustment of the tariff," that was intended to foster home industries and at the same time prevent Canada from being made a 'slaughter and sacrifice market' for industries of the United States (Porritt 1913: 254-55). The tariff wall was seen as an instrument to bind together the three elements of a new development plan for Canada: urban industrial expansion; western settlement; and an independent east-west transportation link.

4.1.2 Organization of Industry and Receptiveness of Government

When MacDonald had campaigned on the protection platform prior to the election, he declared it would benefit and foster all industries in the country. The ambiguity of his claims is said to have attracted everyone who was dissatisfied with the status quo in a time of a prolonged economic depression (Beck 1968: 32). That the plan was not particularly detailed at this point is important because it reinforces the actions the newly elected government took in requesting industry proposals for tariff changes after winning the election. Macdonald stated in a public address, "Let each manufacturer tell us what he wants and we will try to give him what he needs" (Blake 1957: 72). This proposal of the Prime Minister's seems to have come to fruition, in light of Finance Minister Sir Leonard Tilley's comments when introducing the budget, "We have invited gentlemen from all parts of the Dominion, to assist us in the readjustment of the tariff, because we did not feel that we were prepared without advice and assistance from men of experience with reference to these matters to readjust and make a judicious tariff. We therefore invited those who were interested in the general interests of the country or interested in any special interests" (Blake 1957: 72).

Evidence of industry input in drafting the tariff bill also comes from the other side of the public-private relationship. Manufacturers wanted to capture the home market by substituting domestic production for imports and went to great lengths to make sure competing imports were disadvantaged. In his study of the Canadian Manufacturing Association, Clark reports that the CMA's predecessor, The Manufacturers Association of Ontario, was very much involved in this process (Clark 1939: 6-7):

In the actual framing of the tariff of 1879, the Association played an important role. At a meeting in Toronto, the members of each manufacturing industry retired to a separate room and drafted a tariff covering their own articles. A similar scheme was adopted at a meeting of manufacturers in Montreal. The two groups then met in Ottawa and agreed upon a tariff which was submitted by Edward Gurney, the Association's President, to Sir Leonard Tilley with the advice that it be adopted as it stood. "With very few exceptions," the Secretary claimed later, "the tariff which was proposed by Sir Leonard Tilley in his budget speech was the same as that suggested by the Manufacturers' Association." Blake (1957: 72) also notes that allegations surfaced that throughout the Conservative's National Policy mandate, secret meetings between politicians and manufacturers took place in which contributions to party funds were received along with tariff requests.

This close relationship between manufacturers and senior government ministers is important. In Canada, while Members of Parliament are directly elected by their constituents and are to a certain extent responsible to them, the force of party discipline exerts a natural restraint on the ability of lobbies to realize their goals by focusing on individual MPs. Legislators are not typically allowed free votes and are expected to vote the party line. Thus in Canada, lobbying activities are almost certainly directed at key ministers and the prime minister (or prime minister's office), where policy has its origins.

Furthermore, in parliamentary systems the real locus of specialization is the respective ministry, which acquires the policy expertise that legislative committees have in the US. This method of organization gives enormous power, provided there is a stable majority in the House of Parliament. Majorities in parliaments usually choose to delegate broad policy-making authority to cabinet. What's more, a parliamentary cabinet's endorsement of a bill is usually enough to pass it, especially because of legislative party discipline (Diermeier and Myerson 1999: 1183-84). That manufacturers in 1879 would direct their lobbying activities to the Minister of Finance seems entirely rational given the Canadian system for transforming policy proposals into legislation.

Finally, it needs to be noted that not all manufacturers in Canada actively campaigned for increased protection. The agricultural implement industry, in particular,

had earlier voiced opposition to the introduction of protective tariffs. Massey, the industry's most successful businessman, declared in 1876 that, "The existing tariff is satisfactory to us, and is sufficient protection: perhaps even a little less would also be. A still further advance in the tariff would certainly prove adverse to our interests" (McDiarmid 1946: 150). The motivation for this position probably stems from the effect higher tariffs would have on the industry's main customer, the Canadian farmer. Any drop in farm incomes due to higher prices of purchased commodities would result in decreased sales of farm machinery. Since many duties targeted the consumer market, this stance toward protection was well-founded.

4.1.3 The National Policy Tariff

In their first session of parliament in 1879, Macdonald's Conservative Party increased tariff rates on manufactured goods to 30, 35 and in some cases 45 percent, with textiles and iron and steel especially favoured with high tariff protection.

The National Policy bill was introduced in the Commons by Finance Minister Tilley in March of 1879. He explained that the method used in securing special protection for certain industries was, "to select for a higher rate of duty those articles which are manufactured or can be manufactured in the country, and to have those that are neither made nor are likely to be made in the country at a lower rate." (McLean 1895: 22) The general rate was raised from 17½ percent to 20 percent. Two sectors in particular were singled out for special attention. In an attempt to stimulate domestic production, rates of protection for the textile sector and the iron and steel industry roughly doubled. In the textile sector, duties on cotton goods increased from 17½ percent to an effective specific and *ad valorem* rate of about 30 percent, while woollen goods rates also approximately doubled. Previously-free pig iron was charged a specific duty of \$2.00 per ton, primary iron and steel went from a range of free to 5 percent to a range of 12½ percent to 17½ percent, and castings, forgings, boilers and engines increased from 17½ percent to 25 percent. Agricultural implements, whose manufacturers seemed not to support increased protection, actually received a similar boost from 17½ to 25 percent (McDiarmid 1946: 162).

Looking at the National Policy tariff schedule, certain commodity categories stand out as remarkably detailed relative to others. Selected elements of the tariff code are shown in Table 5. This observed specialization could be indicative of the growth of manufacturing, where the precise distinctions of the tariff schedule attempted to reproduce the actual stages of production. But given the reported influence of manufacturing interests and the apparent receptiveness of the government, it is also likely that these specialized categories were deliberately drafted in a cascading manner. This would imply that domestic manufacturing lobbies targeted for higher tariffs the imports that were in direct competition with their stage of production. Other stages that produced the raw or intermediate inputs they used would have been given lower tariffs.

For example, the marble cutting industry in the 1881 tariff was composed of four categories, with the rate of duty increasing from 10 to 30 percent with increasing levels of marble manufacturing. Another example is the sole leather used in manufacturing shoes, with the distinction in the tariff code being whether it was waxed or not. Cascading crossed industry boundaries as well. Primary iron and steel ranged from free to 12½ percent, and

base metals such as brass, copper, lead, tin and zinc were levied at 10 percent if they came to Canada as pigs, bars, blocks, sheets or tubes. However, if they were imported in a higher manufactured form, especially as some form of consumer good, they were levied at 20 to 30 percent. This could indicate that industry groups had considerable success in ensuring that those imported products directly in competition with their industry were taxed onerously, while their raw materials were charged lesser rates. At the very least, it shows that there was a consistent push for higher levels of industrial activity.

4.2 Methodology and Results

This section carries out an empirical analysis into the question of whether an endogenous protection relationship between industry and government is supported by data from this period. Four specifications of the endogenous protection model are tested using ordinary least squares (OLS) estimation. I assume the function is linear and of the form:

(1) $tariff_i = \beta_0 + \beta_1 establishments_i + \beta_2 consumergood_i + \beta_3 scale_i + \beta_4 industrygrowth_i$ + $\beta_5 import penetration_i + \beta_6 geogconc_i + \beta_7 unskilled_i + \beta_8 employment_i + \beta_9 earnings_i + \beta_{10} klratio_i + \beta_{11} labour intensity_i + \beta_{12} earningsgrowth_i + \beta_{13} industrydummy_{g,i} + \varepsilon_i$

where *tariff*_i is the nominal ad valorem equivalent tariff rate in industry i, *industrydummy*_{g,i} is an industry group dummy in g = 1,...,5 (textile, woodpaper, metalelectric, chemical, mineral, misc) with agriculture omitted, $E[\varepsilon_i]=0$ and $E[\varepsilon_i|X]=0$ where X is the vector of explanatory variables.

The results are displayed in Table 9. The four specifications consist of different subsets of these variables. Specification (1) tests for societal effects, isolating the demands of interest groups on the 1881 tariff. Six variables are used to explain interest group organization on the premise that better-organized industry lobbies were more efficient at pressuring the Macdonald government for protection. The results of the estimation indicate that the most important explanatory factors were industry scale and whether the industry produced consumer goods. The coefficient estimates for both variables were significant at the 99% level with the predicted signs. The constant was also significant at that level and reports that the average tariff rate would have been just over 21 percent in the absence of other estimated effects. The variables for number of establishments and industry growth

give the correct signs, both negative, but were not significant. Import penetration was negative and not significant, which unfortunately does not clear up the ambiguity of its r_{i} predicted effect. Geographic concentration failed to achieve significance and was negative, a direction different than hypothesized. The adjusted R^2 was 11 percent.

In specification (2), statist effects are isolated with eight explanatory variables, two of which are common to the societal effects specification. The results are interesting in that this specification is better at explaining tariff levels, with the adjusted R^2 rising from 11% to 16%, and yet the only significant predictor is export intensity, which is at the 99% level and has the predicted negative relationship to tariff rates. The constant again achieves high significance and is of similar magnitude. Also important were three correctly signed but not-significant coefficients, as follows. Industries with high percentages of unskilled workers and low relative earnings received higher tariffs under the National Policy. Combined with the result that the labour intensity of an industry exhibited a positive relationship with tariff levels, this lends some weight to the idea that the Macdonald government may have used commercial policy as a method for supporting labour in weakened industries. This comes even though the implied aim of the National Policy was to redirect the economy toward the more efficient industries, by protecting those sectors with comparative advantage. Recall Finance Minister Tilley's comment that articles which are or could be manufactured in Canada would be given higher rates of duty, while those that were not likely to be would have lower rates. Finally, import penetration and geographic concentration were the same as in the first regression. The coefficient on the employment

variable was unexpectedly negative but not significant, while the capital-labour ratio was positive but not significant.

Specifications (3) and (4) test the combined effects of the societal and statist determinants of tariff levels. Under specification (3)'s combined effects regression, the model increases in predictive power, with the adjusted R^2 rising to 23 percent. The constant implies a tariff level of approximately 17 percent reinforcing the importance of the additional variables. Broadly speaking, the effects of the variables remain the same. The coefficient estimate on industry growth reversed signs to negative, but remained insignificant. The capital-labour ratio remained positively signed and becomes narrowly significant, giving weak evidence that capital-intensive industries were important to the Conservative government. Taken all together however, the robustness of these variables to changes in specification substantiates the theory of endogenous protection being used to understand the National Policy tariffs.

In specification (4), additional dummies based on broad industry groups were added to clarify the government's stance toward different sets of producers. The groupings were textiles, wood and paper, metal and electric, chemical, mineral, and miscellaneous, with agriculture omitted. The coefficient estimates on all the dummy variables were negativelysigned, with only chemicals narrowly achieving significance. This means that agriculturally-derived manufactured products were given the highest level of tariffs. Given the Canadian economy's heavy dependence on its resource base, this result is intuitively satisfactory. In fact, the wood and paper sector was the next highest in the ranking, with a coefficient of -3.156. The chemical sector, with the lowest ranking of -10.875, may have been the sectoral underdog of the Canadian economy.

The only other change from the previous specification was the inclusion of the industry's earnings growth rate, which takes a negative direction and is significant at the 95% level. This suggests that industries which had low (or negative) earnings growth received more protection than healthy industries. Many Canadian industries may have been weakened by import competition during the 1870s. This would also help explain the statist effects in terms of unskilled, earnings, labour intensity and earnings growth, i.e. that the Macdonald government sought to protect these injured sectors.

4.3 Conclusions

What do these results tell us about the mindset of the Macdonald government in drafting the National Policy tariff? More precisely perhaps, which industry characteristics most affected the height of the protective duties that their firms received? The important predictors of 1881 tariff levels pointed to in these tests were consumer good production, scale, and export intensity.

Industries that produced consumer goods were granted some of the highest levels of protection. The endogenous protection theory says that because consumers' interests are diffuse and expenditures on any one product low, the effective voice of consumers is often dim in lobbying against tariff increases.

The average scale of the various industries played a large role in tariff determination too. For example, comparing the sugar refining business to either flour/grist mills or boot and shoe manufacturers illustrates that although each of the latter industries dwarfed sugar refining in their level of value added, it was spread among thousands of establishments - while there were only four sugar refineries in Canada. Consequently, the average tariffs received were 12.5% and 25% for the flour and boot sectors, respectively, versus 48% for the sugar refining business. In lobbying for tariffs then, the absolute size of the industry carried less weight with the MacDonald government than the concerted message of a small group of producers from an economically important industry.

As for the observed importance of export intensity in extracting a low tariff from the government, this gives a signal as to which industries had a comparative advantage at this time. The top 20 Canadian exporting industries are shown in Table 10. Some notable characteristics: these industries were below average in terms of earnings, but employed less unskilled labour than the broader Canadian manufacturing sector; they were not very capital intensive as shown by the capital-labour ratio, and they faced about average import competition (Saw Mills, Ship Yards and Shingle Makers faced very low import competition indeed). Additionally, though not shown below, they were weighted heavily towards the agricultural, wood and paper, and mineral industries, but did not produce a lot of finished/consumer goods.

The Conservative government would not have wanted to jeopardize the success of the best-performing industries with high import duties for fear of possible US retaliation. As well, export-intensive industries had little incentive to lobby for protection, so this result is tied to societal (interest group) factors as well. Finally, the MacDonald government's focus was elsewhere... for despite the fact that these industries constituted an important

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part of the domestic economy and 'were and could be manufactured in Canada' (recall Tilley's comments again), the industries that were most protected produced goods of a higher level of manufacturing. The intent of the National Policy was to foster a protected domestic market for consumer-type products and assist in the industrialization of the broader economy, something that is evident in the cascading seen in the tariff code. And yet, despite this quite specific intent, the analysis in this chapter has found support for endogenous protection motives in terms of both societal and statist effects in the actual drafting of this protective policy.

CHAPTER FIVE: PERSISTENCE OF THE NATIONAL POLICY TARIFF 5.0 Introduction

In the National Policy literature, one fact is well-established: that the system of protection enacted by Macdonald in 1879 remained securely in place until well after the Second World War. Only then did the motivations behind commercial policy shift from the protection and assisted maturation of domestic industries to the development of multilateral trade channels. An important question, as yet unanswered, is whether it was just the 'policy' of protective tariffs that endured over that time, or if the preservation extended to the structure of trade barriers across the cross-section of Canadian manufacturing industries? Evidence of this form of persistence would support the notion that once implemented government tariff protection for key industries can be difficult to reverse, even if not needed anymore.

To investigate the presence of persistence among Canadian tariff rates, I examine post-National Policy tariff rates. Tariffs circa 1925 are a good candidate because the historical-institutional record consistently maintains that the National Policy tariff regime went largely unchanged for 50 years post-enactment. As such, empirically testing for persistence would be useful for validating the historical account. The goal is to see if the relative protective weighting of each industry remains unchanged. Significantly different tariff regimes would invalidate the idea of an inertia effect in Canadian tariff rates. The answer should offer considerable insight into the long-run alignment of protection levels among manufacturing industries. This section starts with a background discussion of the historical account during this time period. Econometric analysis follows, with conclusions given in the last section.

5.1 Background

The 1879 tariff reform was particularly important because it laid the foundation for the tariff schedule of the next 50 years. The general set of protection measures went largely unchanged until 1930, with only minor changes to the tariff schedule (Taylor 1939: 5). The next two sections are arranged into a discussion of the organization of interests and a background on the debates surrounding protection that continued into this time period.

5.1.1 Organization of Industry and Consumers

There was a healthy debate about tariff levels during this time, despite the few changes that actually took place. Voicing the concerns of consumers in the Reciprocity debate of 1911, Harpell (1911) described the deteriorating conditions facing the nation in terms of high prices, business combines, and class division, which he believed were caused solely by Canada's tax burdens, especially the tariff on manufacturing products. He made specific reference to primary industries, whose product was not protected, but whose consumption was made expensive because of manufacturing tariffs. Indeed, it was farmers who expressed the most opposition to high tariffs, both through their organizations, notably the Dominion Grange, the Farmers' Association of Ontario, and the Manitoba Grain-Growers' Association, and through their support for publications decrying protection. The

Grain-Growers' Guide published a book by Edward Porritt, who condemned protection in Canada and its associated societal costs (Porritt 1911).

On the other side of the debate were industry agents who advocated continued protection. Notable among the publications they sponsored was a collection of articles from *Industrial Canada*, which supported raising the tariff wall further and converting *ad valorem* tariffs into specific rates (Griffin 1905). The reasons stated were to enable ease of administration and to escape fraudulent undervaluation by importers. It expected to affect the tariff revision of that year or to at least sway public opinion in Canadian manufacturers' favour. Again in 1921, in response to what they felt was rising free trade sentiment, Canadian industry lobbied hard for the maintenance of protection with a volume published by the Canadian Manufacturers' Association, which expounded on every possible reason for a protective tariff (*The Tariff: Why Canada Needs It* 1921).

5.1.2 Revenue versus Protection and other Debates Continue

In actual fact, the tariff schedule was slightly revised in 1884 and 1894, but the only real departure from the National Policy was the introduction of a preferential tariff for Great Britain in 1897. This added fire to the debate about fostering imperial ties rather than improving ties with Canada's neighbour to the south. Further organizational revisions to the tariff occurred in 1904 and in 1907, by which time the government had established three levels of duties, the lowest being the British preferential, then scaling up to the intermediate and general tariffs. The intermediate tariff served as the basis for the negotiation of treaties with non-British countries. During the 1920's trade agreements were signed with France,

Italy and Belgium in which the intermediate rates were applied. However, because it did not apply to trade with the United States until much later, the intermediate tariff affected only a small volume of trade and remained of little value to consumers. Despite the addition of preference to the tariff in the years after the National Policy, it was noted by some observers that the average level of protection remained sufficiently high.¹⁰ Moreover, a legislative attempt to set up a permanent tariff commission similar to the American system of 1912 "to take the tariff out of politics" was defeated in 1913 by a Liberaldominated Senate (McDiarmid 1946: 256).

Throughout this period, Canada was moving steadily closer to the United States in terms of actual trade flows, and away from Great Britain. At the same time, American tariff rates were increasing dramatically while Great Britain remained for the most part a country governed by free trade. Canada maintained its general tariff, the highest it had, on trade with the US, not negotiating a trade treaty with its neighbour until 1935.

By and large, there were no significant tariff revisions during the 1920's - only minor changes to individual commodities. When the Progressive party took office in Parliament they heeded the agrarian demand for lower duties and produced selected concessions (McDiarmid 1946: 261-64). Tariff rates on farm machinery were lowered considerably in 1922 and 1924, and duties on capital equipment used in other primary industries were reduced in both years. Raw and refined sugar was given a lower duty, which was expected to save consumers \$2.5 million, and iron and steel that was dedicated

¹⁰ Porritt (1913: 304-5) states that, "Except to some degree as regards the British preference, the changes in the tariff schedule in 1897 and 1907 have brought no such relief from the burden of the protective system as was again and again promised by the Liberals during the years when they were in opposition. In many instances the burden of the tariff in 1907 is much heavier than it was in 1904."

to making farm machinery now entered free. Textile duties were cut in 1922, yet they remained quite high at 25 and 35 percent levels under the intermediate and general schedules.

In Parliament, the opposition denounced the tariffs of 1922 and 1924 as "sounding the death knell of protection" as tariff barriers continued to rise internationally. Indeed, the stability of the 1920's presaged the drastic Canadian retaliation-in-kind to the Smoot-Hawley prohibitive tariff introduced in 1930 by the United States Congress. Faced with an impending economic slowdown and deflationary pressure on prices, the administration in 1930 argued that the predominately *ad valorem* nature of the tariff resulted in diminished protection. They acted by adding substantial corrective specific duties to the tariff schedule, despite opponents' contentions that this would increase the burden on consumers and export industries as prices fell. Retaliatory increases were enacted on bituminous coal, agricultural machinery, boots and shoes, tinplate, mining equipment, and the entire iron and steel and textile schedules. These levels would remain in effect until 1935, when Canada and the United States finally negotiated a treaty under which the US was accorded the intermediate tariff or lower on many important trade items.

The debate over whether the tariff should be used for revenue purposes or as a protective measure continued throughout this time period. At the Liberal Convention in 1893, the Grits denounced the National Policy and declared, "that the customs tariff of the Dominion should be based not as it is now, upon the protective principle, but on the requirements of the public service" (Porritt 1913: 308). Since the object of a purely revenue-based tariff free of redistributive effect would be most served by creating a

uniform customs duty or having a tariff commission set rates, it is remarkable that these options were not considered, despite numerous changes of government. That it was not considered at all is in itself evidence of politics having an important role in shaping interindustry tariff rates.

5.2 Methodology and Results

The first step in investigating the amount of persistence in tariff rates over this time period is to conduct, for 1925, the same endogenous protection tests as performed for the National Policy tariff circa 1881. This set of tests is shown in Table 11.

Specification (1) is limited to the societal effects. The coefficient estimate on the variable that measures industry scale is significant at the 99% level and is correctly signed, indicating that sectors with more concentrated production had higher tariffs. Industries that produced consumer goods were also granted higher protection, as the coefficient on this variable was significant at the 95% level. The coefficients on the remaining variables were all correctly signed, but it was not possible to reject that they were significantly different than zero. The constant was significant at the 99% level.

The presence of statist effects was eliminated. The null hypothesis that the combination of statist variables in Specification (2) was significantly different than zero was not able to be rejected, as judged by the F-statistic. The two combined effects models in Specifications (3) and (4) barely do better. Finally, it is worth mentioning that all four model alternatives have very low explanatory power, as pointed to by the adjusted R^2 .

In order to test for the presence of persistence in the 1925 tariff, we now include the 1881 tariff schedule as an additional variable. The simple correlation between 1881 tariff rates and 1925 tariff rates is 55.4%. As shown in Table 12, the addition of the 1881 tariff schedule lowers the number of observations to 92 due to concordance issues between the two datasets. In terms of results, with the addition of the 1881 tariff variable, the adjusted R^2 jumps into the 30%-35% range and those explanatory variables that were significant in previous tests are no longer. In fact, no other variable, save for tariff₁₈₈₁, has a coefficient estimate that is significant at the 95% level or higher, even the constant. The coefficient for tariff₁₈₈₁ is significant at the 99% level in all four specifications. There is a strong direct relationship between high tariff industries in 1881 and similarly protected industries in 1925.

This leads to the same conclusion as in Lavergne's (1983) empirical work, that historical continuity plays an extremely important role in explaining this 1925 tariff structure. This is not surprising given that the historical record indicates that the tariff structure was largely unchanged in the intervening years. However, we now have evidence that this static behaviour extended to the inter-industry variation in tariff levels as well.

There are two further tests conducted that look at the issue of protection persistence. Since we cannot use the levels of contemporary, i.e. 1925, industry structural characteristics to rationalize 1925 tariff protection, and knowing what we now know about the tremendous importance of previous tariff rates, perhaps some of the variation in 1925 rates can be explained by changes in industry characteristics over this time span. In Table 13, the econometric tests explain the 1925 tariff structure based on the 1881 tariff structure and changes in the independent variables between 1925 and 1881 (excluding the industry group dummies).

Looking at the results of the four specifications, the 1881 tariff structure once again explains the vast majority of the variation in the 1925 tariff structure, as indicated by the 99% significance level of its coefficient estimates. However, the results intimate that changes in certain other variables also had an effect on the inter-industry pattern of protection. Namely, the variables representing industry growth rates, unskilled workers, employment levels, and the capital-labour ratio all receive significant coefficient estimates in at least one of the four specifications. These results, while not completely robust across different specifications, imply that reductions in industry growth rates, unskilled percentages, and capital intensity (as compared to labour use) may have had a bearing in at least some industries' upgraded levels of protection. Importance can also be ascribed to the vote buying aspect of the adding machine model, as strong growth in employment was rewarded with relatively higher protection for certain industries.

The final test regresses changes in tariff levels between 1925 and 1881 on changes in the underlying variables between these periods (excluding again the dummy variables), as shown in Table 14. The results of the various specifications indicate that changes in geographic concentration, employment, and the capital-labour ratio drove the minor adjustments in the tariff structure that did occur. More specifically, the econometric results hint at a direct relationship between employment and tariff growth, and an indirect relationship between capital intensity (as compared to labour use) and tariff growth.

As well, the coefficient on geographic concentration is positive and significant in two specifications, indicating that industries that merged production geographically had positive growth in their tariff levels. This is consistent with the interest group model and indicates that geographic concentration plays an important role of this period, something that should be explored further. To begin, note that there was a major trend in mergers between 1909 and 1913, when a host of huge enterprises such as the Steel Company of Canada, Dominion Canners, Canada Cement, Canadian Cottons, and Dominion Glass Company appeared. If the mergers also resulted in a sizeable concentration of production geographically, say in Ontario, this may have affected these industries' lobbying strength. The top 20 Canadian industries in terms of increasing geographic concentration are shown in Table 15. The table shows that industries that consolidated geographically were rewarded with an increase in their tariff, probably as a result of more organized lobbying activities. If you compare this trend with the average for all industries, the average geographic concentration ratio barely moved, and the resulting average tariff change from 1925 to 1881 was steady. Steel manufacturers were some of the top increasers, while glass and cement (not on this list) actually saw reduced tariffs as their geographic concentration ratios stayed the same or diminished.

5.3 Conclusions

These tests show that for Canadian manufacturing industries there was a high degree of persistence of tariff protection over this time period. The National Policy tariffs of 1881 were the most important factor influencing the relative levels of tariffs across industries in 1925. In initial tests, consumer good production and scale of manufacturing showed up as significant predictors of 1925 tariff levels, an effect that was probably more related to stability in these industry characteristics. As evidence of this, the consumer good variable has a correlation of 100% between 1925 and 1881 datasets, while the scale variable has a correlation of 65.5%. However, when 1881 tariff rates are added, the magnitude of this persistence of protection swamps out the other variables pointed to by the endogenous protection theory.

There is also a case for the role of changes in industry structural characteristics to effect changes in certain industries' tariffs over a relatively stable era, via both societal/ interest group effects and statist effects. The econometric tests done here point out that 1925-1881 shifts in employment, capital-labour ratios and geographic concentration were significant determinants of changes in tariff rates over this time period. It has been suggested here that this may be related to the merger movement in manufacturing that occurred in the early years of the twentieth century. Certainly, there is good evidence that those industries that consolidated production geographically were compensated by government with higher duties for their firms. Hence we find evidence of lobbying power and government social concern objectives even in the minor tariff modifications that occurred between 1925 and 1881, a time when persistence of tariff policy was the governing principle.

CHAPTER SIX: CONCLUSION

This thesis presented data on trade and tariffs and industrial characteristics in Canada from 1881 to 1925. The thesis also presented empirical evidence that finds that some industrial sectors have consistently been granted higher amounts of tariff protection as a result of both government policy and the strength and organization of their industries. This suggests that pressure groups from these industries were more successful than others in lobbying decision makers for protection, while also supporting the notion of a benefactor government that sought to assist injured industries and redirect industrial activity through trade policy. Moreover, the study finds a high level of persistence in the structure of tariffs across industries between 1881 and 1925.

As consideration for possible future work goes, certain industry variables that could not be collected and/or calculated in this thesis would assist in further validating the endogenous protection theory. These include seller concentration and changes in import penetration (1881-1871, 1925-1920), as well as those key variables designated by the Grossman-Helpman theory, namely the elasticity of import demand and a more direct (not proxied) indicator variable representing industry political organization. That said, there remains some concern over whether the G-H model of contributions for tariff favours is valid for this time period, as anecdotally it seems that the chief linkage between industry and policymakers was the direct influence of manufacturers together with government requests for tariff proposals.
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TABLES AND FIGURES

Variables	Theory	Author	Subject	Sign	Significant
Seller concentration	+/-	Grether, et. al. (2001)	Mexico TAR 1986-1990	+	***
		Vargha (2001)	US TAR 1974-79,80-87,88-94	· +	**,***,NS
		Gawande & Bandyopadhyay (2000)	US NTB 1983	-	NS
		Gawande (1998)	US-EC4, US-Japan TAR 1983	+,+	**,*
		Greenaway & Milner (1994)	UK TAR 1979	-	NS
		Trefler (1993)	US NTB 1983	+	**
		Bar-Nathan & Baruh (1990)	Israel TAR 1965,1977	+	NS,**
		Baldwin (1985)	US TAR 1976	+	NS
		Lavergne (1983)	US TAR 1964,1972,1979	+,+,-	*,*,NS
		Ray (1981)	US TAR 1970	+	NS
		Saunders (1980)	Canada TAR 1967	+	NS
		Helleiner (1977)	Canada TAR 1961,1970	+,-	**,NS
		Caves (1976)	Canada TAR 1963	-	**
		Pincus (1975)	US TAR 1824	+	**
Seller no. of firms	-	Vargha (2001)	US TAR 1974-79,80-87,88-94		***
		Trefler (1993)	US NTB c.1983	-	*
		Kahane (1992)	Israel TAR 1968,1972,1978	-	***
		Hayford & Pasurka (1992)	US TAR 1923,1930	-	NS
		Anderson (1988)	Australia ERA 1968,,1978	-	**
		Baldwin (1985)	US TAR 1976	-	**
		Baack & Ray (1983)	US TAR 1870,1910,1914	-,+,-	NS
		Helleiner (1977)	Canada TAR 1961,1970	-	*
		Pincus (1975)	US TAR c.1824	+	***
Buyer concentration	-	Vargha (2001)	US TAR 1974-79,80-87,88-94	+,-,-	NS,**,***
(Non-consumer goods)		Greenaway & Milner (1994)	UK TAR c.1979	-	***
		Trefler (1993)	US NTB c.1983	-	**
		Hayford & Pasurka (1992)	US TAR 1923,1930	-	**,*
		Baack & Ray (1983)	US TAR 1870,1910,1914	-	**,NS,**
		Lavergne (1983)	US TAR 1964,1972,1979	+,+,-	*,NS,***
		Caves (1976)	Canada TAR c.1963	-	NS
Buyer no. of firms	+	Trefler (1993)	US NTB c.1983		**
Scale	+/-	Gawande & Bandyopadhyay (2000)	US NTB c.1983	+	**
		Gawande (1998)	US-EC4, US-Japan TAR 1983	÷	**
		Trefler (1993)	US NTB c.1983	-	**
		Ray (1981)	US TAR c.1970	-	***
		Saunders (1980)	Canada TAR c.1967	+	NS
		Helleiner (1977)	Canada TAR 1961,1970	-	NS
		Caves (1976)	Canada TAR c.1963	+	***
Capital stock	+/-	Trefler (1993)	US NTB c.1983	-	**
Geographic concentration	+/-	Grether, et. al. (2001)	Mexico TAR 1986-1990	-	*
		Gawande & Bandyopadhyay (2000)	US NTB c.1983	-	NS
		Gawande (1998)	US-EC4, US-Japan TAR 1983	_	**
		Greenaway & Milner (1994)	UK TAR c.1979	+	NS
		Trefler (1993)	US NTB c.1983	+	NS
		Lavergne (1983)	US TAR 1964,1972,1979	-,-,+	NS

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TABLE 1.- RESULTS OF OTHER EMPIRICAL STUDIES ON ENDOGENOUS PROTECTION

		Hayford & Pasurka (1992)	US TAR 1923,1930	+	*,NS
		Ray (1981)	US TAR c.1970	+	NS
		Caves (1976)	Canada TAR c.1963	-	NS
		Pincus (1975)	US TAR c.1824	+	**
Employment	+	Vargha (2001)	US TAR 1974-79,80-87,88-94	+,-,+	**,NS,**
1 0		Gawande & Bandyopadhyay (2000)	US NTB c.1983	+	*
		Gawande (1998)	US-EC4, US-Japan TAR 1983	-	** *
		Lee & Swagel (1997)	US NTB c.1988	+	***
		Goldberg & Maggi (1997)	US NTB c.1983	+	*
		Greenaway & Milner (1994)	UK TAR c.1979	+	NS
		Trefler (1993)	US NTB c.1983	+	NS
		Kahane (1992)	Israel TAR 1968,1972,1978	+	***
		Hayford & Pasurka (1992)	US TAR 1923,1930	+ .	NS
		Anderson (1988)	Australia ERA 1968,,1978	+	NS
		Baldwin (1985)	US TAR c.1976	+	*
		Lavergne (1983)	US TAR 1964,1972,1979	-,+,+	*,NS,**
Industry growth	+/-	Vargha (2001)	US TAR 1974-79,80-87,88-94		NS
		Gawande (1998)	US-EC4, US-Japan TAR 1983	-	NS
		Trefler (1993)	US NTB c.1983	+	NS
		Kahane (1992)	Israel TAR 1968,1972,1978	-	NS
		Anderson (1988)	Australia ERA 1968,,1978	-	**
		Baldwin (1985)	US TAR c.1976	+	NS
		Lavergne (1983)	US TAR 1964,1972,1979	-,-,+	*,NS,NS
		Saunders (1980)	Canada TAR c.1967	+	NS
		Caves (1976)	Canada TAR c.1963	-	NS
Import penetration	+/-	Grether, et. al. (2001)	Mexico TAR 1986-1990	+	***
		Vargha (2001)	US TAR 1974-79,80-87,88-94	+ +	NS,***,***
		Gawande & Bandyopadhyay (2000)	US NTB c.1983	-	**
		Gawande (1998)	US-EC4, US-Japan TAR 1983	+,-	NS
		Lee & Swagel (1997)	US NTB c.1988	+	***
		Goldberg & Maggi (1997)	US NTB c.1983	-	*
		Greenaway & Milner (1994)	UK TAR c.1979	+	***
		Trefler (1993)	US NTB c.1983	+	NS
		Anderson (1988)	Australia ERA 1968,,1978	-	NS
		Baldwin (1985)	US TAR c.1976	+	*
		Lavergne (1983)	US TAR 1964,1972,1979	+	***,***,NS
Δ (Import penetration)	+/-				
		Grether, et. al. (2001)	Mexico TAR 1986-1990	+	**
		Vargha (2001)	US TAR 1974-79,80-87,88-94	++,+,-	NS,NS,***
		Gawande & Bandyopadhyay (2000)	US NTB c.1983	+	*
		Gawande (1998)	US-EC4, US-Japan TAR 1983	-	NS .
		Trefler (1993)	US NTB c.1983	+	**
Export intensity	+/-	Gawande & Bandyopadhyay (2000)	US NTB c.1983	-	**
		Gawande (1998)	US-EC4, US-Japan TAR 1983	-	**,NS
		Lee & Swagel (1997)	US NTB c.1988	-	***
		Greenaway & Milner (1994)	UK TAR c.1979	-	**
		Trefler (1993)	US NTB c.1983	-	**
		Anderson (1988)	Australia ERA 1968,,1978	-	***
		Baldwin (1985)	US TAR c.1976	+	NS

		Saunders (1980)	Canada TAR c.1967	-	**
Union	+	Vargha (2001)	US TAR 1974-79,80-87,88-94	. <u>-</u> '	***
		Gawande & Bandyopadhyay (2000)	US NTB c.1983	-	*
		Gawande (1998)	US-EC4, US-Japan TAR 1983	-	**,NS
		Greenaway & Milner (1994)	UK TAR c.1979	-	NS
		Trefler (1993)	US NTB c.1983	+	NS
		Kahane (1992)	Israel TAR 1968,1972,1978	+	***
		Lavergne (1983)	US TAR 1964,1972,1979	-,-,4	- NS
Unemployment	+/-	Goldberg & Maggi (1997)	US NTB c.1983	+	*
		Trefler (1993)	US NTB c.1983	+	**
Unskilled	+	Vargha (2001)	US TAR 1974-79,80-87,88-94	+	***
		Gawande & Bandyopadhyay (2000)	US NTB c.1983	-	*
		Gawande (1998)	US-EC4, US-Japan TAR 1983	-	**,NS
		Greenaway & Milner (1994)	UK TAR c.1979	+	***
		Trefler (1993)	US NTB c.1983	+	NS
		Hayford & Pasurka (1992)	US TAR 1923,1930	-	NS
		Baack & Ray (1983)	US TAR 1870,1910,1914	+,-,·	· NS
		Ray (1981)	US TAR c.1970	+	***
Earnings	-	Vargha (2001)	US TAR 1974-79,80-87,88-94	-	***
		Lee & Swagel (1997)	US NTB c.1988	-	***
		Greenaway & Milner (1994)	UK TAR c.1979	-	***
		Kahane (1992)	Israel TAR 1968,1972,1978	-	***
		Anderson (1988)	Australia ERA 1968,,1978	-	***
		Baldwin (1985)	US TAR c.1976	-	***
		Lavergne (1983)	US TAR 1964,1972,1979	-	NS
		Helleiner (1977)	Canada TAR 1961,1970	-	*
Value added per worker	+/-	Lee & Swagel (1997)	US NTB c.1988	+	***
(Labour productivity)		Anderson (1988)	Australia ERA 1968,,1978	-	***
		Helleiner (1977)	Canada TAR 1961,1970	-	*
		Caves (1976)	Canada TAR c.1963	-	**
Capital-labour ratio	-	Grether, et. al. (2001)	Mexico TAR 1986-1990	-	***
		Vargha (2001)	US TAR 1974-79,80-87,88-94	-	NS
		Bar-Nathan & Baruh (1990)	Israel TAR 1965,1977	+,-	NS
		Baack & Ray (1983)	US TAR 1870,1910,1914	+,-,+	- **,NS,NS
		Ray (1981)	US TAR c.1970	-	**
Labour intensity	+	Grether, et. al. (2001)	Mexico TAR 1986-1990	+	***
(Labour share)		Vargha (2001)	US TAR 1974-79,80-87,88-94	+	***,***,NS
		Gawande & Bandyopadhyay (2000)	US NTB c.1983	+	*
,		Gawande (1998)	US-EC4, US-Japan TAR 1983	+	NS
		Greenaway & Milner (1994)	UK TAR c.1979	+	***
		Hayford & Pasurka (1992)	US TAR 1923,1930	+	*
		Anderson (1988)	Australia ERA 1968,,1978	+	**
		Baldwin (1985)	US TAR c.1976	+	NS
		Lavergne (1983)	US TAR 1964,1972,1979	+	**,**,*
		Baack & Ray (1983)	US TAR 1870,1910,1914	-,+,+	- NS,**,NS
		Ray (1981)	US TAR c.1970	+	***
		Saunders (1980)	Canada TAR c.1967	-	NS
Foreign direct investment	-	Grether, et. al. (2001)	Mexico TAR 1986-1990	+	***

(Foreign ownership)		Baldwin (1985)	US TAR c.1976	+	NS
		Saunders (1980)	Canada TAR c.1967	-	**
Agricultural products	+/-	Hayford & Pasurka (1992)	US TAR 1923,1930	+	***
		Baack & Ray (1983)	US TAR 1870,1910,1914	+	NS,**,**
Transportation costs	+/-	Anderson (1988)	Australia ERA 1968,,1978	-	**
		Saunders (1980)	Canada TAR c.1967	-	*
		Caves (1976)	Canada TAR c.1963	-	**

Notes: (1) *** 99% level of significance, ** 95% level of significance, * 90% level of significance, NS Not significant.

(2) ERA (effective rates of assistance) are trade barrier estimates that include tariffs, NTBs, and discriminatory taxes and pricing.

(3) Other variables not discussed include: relative inefficiency, human capital-labour ratio, R&D intensity, product differentiation/ diversification, productivity disadvantage, intra-industry trade, change in wage rate, job tenure, rural location of industries, size of states, % of imports from foreign affiliates, % of imports from less-developed countries, agriculture and textile dummies, natural resource intensity, corporate PAC spending, and value-added share of production.

Industry	No.	Н	ands E	mployed		Total	Total Value		Tot	al Value		Total
	of	Over 1	6 yrs	Under [·]	l6 yrs	Yearly		of Raw		Articles		Capital
	Estab.	М	w	В	G	Wages	M	aterials	Pr	oduced	lr	vested
Charcoal Burning	32	80	-	3	-	\$ 16,775	\$	28,687	\$	70,030	\$	55,843
Dentistry	4	7	-	3	-	\$ 3,600	\$	1,750	\$	9,750	\$	6,000
Flag Manufactories	1	-	3	-	-	\$60	\$	600	\$	900	\$	300
Gas Works	36	508	-	4	-	\$239,270	\$	319,037	\$1	,173,181	\$5	5,358,490
Indian Manufactures	94	109	170	-	65	\$ 19,319	\$	45,778	\$	86,871	\$	29,585
Match Factories	22	261	448	221	132	\$145,640	\$	222,497	\$	511,250	\$	564,847
Mathematical Instruments	3	22	-	1	-	\$ 8,700	\$	3,500	\$	21,000	\$	27,500
Morocco Manufactories	1	2	-	-	-	\$ 800	\$	200	\$	1,000	\$	400
Oil Clothing Establishments	20	16	27	3	1	\$ 1,171	\$	5,776	\$	9,490	\$	3,305
Photographic Galleries	182	322	79	20	1	\$143,426	\$	101,333	\$	409,427	\$	492,469
Plaster and Stucco Works	20	84	-	-	-	\$ 28,976	\$	33,607	\$	86,450	\$	38,005
Prepared Peat-Fuel Factory	1	1	-	-	-	\$ 300	\$	60	\$	600	\$	120
Pulp Mills	5	44	8	14	2	\$ 15,720	\$	9,400	\$	63,300	\$	92,000
Pump Factories	237	453	-	17	-	\$120,884	\$	117,733	\$	377,975	\$	197,517
Spinning Wheel Factories	22	36	5	-	-	\$ 6,928	\$	11,294	\$	24,912	\$	26,024
Steel Barb Fence Factories	1	3	-	-	-	\$ 1,200	\$	4,000	\$	12,000	\$	3,000
Superphosphate Mills	3	37	-	4	-	\$ 16,400	'\$	62,000	\$	90,500	\$	252,200
Total Omitted:	684	1,985	740	290	201	\$769,169	\$	967,252	\$2	,948,636	\$7	,147,605
As a % of All Industries:	1.4%	1.0%	1.8%	2.0%	3.7%	1.3%		0.5%		1.0%		4.3%
Average of All Industries:	299	1,167	365	104	65	\$355,693	\$	1,076,241	\$1	,854,348	\$	989,836

TABLE 2.- INDUSTRIES OMITTED FROM THE 1881 DATASET

TABLE 3 INDUSTRIE	S OMITTED	FROM THE	1925	DATA	SEI
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Industry	No.	Hands Employed			Total	Total Value		Total Value		Total	
	of	Over 1	6yrs	Under 16	1	Yearly	of Raw	0	f Articles		Capital
	Estab.	М	W	B or G		Wages	Materials	F	Produced		Invested
ke Cream Cones	8	47	21	-	\$	72,624	\$ 125,041	\$	438,138	\$	731,300
Human Hair Goods	5	8	15	-	\$	19,898	\$ 21,436	\$	47,007	\$	41,917
Dyeing, Cleaning & Laundry Work	343	3,393	4,645	7	\$	7,314,822	\$2,433,053	\$	15,578,482	\$	15,857,978
Beekeeper's/Poultryman's Supplies	4	3	1	-	\$	2,806	\$ 5,293	\$	31,448	\$	18,119
Blueprinting	14	55	11	-	\$	69,108	\$ 60,519	\$	181,269	\$	172,774
Clothes Pins	3	166	17	-	\$	79,736	\$ 43,001	\$	188,504	\$	126,665
Wood Preservation	-	-	-	-	\$	i -	\$-	\$	-	\$	-
Clay Products from Imported Clay	12	498	54	113	\$	653,211	\$ 326,023	\$	1,741,745	\$	2,762,951
Sand-lime Brick	9	205	1	81	\$	242,996	\$ 130,155	\$	781,555	\$	960,729
Advertising and Other Novelties	7	18	40	-	\$	47,151	\$ 53,045	\$	141,746	\$	113,631
Typew riter Supplies	4	57	25	-	\$	156,297	\$ 239,742	\$	507,923	\$	485,430
Electric Pow er and Light	1,007	12,099	1,164	35	\$	18,755,907	\$-	\$1	02,587,882	\$7	26,721,087
Total Omitted:	1,416	16,549	5,994	236	\$	27,414,556	\$3,437,308	\$1	22,225,699	\$7	47,992,581
As a % of All Industries:	6.3%	3.9%	4.9%	1.9%		4.6%	0.2%		4.1%		19.6%
Average of All Industries:	132	2,485	727	109	\$	3,526,776	\$9,341,424	\$	17,447,014	\$	22,534,379

			Rate on	Rate on
		General	total	dutiable
Circa ⁽¹⁾	Development	Tariff Rate	imports	imports
1662	New France: 10% tax on all imports for six years to pay colonial debt	10%		
	New France: 10% duty removed; equivalent specific duties imposed on tobacco,	11		
1670	wine and brandy			
1748	New France: general 3% tariff introduced, food and other essentials exempted	3%		
1763	British regime instituted, French revenue system continued unchanged	"		
1792	Nova Scotia: 2 ^{1/2} % general ad valorem tariff introduced; 10% American tariff	$2^{1/2}\%$		
1813	Upper and Lower Canada: general ad valorem tariff rate of $2^{1/2}$ % introduced	$2^{1/2}\%$		
1840	Upper and Lower Canada joined in province of United Canada			
1841	United Canada: colonial tariff revised, general rate rises from $2^{1/2}$ % to 5%	5%		
1847	General rate raised to $7^{1/2}$ %, duties on luxury and manufactured goods rise	7 ^{1/2} %		
1849	General rate increased to $12^{1/2}$ % many specific duties increased	$12^{1/2}\%$	14.5%	
1854	Reciprocity Treaty with US negotiated: free trade on almost all native products	15%	12 1%	
1858	Cavley tariff raises rates on manufactured and processed goods	"	11.6%	
1859	Galt tariff introduced	20%	13.2%	
1865	Reciprocity treaty abrogated by US, effective 1866	"	12.7%	
1866	United Canada: tariff rates reduced to conform with Maritime colonies	15%	13.6%	
1867	Confederation of Ontario. Ouebec. Nova Scotia and New Brunswick into Dominion	"	11.9%	20.2%
1007	of Canada		11.970	20.270
1870	Upward revision in tariff rates, general increase of 5% of existing charges	15% (+5%)	14.1%	20.9%
1871	Tariff increases of 1870 repealed	15%	14.0%	19.6%
1874	Major revenue-based changes, huxury goods hit hard	$17^{1/2}\%$	11.7%	18.9%
1879	National Policy protective tariff enacted by newly elected Conservative Government;	20%	16.4%	23.3%
	specific duties replaced many ad valorem rates	•		
1880-1881	Numerous minor tariff adjustments	n	20.3%	26.0%
1882	Removal of duty on tea, coffee, and tin; several other reductions	11	19.5%	25.3%
1883-1885	Numerous minor changes to give manufacturers lower duty or free importation of	U	19.0%	25.5%
	raw materials			
1886-1890	Trend back to ad valorem rates to sustain revenues from falling world prices	"	21.3%	30.0%
1894	First major revision since 1879	0	17.8%	30.9%
1897-1898	First Liberal Government since 1879 introduced British preferential aspect in tariff;		18.1%	29.9%
1006	Infinite revisions	U	16 107	07 007
1900	British Preferential (B.P.)		10.4%	21.0%
1914-1915	Were hydrat opposing advalation duty on all coole dutichle and free of $7^{1/2}$	n	171%	26.8%
1711 1710	for goods under general and intermediate tariffs 5% for B D imports		1,.1,0	20.070
1017	First national income tax on individual and corporations gives government another	"	12.00	<u>00 0</u> 77
1917	revenue instrument		15.0%	23.8%
1919	Removal of 5% special tariff on B P imports exemption of some goods from $7^{1/2}$ %	11	12.3%	21.5%
	rate			
1010-1020	Minor tariff adjustments, mainly reductions	18	151%	23 102
1930-1931	Major increases on agricultural products, paper and printed matter, iron and steel	30%	16.2%	25.7%
1720-1721	items, textiles, motor vehicles, coal and coke, leather and leather products, and other	5070	10.270	23.270
	goods			
1936	Canada-US Trade Agreement implemented	25%	14.7%	267%

TABLE 4.- CHRONOLOGY OF TARIFF DEVELOPMENTS IN CANADA, 1854-1936

Sources: Perry, J. Harvey. Taxes, Tariffs, & Subsidies (Vol.2), Appendix A - Main Events in Taxation, 1650-1954.

Perry, J. Harvey. Taxes, Tariffs, & Subsidies (Vol.2), Appendix C - Table 25,26 Average Ad Valorem Tariff Rates, 1850-1953.

Notes: (1) In years not cited, tariff developments were minor or none.

Industry	Rate	Entered for Ho	ome Csmptn	Duty	Ad Valorem
Imported Items	of Duty	Quantity	Value (\$)	(\$)	Tariff (%)
Stone and Marble Cutting		6,552	206,039	37,395	18.15
marble blocks from the quarry, in the rough	10 pc	-	1,704	170	10.00
marble slabs	15 pc	-	42,776	6,417	15.00
marble blocks and slabs, saw n on more than					
tw o sides	20 pc	-	28,716	5,744	20.00
	25 pc to Feb 26th,				
manufactures of marble, nes	30 pc after	-	12,781	3,406	26.65
Tanneries		1,431,318	721,090	137,057	19.01
sole leather	10 pc	54,912	21,049	2,105	10.00
sole leather and belting leather, not waxed	15 pc	228,256	81,755	12,264	15.00
sole leather and belting leather, waxed	20 pc	7,984	4,822	965	20.01
Iron Smelting Furnaces and Steel making		2,952,475	5,958,389	298,250	5.01
iron, other, in slabs, blooms, loops, etc	10 pc	111,666	111,374	11,137	10.00
boiler-plate	12 1/2 pc	66,343	178,259	22,301	12.51
old and scrap iron	\$2 per ton	584	8,807	1,168	13.26
pig iron	\$2 per ton	43,630	715,997	87,263	12.19
steel in ingots, bars, sheets and coils	-	209,226	793,329	0	0.00
steel in fish-plates	-	74,893	146,514	0	0.00
steel in railw ay bars or rails	-	1,792,898	2,977,088	0	0.00
steel for manufacture of skates	-	692	4,358	0	0.00
Foundries and Machine w orking		341,280	1,980,029	220,201	11.12
copper bars, rods, bolts, ingots, sheets and					
sheathing	10 pc	7,592	111,832	11,183	10.00
copper, old and scrap	10 pc	55	437	44	10.00
copper pigs	10 pc	43	720	72	10.00
Fittings and Foundry working in Brass, Iron, L	ead, etc	142,876	3,133,320	776,900	24.79
iron, all other manufactures of, nes	20 pc	-	75,545	15,172	20.08
iron bridges and structural iron w ork	25 pc	84,166	420,410	105,110	25.00
iron not otherwise provided for	17 1/2 pc	914	2,540	445	17.50
all other machinery composed of iron, nes	25 pc	-	1,022,518	255,686	25.01
all other manufactures of steel and iron, nes	20 pc	-	122,493	24,510	20.01
copper in seamless draw n tubing	10 pc	-	12,548	1,255	10.00
copper, all other manufactures of, nes	30 pc	-	23,047	6,913	30.00
anvils	30 pc	938	7,384	2,215	30.00
bedsteads and other iron furniture and					
ornamental iron-w ork	25 pc	-	7,126	1,782	25.00
castings, nes	25 pc	-	223,323	55,837	25.00
cast iron, gas, water and soil pipes	25 pc	-	55,676	13,918	25.00
hardw are of builders, cabinet makers,					
upholsterers, carriage makers, saddlers and					
undertakers	30 pc	-	470,039	141,009	30.00
hardw are, nes	20 pc	-	52,466	10,525	20.06
hollow -w are, tinned, glazed or enamelled	25 pc	-	68,168	17,042	25.00
stoves	25 pc	1,084	16,787	4,199	25.01
locomotive tires of steel or bessemer steel	10 pc	7,344	29,053	2,905	10.00
shovels, spades, hoes, forks and rakes	30 pc	-	46,949	14,089	30.01

TABLE 5.- EXAMPLE OF CASCADING AND SPECIALIZATION IN THE 1881 TARIFF

Note: Industry subtotals may not sum as only selected imported items were included for the purposes of this example.

TABLE 6.- INDUSTRY VARIABLES USED IN THE ECONOMETRIC ANALYSES

Variable	Description
tariff ₁₈₈₁ , tariff ₁₉₂₅	Canadian ad valorem tariff equivalent by industry (%)
establishments	Number of establishments/ industry shipments (thousand/ \$ million)
consumergood	Dummy for industries producing finished/consumer goods
scale	Measure of industry scale: value added per establishment (\$ million/ thousand)
industrygrowth	Growth in industry shipments: 1871-1881; 1920-1925 (%)
importpenetration	Share of imports in domestic consumption =IMP/ Q+IMP-EXP (%)
geogconc	1881: $\sum_{j=1}^{8} (Q_{ij}/\sum_{j=1}^{8} Q_{ij}) - (POP_j/\sum_{j=1}^{8} POP_j) $ (A measure of the difference between production and population shares across 7 provinces and 1 territory by industry)
	1925: $\sum_{j=1}^{9} (Q_{ij}/\sum_{j=1}^{9}Q_{ij}) - (POP_j/\sum_{j=1}^{9}POP_j) $ (A measure of the difference between production and population shares across 9 provinces by industry)
unskilled	Percentage of employees under 16 years of age (%)
employment	Number of employees (thousand)
exportintensity	Share of production exported =EXP/ Q (%)
earnings	Average earnings per employee in an industry (\$ hundred/yr)
klratio	Ratio of capital stock to number of employees (\$ million/ thousand)
labourintensity	Share of payroll in industry shipments (\$ million/ \$ million)
earningsgrowth	Growth in average earnings: 1871-1881; 1920-1925 (%)
agriculture	Dummy for agriculture-based industries
textile	Dummy for textile-based industries
woodpaper	Dummy for wood or paper-based industries
metalelectric	Dummy for metal or electric-based industries
chemical	Dummy for chemical-based industries
mineral	Dummy for mineral-based industries
misc	Dummy for miscellaneous industries

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		Expected		
Theory	Variable	Ŝign	Mean	Std. Dev.
Dependent variable	tariff ₁₈₈₁		23.763	15.497
Societal Models:				
Special-interest,	establishments	· _	0.204	0.360
[·] Pressure groups	consumergood	+	0.500	0.502
	geogconc	+	0.786	0.409
	scale	+	14.487	27.843
	industrygrowth	-	140.062	319.296
	importpenetration	+/-	33.616	37.081
Statist Models:			·	
Adjustment cost,	importpenetration	+/-	33.616	37.081
Status quo	unskilled	+	10.187	11.198
Å	earningsgrowth		7.929	27.577
Adding-machine	employment	+	1.679	4.394
-	geogconc	-	0.786	0.409
Comparative costs,	importpenetration	+	33.616	37.081
Comparative advant	age exportintensity	-	21.861	120.490
Social change,	earnings	-	2.737	1.105
National Policy	unskilled	+	10.187	11.198
	geogconc	+	0.786	0.409
	klratio	+/-	1.098	1.575
	labourintensity	+	0.239	0.117
	textile	+/-	0.127	0.334
	woodpaper	+/-	0.180	0.385
	metalelectric	+/-	0.233	0.424
	chemical	+/-	0.073	0.262
	mineral	+/-	0.080	0.272
	misc	+/-	0.080	0.272

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TABLE 7.- EXPLANATORY VARIABLES IN 1881: EXPECTED SIGNS AND DESCRIPTIVE STATISTICS

Note: Number of observations: 150, except for industrygrowth and earningsgrowth: 120 each.

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		Expected		
Theory	Variable	Ŝign	Mean	Std. Dev.
Dependent variable	tariff ₁₉₂₅		22.043	11.948
				,
Societal Models:				
Special-interest,	establishments	-	0.014	0.019
Pressure groups	consumergood	+	0.525	Ó.501
	geogconc	+	0.674	0.259
	scale	+	205.252	516.340
	industrygrowth	-	81.826	598.412
	importpenetration	+/-	31.900	140.313
Statist Models:				
Adjustment cost,	importpenetration	+/-	31.900	140.313
Status quo	unskilled	+	3.565	3.264
*	earningsgrowth		2.700	52.700
Adding-machine	employment	+	3.264	5 350
C	geogconc	-	0.674	0.259
Comparative costs,	importpenetration	+	31,900	140 313
Comparative advant	age exportintensity	-	140.319	1264.378
Social change	earnings	_	11 044	2 600
National Policy	unskilled	+-	3 565	2.090
2 (4420)	geogconc	+	0.674	0.259
	klratio	+/-	6.608	5.361
	labourintensity	+	0.242	0.110
	textile	+/-	0.210	0.410
	woodpaper	+/-	0.173	0.380
	metalelectric	+/-	0.123	0.330
	chemical	+/-	0.062	0.241
	mineral	+/-	0.086	0.282
	misc	+/-	0.142	0.350

TABLE 8.- EXPLANATORY VARIABLES IN 1925: EXPECTED SIGNS AND DESCRIPTIVE STATISTICS

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Note: Number of observations: 162, except for industrygrowth and earningsgrowth: 155 each, and geogconc and unskilled: 109 each.

	(1)	(2)	(3)	(4)
	Tariff ₁₈₈₁	Tariff ₁₈₈₁	Tariff ₁₈₈₁	Tariff ₁₈₈₁
	Societal Effects	Statist Effects	Combined Effects	Combined Effects
establishments	-4.654		-2.051	-0.840
	(3.219)		(3.728)	(4.111)
consumergood	8.984***		8.623***	8.254***
Ũ	(3.081)		(2.912)	(2.741)
scale	0.130***		0.089***	0.085***
	(0.047)		(0.030)	(0.029)
industrygrowth	-0.002		0.001	0.004
70	(0.003)		(0.003)	(0.003)
importpenetration	-0.034	-0.062	-0.053	-0.045
	(0.037)	(0.042)	(0.046)	(0.045)
geogconc	-2.909	-4.311	-4.922	-5.855*
00	(2.883)	(3.150)	(3.003)	(3.080)
unskilled	· · ·	0.145	0.026	0.025
		(0.155)	(0.160)	(0.170)
employment		-0.085	-0.027	-0.028
1 2		(0.225)	(0.198)	(0.175)
exportintensity		-0.018***	-0.012**	-0.014**
1		(0.005)	(0.005)	(0.005)
earnings		-3.022	-3.707	-2.147
Ų		(2.871)	(2.853)	(2.438)
klratio		10.418	10.580*	10.943*
		(6.674)	(6.348)	(6.277)
labourintensity		14.031	22.300	27.582
-		(13.333)	(14.451)	(17.558)
earningsgrowth				-0.114**
				(0.056)
textile				-6.336
				(4.806)
woodpaper				-3.156
				(4.290)
metalelectric				-5.017
				(4.201)
chemical				-10.875*
				(5.524)
mineral				-7.179
				(5.060)
misc				-6.976
				(5.108)
constant	21.294***	21.558***	17.212***	16.944***
	(2.574)	(4.839)	(5.346)	(5.728)
Observations	120	120	120	120
F-statistic	2.72	8.71 ·	8.93	5.29
Adjusted R-squared	0.11	0.16	0.23	0.25

TABLE 9.- OLS ESTIMATION OF TARIFF DETERMINATION MODEL IN 1881

industry	tariff ₁₈₈₁	employment	earnings	unskilled	 scale 	klratio	importpenetration	exportintensity
Bone Crushing Mills	0.0	0.006	2.36	0.0	0.695	0.467	-1.051	1012.473
Miscellaneous Wares	22.0	1.839	2.10	18.0	2.923	0.522	116.529	183.375
Cheese Factories	18.1	2.003	1.91	4.5	1.692	0.510	-42.668	100.842
Pot and Pearl Asheries	0.0	0.467	1.73	1.7	0.808	0.297	6.999	84.204
Grindstone Works	19.8	0.204	1.77	2.9	4.134	0.347	65.884	70.471
Wood-Turning Establishments	24.8	0.604	2.60	12.9	3.684	0.315	78.617	67.545
Bark Extract Establishments	0.0	0.14	3.67	0.7	28.069	1.157	35.335	66.399
Furriers, Hatters, etc	22.8	2.35	2.39	5.8	9.713	0.823	54.524	59.244
Saw Mills	8.8	42.085	1.94	6.6	3.292	0.606	2.995	58.853
Preserved Articles of Food	24.2	8.453	0.84	10.3	4.544	0.145	11.173	50.186
Shook and Fish Box making	25.0	0.268	2.05	10.8	2.480	0.416	76.073	30.341
Iron Smelting Furnaces and Steel making	5.0	0.974	3.90	3.2	63.073	2.230	87.355	27.978
Carding and Fulling Mills	0.0	0.901	1.37	9.0	0.861	0.644	59.492	27.342
Shingle making	20.0	2.389	0.88	14.2	0.538	0.188	4.556	25.010
Straw Works	20.0	0.232	1.90	5.6	3.309	0.502	18.688	24.087
Gypsum Works	30.0	0.089	3.42	2.2	2.077	1.586	14.633	23.334
Sewing Machine Factories	34.3	1.188	3.80	6.6	38.459	0.775	17.965	15.783
Starch Factories	30.1	0.141	2.25	12.8	8.243	2.184	15.490	15.420
Salt Works	0.5	0.247	3.18	7.3	8.137	1.207	58.130	9.995
Ship Yards	10.0	4.454	2.59	1.3	8.778	0.353	1.659	9.783
Average for top 20 exporting industries	15.8	3.452	2.33	6.8	9.775	0.764	34.119	98.133
Average for all 120 industries	23.8	1.679	2.74	10.2	14.487	1.098	33.616	21.861

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	(1)	(2)	(3)	(4)
	Tariff ₁₉₂₅	Tariff ₁₉₂₅	Tariff ₁₉₂₅	Tariff ₁₉₂₅
	Societal Effects	Statist Effects	Combined Effects	Combined Effects
establishments	-79.360		-75.879	-104.891
	(59.940)		(60.486)	(63.224)
consumergood	5.515**		5.356**	4.957**
	(2.538)		(2.518)	(2.409)
scale	0.003***		0.004**	0.004**
	(0.001)		(0.002)	(0.002)
industrygrowth	-0.002		-0.003*	-0.002
	(0.002)		(0.002)	(0.001)
importpenetration	0.003	0.003	0.005*	0.002
	(0.002)	(0.003)	(0.003)	(0.003)
geogconc	2.425	5.424	-0.360	-0.442
	(5.680)	(5.854)	(5.957)	(6.101)
unskilled		0.244	-0.031	0.002
		(0.274)	(0.287)	(0.338)
employment		0.018	-0.087	-0.219*
		(0.135)	(0.123)	(0.117)
exportintensity		-0.000	-0.000	0.000
		(0.000)	(0.000)	(0.000)
earnings		-0.159	-0.964	-0.966
		(0.645)	(0.700)	(0.736)
klratio		0.290	0.338	0.416
		(0.647)	(0.585)	(0.567)
labourintensity		-4.515	2.369	20.569
		(18.189)	(17.326)	(16.911)
earningsgrowth				-0.025
				(0.015)
textile				-6.635
1				(5.645)
woodpaper				-2.629
				(4.996)
metalelectric				-2.508
-1tt				(5.850)
chemical				-8.150
				(3.373)
mineral				-9.88/*
mino				(5.803)
misc	1			-10.003
constant	10 100***	10 602**	20 111***	(0.408) 20.002**
constant	(2 852)	17.005***	۲۵.411 ۲۰۰۰ (۱۵ ۹۲۸)	ムメ・メリング ^{・・・・} (10 107)
Observations	(3.033)	105	105	105
Festatistic	2 22	105	202	103 5 60
Adjusted R-squared	0.04	-0.05	2.00	0.09
rajuoiou reoquatou	0.07	-0.05	0.00	0.00

TABLE 11.- OLS ESTIMATION OF TARIFF DETERMINATION MODEL IN 1925

Tariffyzs Tariffyzs Tariffyzs Combined Effects Combined Effects Combined Effects tariffyzs 0.444*** 0.534*** 0.535*** 0.535*** (0.126) (0.148) (0.158) (0.164) establishments -9.042 -9.61.37 -34.278 (49.357) -0.440 -1.473 (1.604) 0.003 0.004 (0.003) 0.003 0.004 (0.003) 0.003 0.004 industrygrowth -0.001 -0.001 -0.001 inportpenetration -0.002* -0.025 -0.025 -0.025 geogconc 7.813 8.908 5.729 2.767 unskilled 0.024 -0.049 0.002 unskilled 0.025 0.025 0.025 exportintensity 0.010 0.001 0.001 unskilled 0.437 (0.562) 0.252) exportintensity 0.236 -0.081 0.062 exportintensity 0.437 (0.		(1)	(2)	(3)	(4)
Societal Effects Statist Effects Combined Effects Combined Effects Combined Effects tariff ₁₈₃₁ 0.444*** 0.534*** 0.535*** 0.535*** (0.126) (0.148) (0.153) (0.164) establishments -9.042 -36.137 -34.278 consumergood 0.737 -0.440 -1.473 (1.604) 0.003 0.004 (0.023) consumergood 0.737 -0.440 -1.473 scale 0.001 0.003 0.004 industrygrowth -0.005 -0.025 -0.025 industrygrowth -0.005 -0.025 -0.025 geogconc 7.813 8.908 5.729 2.767 unskilled 0.024 -0.049 0.002 (0.021) 0.081 unskilled 0.022 0.025 (0.255) (0.251) (0.52) unskilled 0.021 0.0021 0.002 (0.002) (0.002) employment 0.188 0.121 0.081		Tariff ₁₉₂₅	Tariff ₁₉₂₅	Tariff ₁₉₂₅	Tariff ₁₉₂₅
tariff ₁₈₃₁ 0.444^{***} 0.534^{***} 0.533^{***} 0.533^{***} establishments -9.042 -36.137 -34.278 consumergood 0.737 -0.440 -1.473 consumergood 0.737 -0.440 -1.473 cale 0.001 0.003 0.004 industrygrowth -0.002^* -0.001 -0.001 importpenetration -0.005 -0.025 -0.028 geogconc 7.813 8.908 5.729 2.767 geogconc 7.813 8.908 5.729 2.767 (5.460) (5.453) (5.476) (6.129) unskilled 0.024 -0.049 0.002 exportintensity 0.011 0.001 0.001 colocal 0.025 0.225 0.225 importpenetration 0.002 0.002 0.002 exportintensity 0.010 0.001 0.001 carrings 0.236 <		Societal Effects	Statist Effects	Combined Effects	Combined Effects
(0.126) (0.148) (0.158) (0.164) establishments -9.042 -36.137 -34.278 (49.357) (57.594) (62.299) consumergood 0.737 -0.440 -1.473 scale 0.001 0.003 0.004 (0.003) (0.003) (0.004) -0.001 industrygrowth -0.002* -0.001 -0.001 (0.010) (0.037) (0.039) (0.048) geogconc 7.813 8.908 5.729 2.767 (5.460) (5.453) (5.476) (6.129) (0.048) geogconc 7.813 8.908 5.729 2.767 (0.192) (0.195) (0.192) (0.192) (0.192) unskilled 0.024 -0.049 0.002 (0.002) employment 0.198 0.121 0.081 (0.457) (0.502) (0.062) (0.002) earnings 0.236 -0.081 0.062 earnings 0.236	tariff ₁₈₈₁	0.444***	0.534***	0.535***	0.533***
establishments -9.042 -36.137 -34.278 (49.357) (57.594) (62.299) consumergood 0.737 -0.440 -1.473 scale 0.001 0.003 0.004 (0.003) (0.003) (0.004) industrygrowth -0.002^* -0.001 -0.001 importpenetration -0.005 -0.025 -0.025 -0.028 geogconc (7.813 8.908 5.729 2.767 (0.010) (0.037) (0.039) (0.048) geogconc (5.460) (5.453) (5.476) (6.129) unskilled 0.025 (0.255) (0.251) (0.211) employment 0.198 0.121 0.081 (0.020) (0.002) (0.002) (0.022) earnings 0.236 -0.081 0.062 iernings 0.236 -0.081 0.062 iernings 0.236 -0.594 -0.637 iernings 0.236		(0.126)	(0.148)	(0.158)	(0.164)
$\begin{array}{c} (49.357) & (57.594) & (62.299) \\ consumergood & 0.737 & -0.440 & -1.473 \\ (1.604) & (1.962) & (2.726) \\ scale & 0.001 & 0.003 & 0.004 \\ (0.003) & (0.003) & (0.004) \\ industrygrowth & -0.002* & -0.001 & -0.001 \\ (0.001) & (0.001) & (0.001) & (0.001) \\ importpenetration & -0.005 & -0.025 & -0.025 & -0.028 \\ (0.010) & (0.037) & (0.039) & (0.048) \\ geogconc & 7.813 & 8.908 & 5.729 & 2.767 \\ (5.460) & (5.453) & (5.476) & (6.129) \\ unskilled & 0.024 & -0.049 & 0.002 \\ (0.255) & (0.255) & (0.255) & (0.251) \\ employment & 0.198 & 0.121 & 0.081 \\ (0.192) & (0.192) & (0.195) & (0.199) \\ exportintensity & 0.001 & 0.001 & 0.001 \\ (0.002) & (0.002) & (0.002) \\ earnings & 0.236 & -0.081 & 0.062 \\ (0.457) & (0.552) & (0.552) \\ labourintensity & -1.702 & -1.129 & -0.574 \\ (4.0437) & (0.522) & (0.523) \\ labourintensity & -1.702 & -1.129 & -0.574 \\ (4.000) \\ woodpaper & -0.346 \\ (4.578) \\ metalelectric & -1.475 \\ (4.892) \\ chemical & 8.117 & 5.624 & 12.555 & 14.393 \\ mineral & -7.476 \\ (5.927) \\ misc & -5.624 & 12.555 & 14.393 \\ constant & 8.117 & 5.624 & 12.555 & 14.393 \\ constant & 8.117 & 5.624 & 12.555 & 14.393 \\ chemical & -7.476 \\ (4.981) & (6.685) & (8.442) & (0.680) \\ \hline \\ Observations & 92 & 92 & 92 \\ F-statistic & 3.99 & 6.09 & 5.31 & 14.03 \\ chintel R constant & 0.35 & 0.366 & 0.34 & 0.51 \\ constant & 8.025 & 0.265 & 0.346 & 0.34 \\ chintel R constant & 0.59 & 0.35 & 0.36 & 0.34 \\ chintel R constant & 0.55 & 0.35 & 0.36 & 0.34 & 0.51 \\ chintel R constant & 0.55 & 0.35 & 0.36 & 0.34 & 0.51 \\ chintel R constant & 0.55 & 0.35 & 0.36 & 0.34 & 0.51 \\ chintel R constant & 0.35 & 0.35 & 0.36 & 0.34 & 0.51 \\ chintel R constant & 0.35 & 0.35 & 0.36 & 0.34 & 0.51 \\ chintel R constant & 0.35 & 0.36 & 0.34 & 0.21 \\ chintel R constant & 0.55 & 0.35 & 0.36 & 0.34 & 0.21 \\ chintel R constant & 0.35 & 0.35 & 0.36 & 0.34 & 0.21 \\ chintel R constant & 0.35 & 0.35 & 0.36 & 0.34 & 0.21 \\ chintel R constant & 0.35 & 0.35 & 0.36 & 0.34 & 0.21 \\ chintel R constant & 0.35 & 0.35 & 0.36 & 0.34 & 0.21 \\ chintel R constant & 0.35 & 0.35 & $	establishments	-9.042	. ,	-36.137	-34.278
consumergood $0.737'$ $-0.440'$ $-1.473'$ scale 0.001 (0.003) (0.003) 0.004 industrygrowth -0.002^{*} -0.001 -0.001 -0.001 industrygrowth -0.005 -0.025 -0.002 -0.001 -0.001 importpenetration -0.005 -0.025 -0.025 -0.028 -0.0028 geogconc 7.813 8.908 5.729 2.767 (5.460) (5.453) (5.476) (6.129) unskilled 0.024 -0.049 0.002 (0.0255) (0.255) (0.255) (0.255) (0.255) (0.251) (0.99) (0.99) (0.99) (0.99) (0.902) (0.002) $(0.0$		(49.357)		(57.594)	(62.299)
(1.604) (1.962) (2.726) scale 0.001 0.003 0.004 industrygrowth -0.002* -0.001 -0.001 importpenetration -0.005 -0.025 -0.025 -0.028 geogcone 7.813 8.908 5.729 2.767 unskilled 0.024 -0.049 0.002 unskilled 0.025 (0.255) (0.255) (0.251) unskilled 0.024 -0.049 0.002 employment (0.192) (0.195) (0.199) exportintensity 0.001 0.001 0.001 earnings 0.236 -0.081 0.062 ktratio -0.480 -0.594 -0.637 (0.437) (0.522) (0.523) (0.523) labourintensity -1.702 -1.129 -0.574 imstallelectric -1.476 (4.000) -0.346 woodpaper -0.346 -1.029 (3.330) mineral -1.17 5.624	consumergood	0.737		-0.440	-1.473
scale 0.001 0.003 0.004 industrygrowth -0.003 (0.003) (0.004) industrygrowth $-0.002*$ -0.001 -0.001 importpenetration -0.005 -0.025 -0.025 -0.028 geogconc 7.813 8.908 5.729 2.767 inskilled 0.024 -0.049 0.002 inskilled 0.025 0.025 0.021 inskilled 0.024 -0.049 0.002 inskilled 0.025 0.025 0.025 inskilled 0.025 0.025 0.021 inskilled 0.023 0.001 0.001 exportintensity 0.001 0.001 0.001 earnings 0.236 -0.081 0.062 idustrygrowth -1.702 -1.129 -0.574 idustrygrowth -1.702 -1.129 -0.574 idustrygrowth -1.702 -1.215 (4.892) <	C C	(1.604)		(1.962)	(2.726)
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	scale	0.001		0.003	0.004
$\begin{array}{c c c c c c c c c c c c c c c c c c c $		(0.003)		(0.003)	(0.004)
(0.001) (0.001) (0.001) (0.001) importpenetration -0.005 -0.025 -0.023 geogconc 7.813 8.908 5.729 2.767 (5.460) (5.453) (5.476) (6.129) unskilled 0.024 -0.049 0.002 unskilled 0.255 (0.255) (0.251) employment 0.198 0.121 0.081 exportintensity 0.001 0.001 0.001 exportintensity 0.0236 -0.081 0.062 earnings 0.236 -0.081 0.062 iabourintensity -1.702 -1.129 -0.537 labourintensity -1.702 -1.129 -0.574 iabourintensity -1.702 -1.129 -0.574 iabourintensity -1.702 -1.129 -0.574 icktile -1.476 (4.000) -0.346 imatelelectric -1.476 (5.927) -1.069	industrygrowth	-0.002*		-0.001	-0.001
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$		(0.001)		(0.001)	(0.001)
(0.010) (0.037) (0.039) (0.048) geogconc 7.813 8.908 5.729 2.767 unskilled (5.460) (5.453) (5.476) (6.129) unskilled 0.024 -0.049 0.002 employment 0.198 0.121 0.081 exportintensity 0.001 0.001 0.001 exportintensity 0.002 (0.002) (0.002) earnings 0.236 -0.081 0.062 earnings 0.236 -0.081 0.062 k1atio -0.480 -0.594 -0.637 labourintensity -1.702 -1.129 -0.574 labourintensity -1.702 -1.129 -0.574 earningsgrowth -0.009 -0.009 -0.346 woodpaper -0.346 -3.346 -3.346 metalelectric -1.215 (4.578) mise -3.456 (5.336) constant $8.$	importpenetration	-0.005	-0.025	-0.025	-0.028
geogconc 7.813 8.908 5.729 2.767 unskilled (5.460) (5.433) (5.476) (6.129) unskilled 0.024 -0.049 0.002 employment 0.198 0.121 0.081 exportintensity 0.001 0.001 0.001 exportintensity 0.001 0.001 0.002 earnings 0.236 -0.081 0.662 ktratio -0.480 -0.594 -0.637 ktratio -0.480 -0.594 -0.637 ktratio -0.480 -0.594 -0.637 ktratio -1.702 -1.129 -0.574 labourintensity -1.702 -1.129 -0.574 textile -1.476 (4.600) (4.000) woodpaper -0.346 (5.927) (5.927) misc 5.729 92 92 92 misc 3.456 (5.336) (5.442) $(9.6$		(0.010)	(0.037)	(0.039)	(0.048)
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	geogconc	7.813	8.908	5.729	2.767
unskilled 0.024 -0.049 0.002 employment 0.198 0.121 0.081 (0.192) (0.195) (0.199) exportintensity 0.001 0.001 0.001 earnings 0.236 -0.081 0.062 (kratio -0.480 -0.594 -0.637 (kratio -1.702 -1.129 -0.574 (kratio -0.009 (0.016) (4.000) woodpaper -0.346 (4.578) (4.578) metalelectric (4.578) (5.927) (5.927) misc 3.456 (5.336) (5.336) </td <td>5 5</td> <td>(5.460)</td> <td>(5.453)</td> <td>(5.476)</td> <td>(6.129)</td>	5 5	(5.460)	(5.453)	(5.476)	(6.129)
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	unskilled		0.024	-0.049	0.002
employment 0.198 0.121 0.081 exportintensity 0.001 0.001 0.001 earnings 0.236 -0.081 0.062 (0.457) (0.502) (0.562) klratio 0.480 -0.594 -0.637 (0.457) (0.522) (0.523) labourintensity -1.702 -1.129 -0.574 earningsgrowth -1.702 -1.129 -0.574 woodpaper -0.009 (0.016) (0.016) textile -0.009 (0.016) (4.478) metalelectric -1.476 (4.000) woodpaper -0.346 (4.578) mineral -1.476 (5.927) misc -1.491 (6.685) (8.442) (9.680) Observations 92 92 92 92 92 Post 92 92 92 92 92 92 Observations 92			(0.255)	(0.255)	(0.251)
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	employment		0.198	0.121	0.081
exportintensity 0.001 0.001 0.001 earnings 0.236 -0.081 0.062 (0.457) (0.502) (0.562) klratio -0.480 -0.594 -0.637 labourintensity -1.702 -1.129 -0.574 labourintensity -1.702 -1.129 -0.574 earningsgrowth 0.001 0.001 0.001 woodpaper -0.009 (4.000) 0.0346 woodpaper -0.346 (4.578) -1.215 metalelectric -1.069 (3.330) -1.069 mineral -7.476 (5.927) 3.456 constant 8.117 5.624 12.555 14.393 (4.981) (6.685) (8.442) (9.680) Observations 92 92 92 92 F-statistic 3.99 6.09 5.31 14.03			(0.192)	(0.195)	(0.199)
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	exportintensity		0.001	0.001	0.001
earnings 0.236 -0.081 0.062 klratio 0.480 -0.594 -0.637 labourintensity -1.702 -1.129 -0.574 labourintensity -1.702 -1.129 -0.574 earningsgrowth -0.009 (0.016) (0.016) textile -0.009 (0.016) (4.578) metalelectric -1.476 (4.578) metalelectric -1.215 (4.892) chemical -7.476 (5.927) misc 5.624 12.555 14.393 (4.981) (6.685) (8.442) (9.680) Observations 92 92 92 92 Patatistic 3.99 6.09 5.31 14.03			(0.002)	(0.002)	(0.002)
Initiage (0.457) (0.502) (0.562) kiratio -0.480 -0.594 -0.637 (0.437) (0.522) (0.523) labourintensity -1.702 -1.129 -0.574 (14.464) (14.326) (17.173) earningsgrowth -0.009 (0.016) textile -1.476 (4.000) woodpaper -0.346 (4.000) (4.578) metalelectric -1.215 (4.892) (4.892) chemical -7.476 (5.927) (5.927) misc 3.456 (5.336) (5.336) constant 8.117 (4.981) (6.685) (8.442) (9.680) Observations 92 93 0.35 0.36 0.34 0.31 <td>earnings</td> <td></td> <td>0.236</td> <td>-0.081</td> <td>0.062</td>	earnings		0.236	-0.081	0.062
klratio -0.480 -0.594 -0.637 labourintensity -1.702 -1.129 -0.574 labourintensity -1.702 -1.129 -0.574 earningsgrowth 0.009 0.016) (14.464) (14.326) (17.173) earningsgrowth -0.009 0.016) (4.000) 0.046 (4.000) woodpaper -0.346 (4.578) (4.578) (4.578) metalelectric -1.215 (4.892) (5.927) misc 7.476 (5.927) (5.927) misc 3.456 (5.336) (5.927) Observations 92 92 92 92 Observations 92 92 92 92 Adjusted B coursed 0.35 0.36 0.34 0.31			(0.457)	(0.502)	(0.562)
Initial (0.437) (0.522) (0.523) labourintensity -1.702 -1.129 -0.574 labourintensity (14.464) (14.326) (17.173) earningsgrowth -0.009 (0.016) textile -1.476 (4.000) woodpaper -0.346 (4.000) metalelectric -1.215 chemical -1.069 mineral -1.069 misc -7.476 (5.927) (5.927) misc 3.456 (5.336) (5.336) constant 8.117 5.624 12.555 14.393 (4.981) (6.685) (8.442) (9.680) Observations 92 93 936 936 934 936	klratio		-0.480	-0.594	-0.637
labourintensity -1.702 -1.129 -0.574 earningsgrowth (14.464) (14.326) (17.173) earningsgrowth -0.009 (0.016) textile -1.476 (4.000) woodpaper -0.346 (4.000) metalelectric -1.215 chemical -1.069 mineral (3.330) mineral -7.476 misc 3.456 constant 8.117 5.624 12.555 14.393 Observations 92 935 0.36 0.34 0.31			(0.437)	(0.522)	(0.523)
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	labourintensity		-1.702	-1.129	-0.574
earningsgrowth -0.009 textile -1.476 woodpaper -0.346 metalelectric -1.215 chemical -1.069 mineral -7.476 misc -3.456 constant 8.117 5.624 12.555 14.393 Constant 8.117 5.624 12.555 14.393 Constant 8.117 5.624 12.555 14.393 Constant 8.117 6.685) (8.442) 9.2 92 92 92 92 92 92 92 92 92 92 92 92 92 92 92 92 92 92 92 92 92 92 92 92 92 92 92 934 0.31			(14.464)	(14.326)	(17.173)
$\begin{array}{c} \text{textile} & (0.016) \\ \text{textile} & (4.000) \\ \text{woodpaper} & -0.346 \\ (4.578) \\ \text{metalelectric} & (4.578) \\ \text{metalelectric} & -1.215 \\ (4.892) \\ \text{chemical} & (3.330) \\ \text{mineral} & -7.476 \\ (5.927) \\ \text{misc} & (5.927) \\ \text{misc} & (5.927) \\ \text{misc} & (5.336) \\ \text{constant} & 8.117 & 5.624 & 12.555 & 14.393 \\ (4.981) & (6.685) & (8.442) & (9.680) \\ \hline \\ \text{Observations} & 92 & 92 & 92 \\ \text{F-statistic} & 3.99 & 6.09 & 5.31 & 14.03 \\ \text{Adjusted P sequered} & 0.35 & 0.36 & 0.34 & 0.21 \\ \hline \end{array}$	earningsgrowth			(-0.009
textile -1.476 woodpaper -0.346 metalelectric -1.215 metalelectric -1.215 chemical -1.069 mineral -7.476 misc -7.476 constant 8.117 5.624 12.555 14.393 (4.981) (6.685) (8.442) Observations 92 92 92 92 92 F-statistic 3.99 6.09 5.31 Adjusted B congrad 0.35 0.36 0.34					(0.016)
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	textile				-1 476
woodpaper -0.346 metalelectric (4.578) chemical -1.215 mineral -1.069 mineral (5.927) misc (5.927) constant 8.117 5.624 12.555 Constant 8.117 5.624 12.555 14.393 Observations 92 92 92 92 F-statistic 3.99 6.09 5.31 14.03 Adjusted P sequered 0.35 0.36 0.34 0.31	toxtilo				(4,000)
metalelectric (4.578) metalelectric -1.215 chemical -1.069 mineral (3.330) misc (5.927) misc 3.456 (5.336) (5.336) constant 8.117 5.624 12.555 14.393 (4.981) (6.685) (8.442) (9.680) Observations 92 92 92 92 F-statistic 3.99 6.09 5.31 14.03 Adjusted P sequered 0.35 0.36 0.34 0.31	woodpaper				-0.346
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	nooapapor				(4 578)
international (4.892) chemical (4.892) mineral (3.330) misc (5.927) misc (5.336) constant 8.117 5.624 12.555 14.393 (4.981) (6.685) (8.442) (9.680) Observations 92 92 92 F-statistic 3.99 6.09 5.31 14.03 Adjusted P sequered 0.35 0.36 0.34 0.31	metalelectric				-1.215
$ \begin{array}{c} \text{chemical} & & & & & & & & & & & & & & & & & & &$	memoroeure				(4 892)
mineral (3.330) misc -7.476 (5.927) (5.927) misc (5.336) constant 8.117 5.624 12.555 14.393 (4.981) (6.685) (8.442) (9.680) Observations 92 92 92 F-statistic 3.99 6.09 5.31 14.03 Adjusted P sequered 0.35 0.36 0.34 0.31	chemical				-1.069
mineral -7.476 misc (5.927) misc 3.456 constant 8.117 5.624 12.555 14.393 (4.981) (6.685) (8.442) (9.680) Observations 92 92 92 F-statistic 3.99 6.09 5.31 14.03 Adjusted P sequered 0.35 0.36 0.34 0.31					(3,330)
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	mineral				-7.476
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	mmorut				(5.927)
constant 8.117 5.624 12.555 14.393 (4.981) (6.685) (8.442) (9.680) Observations 92 92 92 F-statistic 3.99 6.09 5.31 14.03 Adjusted P sequered 0.35 0.36 0.34 0.31	misc				3 4 5 6
constant 8.117 5.624 12.555 14.393 (4.981) (6.685) (8.442) (9.680) Observations 92 92 92 F-statistic 3.99 6.09 5.31 14.03 Adjusted P sequered 0.35 0.36 0.34 0.31	11100				(5 336)
Observations 92 93	constant	8 117	5 624	12 555	14 303
Observations 92 92 92 92 92 F-statistic 3.99 6.09 5.31 14.03 Adjusted P sequend 0.35 0.36 0.34 0.31	Volidium	(4 981)	(6 685)	(8 442)	(9 680)
F-statistic 3.99 6.09 5.31 14.03 Adjusted P squared 0.35 0.36 0.34 0.31	Observations	02	<u>(0.005)</u> 07	07	02
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	F-etatietic	3 00	6.09	5 31	14.03
	Adjusted Resourced	0.35	0.02	0.2/	0.21

TABLE 12.- OLS ESTIMATION OF TARIFF PERSISTENCE MODEL IN 1925 WITH 1881 TARIFF

	(1)	(2)	(3)	(4)
	Tariff ₁₉₂₅	Tariff ₁₉₂₅	Tariff ₁₉₂₅	Tariff ₁₉₂₅
	Societal Effects	Statist Effects	Combined Effects	Combined Effects
tariff ₁₈₈₁	0.460***	0.546***	0.543***	0.622***
	(0.153)	(0.143)	(0.158)	(0.167)
destablishments	1,630.518		249.373	2,085.369
	(2,335.383)		(2,970.981)	(4,515.078)
dscale	0.000		0.000	0.000
	(0.000)		(0.000)	(0.000)
lindustrygrowth	-0.002**		-0.001	-0.001
	(0.001)		(0.001)	(0.001)
limportpenetration	-0.004	-0.010	0.034	-0.021
	(0.009)	(0.028)	(0.037)	(0.047)
lgeogconc	8.001	4.275	7.267	5.055
	(5.629)	(3.904)	(5.333)	(5.126)
lunskilled		-0.249**	-0.289	-0.330
		(0.123)	(0.220)	(0.240)
lemployment		0.000*	0.000*	0.000
		(0.000)	(0.000)	(0.000)
lexportintensity		0.001	-0.001	0.001
· ·		(0.001)	(0.001)	(0.002)
learnings		-0.003	-0.004	-0.004
·		(0.005)	(0.006)	(0.007)
lklratio		-0.001	-0.001**	-0.001**
		(0.000)	(0.000)	(0.001)
llabourintensity		-6.921	-17.640	-14.746
		(12.952)	(13.139)	(16.215)
learningsgrowth		· · ·		-0.014
0.0				(0.010)
constant	12.209***	13.739***	15.971***	14.506***
	(2.974)	(4.624)	(5.535)	(5.703)
Observations	72	92	72	65
F-statistic	4.10	6.25	6.32	11.55
Adjusted R-squared	0.35	0.40	0.42	0.44

TABLE 13 OLS ESTIMATION OF TARIFF PERSISTENCE MODEL IN 1925 WITH 1881 TARIFF AND
. 1925-1881 CHANGES

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	(1)	(2)	(3)	(4)
	dTariff ₁₉₂₅₋₁₈₈₁	dTariff ₁₉₂₅₋₁₈₈₁	dTariff ₁₉₂₅₋₁₈₈₁	dTariff ₁₉₂₅₋₁₈₈₁
	Societal Effects	Statist Effects	Combined Effects	Combined Effects
destablishments	-3,789.076		-4,928.213	-452.853
	(3,605.681)		(5,008.185)	(5,987.210)
dscale	0.000		0.000	0.000
	(0.000)		(0.000)	(0.000)
dindustrygrowth	-0.001		-0.000	0.000
	(0.001)		(0.001)	(0.001)
dimportpenetration	-0.024	-0.012	-0.015	-0.095
	(0.028)	(0.061)	(0.060)	(0.068)
dgeogconc	13.218	12.113**	11.902*	5.999
	(7.973)	(5.954)	(6.652)	(6.058)
dunskilled		-0.179	-0.146	-0.247
		(0.242)	(0.257)	(0.257)
demployment		0.001***	0.001**	0.000
		(0.000)	(0.000)	(0.000)
dexportintensity		0.001	0.001	0.005*
		(0.002)	(0.002)	(0.003)
dearnings		0.006	0.006	0.004
		(0.010)	(0.011)	(0.010)
dklratio		-0.002**	-0.002**	-0.002**
		(0.001)	(0.001)	(0.001)
dlabourintensity		-24.691	-20.745	-7.627
		(16.526)	(17.380)	(19.325)
dearningsgrowth				-0.019
				(0.012)
constant	-1.360	1.591	0.421	1.001
	(2.088)	(6.945)	(7.471)	(7.074)
Observations	72	72	72	65
F-statistic	1.06	2.35	2.16	1.89
Adjusted R-squared	0.05	0.30	0.28	0.34

TABLE 14.- OLS ESTIMATION OF TARIFF PERSISTENCE MODEL FOR 1925-1881 CHANGES

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Adjusted R-squared0.050.300.28Robust standard errors in parentheses*** significant at 99% level; ** significant at 95% level; * significant at 90% level

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TABLE 15.- TOP 20 INCREASERS IN GEOGRAPHIC CONCENTRATION FROM 1925-1881

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Industry	tariff ₁₈₈₁	tariff ₁₉₂₅	geogconc ₁₈₈₁	geogconc ₁₉₂₅	Tariff Chg ₁₉₂₅₋₁₈₈₁	GeogConc Chg1925-1881
Tobacco, chewing, smoking and snuff	60.2	43.8	0.515	1.226	-16.3	0.711
Sheet metal products	20.3	25.1	0.335	0.980	4.9	0.645
Steel and rolled products, pig iron, ferro-alloys, etc	13.6	10.9	0.353	0.980 .	-2.8	0.627
Miscellaneous textiles, n.e.s.	0.0	15.6	0.000	0.615	15.6	0.615
Pulp and paper	0.0	25.0	0.000	0.613	25.0	0.613
Scientific and professional equipment	6.7	23.5	0.161	0.737	16.8	0.576
Gloves and mittens, leather	25.0	24.8	0.482	1.014	-0.2	0.532
Furniture and upholstery	35.1	28.3	0.222	0.753	-6.7	0.532
Brooms, brushes and mops	25.1	23.3	0.371	0.878	-1.8	0.507
Pickles, vinegar and cider	33.3	27.3	0.693	1.092	-6.0	0.399
Miscellaneous non-metallic mineral products	0.0	20.7	0.000	0.382	20.7	0.382
Clothing, men's factory	27.5	28.2	0.240	0.620	0.7	0.380
Leather tanneries	9.5	13.9	0.325	0.702	4.4	0.377
Cigars and cigarettes	60.2	111.0	0.515	0.879	50.9	0.363
Brass and copper products	24.8	20.6	0.259	0.613	-4.2	0.354
Salt	0.5	20.8	1.107	1.414	20.3	0.307
Miscellaneous chemical industries	8.8	17.6	0.255	0.547	8.8	0.293
Machinery	16.1	22.7	0.246	0.521	6.6	0.275
Explosives, ammunition, fireworks, matches	15.5	22.0	0.584	0.852	6.5	0.268
Biscuits, confectionary and chewing gum	20.0	25.4	0.223	0.470	5.4	0.248
Average for top 20 industries	20.1	27.5	0.344	0.794	7.4	0.450
Average for all industries	23.4	23.2	0.653	0.637	-0.2	-0.016



FIGURE 1.- TARIFF DISTRIBUTION ACROSS 150 INDUSTRIES IN 1881

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FIGURE 3.- CANADIAN CUSTOMS REVENUE, 1868-1900

Source: Perry, J. Harvey, Taxes, Tariffs, & Subsidies (Vol.2), Appendix C - Table 7 Main Sources of Customs Revenue

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