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# The Politics and Regulation of Hydroelectricity : The Case of Quebec in the Thirties

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# The Politics and Regulation of Hydroelectricity : The Case of Quebec in the Thirties[*][¶]

*Ruth Dupré, Michel Patry, Patrick Joly*[§]

## Résumé / Abstract

**Résumé :**

Pour plusieurs, la nationalisation des compagnies d'électricité de 1963 marque le début de l'intervention du gouvernement québécois dans le domaine de l'électicité. Une des actions les plus notoires de la Révolution tranquille, la nationalisation de 1963, n'était que la dernière étape d'une évolution qui remonte aux années trente avec la mise sur pied d'une agence de réglementation, la Commission de l'électricité du Québec. On peut se poser la question si cette Commission a réellement réglementé l'électricité ou si elle était juste un moyen de calmer l'opinion publique. Nous répondons à cette question en mesurant l'impact de la Commission de deux façons. L'effet anticipé de la réglementation sur le prix des actions des compagnies d'électricité est estimé au moyen d'une étude évènementielle. L'effet actuel sur les tarifs d'électricité est évalué en les comparant à ceux de l'Ontario. Les deux approches suggèrent que la Commission a été plutôt inefficace. Le modèle de marché politique explique pourquoi. La lutte était très inégale. Les consommateurs, nombreux mais inorganisés, ne faisaient pas front commun à cause du grand écart entre les tarifs domestiques et industriels. Ils se retrouvaient de plus défavorisés par les inégalités de la carte électorale. Ils faisaient face à un petit groupe d'entreprises avec de fortes interrelations, de grands moyens financiers et des liens serrés avec le gouvernement.

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# Abstract :

*For many, Quebec government intervention in hydroelecticity began in 1963 with the nationalization of the industry. In fact, this was the last stage of a progression in policy whose beginnings can be traced back to the Quebec Electricity Commission in 1935. Was this commission effective or was it just a "window dressing" exercise by the government in order to calm down political agitation ? To answer this question, two types of tests are used. First, we conduct an event study analysis of the expected effect of regulation on the stock market prices of utilities. Second, we examine the effect regulation has had on the evolution of rates in Quebec. Both approaches point towards ineffectiveness. The political economy model explains why. The political struggle was quite unequal. The consumers, numerous but mostly unorganized, were not united because of the large gap between domestic and industrial rates and were disadvantaged by the inequalities of the electoral map. They were fighting a small and tight group of power companies with large financial means and close relationships with the government.*

The province of Quebec is the richest region in hydro resources in North America. Hydroelectricity thus played a crucial role in its industrial development. For many, government intervention in that sector began in 1963 with the nationalization of the industry, one of the most spectacular actions of the so-called *Quiet Revolution*, when Quebec is said to have belatedly but suddenly burst into modern times after a long period of *grande noirceur*.

In fact, the nationalization of 1963 was the last stage of a gradual progression whose beginnings, like so many innovations in state activity, can be traced back to the 1930s. As in the U.S., the controversy over the electricity «trust» was a major political issue in Quebec in that decade. To calm down the political agitation, the provincial government set up the Quebec Electricity Commission [QEC below] in 1935 with powers to regulate rates, mergers, capitalization, and service extensions. Two years later, it was replaced by the Provincial Electricity Board [PEB below]. In 1940, the latter was dissoluted and the regulation of electricity returned to a more general purpose agency, the Public Service Commission. In 1944, the provincial government nationalized the Montreal Light, Heat & Power and created Hydro-Quebec.

Was regulation in the 1930s effective or was it just a «window-dressing» governmental response to a trustbuster public opinion? In the U.S., since Stigler and Friedland's (1962) seminal article, the conventional wisdom is that state commission regulation had little or no effect on electricity prices at that time.[1] In Canada, there does not seem to be any empirical studies of the impact of electricity commissions before the Second World War.[2]

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[1]    Ironically, Stigler and Friedland's results have recently been found to be wrong about the magnitude (but not of the statistical significance) of the effect of regulation because of a coding error of the dummy variable set equal to 10 instead of 1. See Peltzman (1993:820-821). We still can say that it is conventional wisdom because more recent studies such as Jarrell (1978) and Emmons (1993) found that state regulation in the interwar was relatively ineffective.

[2]    In fact, very little attention has been paid to these electric commissions with the exception of the Ontario Hydroelectric Commission which set up in 1910 a publicly-owned cooperative distribution system. Perhaps because it was a unique institution in North America at the time of its creation, it has been the object of at least three in-depth studies [Denison (1960), Nelles (1974), Fleming (1992)]. To our knowledge, only Armstrong and Nelles (1986) look at the other provincial electricity boards within their historical survey of all utilities in Canada. They do not however try to estimate their impact.

In the case of Quebec, there are a few good historical studies of the industry but few are concerned with policy.[3] «Of social control by regulatory boards in Quebec, the most charitable thing one can say is that it has been minimal» is Dales' judgment in his classic study of hydroelectricity in Quebec (1957:31). He adds that the effectiveness of the commission as a regulatory body has been very small in part because it immediately became a political plaything. As policy was not the object of his study, Dales does not go any further.

In order to substantiate this intuition, we seek to assess the impact of the two regulatory boards, the QEC and PEB, from three different perspectives. First, the interaction between the main actors is explored within a political economy framework. Second, the effect of regulation on the stock prices of the utility companies is investigated with an «event study». Finally, the impact of regulation on the rates in Quebec is evaluated by comparing them to those in Ontario, the neighbouring province with a public system.

# 1.	THE POLITICAL ECONOMY OF ELECTRICITY IN THE THIRTIES

Electricity was a critical political issue in Quebec in this very troubled decade, indeed one of the factors ending the forty-year reign of the provincial Liberal Party. The episode is examined here through the behavior of the four main actors: the opposing parties, producers vs consumers of electricity; and the responding parties, the provincial government and its regulatory commissions.

## THE POWER COMPANIES

In the interwar period, the hydroelectric industry in Quebec consisted in a handful of large private power concerns. 90 % of total output was produced by four of them: the Shawinigan Water and Power, the Montreal Light, Heat and Power, the Gatineau Power and the Saguenay Power.[4] The last two firms were selling almost exclusively their output to a few specialized large power-consuming industries like pulp and paper and aluminum in Northern Quebec. As they were outside the political

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[3]	The classic is still Dales (1957) but there are now a few others: Bolduc *et al* (1984); Bellavance (1994) on the Shawinigan Group. To these books, we should add the articles comparing Quebec to Ontario's hydroelectric development by Armstrong and Nelles (1983) and by Lanthier (1987).

[4]	This portrait of the industry comes from Dales (1957).

battlefield in the thirties, they are left out of our study. We concentrate on those firms which supplied the domestic and industrial needs of the Quebec population : the Shawinigan Water and Power, the Montreal Light, Heat, and Power, the Quebec Power and the Southern Power. The Shawinigan was by far the most important power company and was doing business throughout most of the settled portion of Quebec. [see figure 3] The very controversial Montreal company was the second in importance. The Quebec Power, a subsidiary of the Shawinigan, supplied Quebec City, and the Southern Power served the Eastern Townships.

Since these firms enjoyed a territorial monopoly, they had much to lose with nationalization or severe regulation. From 1933 to 1938, there were a very large number of articles in the *Financial Times of Canada*, a Montreal financial weekly, strongly denouncing government intervention and denigrating public Hydro-Ontario. They argued again and again to their defense of the rates they charged that they were taxed while a public system like Hydro-Ontario was heavily subsidized.[5] Their other argument was that in this industry characterized by very large fixed costs, prices could be much lower when the quantity consumed was large. Consumption per capita was lower in Quebec than in Ontario, and lower in Montreal than in Toronto.

Conventional wisdom is that the power companies had much political clout.[6] They certainly seemed to be quite confident to have the Premier's ear. They were probably right, as L.A. Taschereau, Premier from 1920 to 1936, has a well-known reputation of having been very pro-big business, sitting on boards of directors and having close relationships with many industrialists and financiers. As we will see later, this confidence may have been shaken only for a brief period after the November 1935 elections, which were barely lost by a leftist coalition. But it was only a few months before Maurice Duplessis, ideologically very close to Taschereau, emerged as the sole leader of the new party *l'Union nationale* which he was to lead to a sweeping victory in August 1936.

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[5] For instance, the Montreal Light, Heat and Power in its memorandum to the Lapointe Commission (1934:18) points out that Toronto Hydro operated at a loss of 1/2 million dollars in 1933 and that Ontario Hydro supplied Toronto power at some $850,000 below cost [according to their annual reports]. The Montreal company adds that it had to pay a 8% tax on gross earnings while Toronto Hydro was practically free from taxation. This cannot be totally dismissed as anti-public power rhetoric. In his thesis on Ontario resource policies, Nelles (1974:407, 467-481 for instance) often asserts that Ontario-Hydro cost a lot of money to the provincial government.

[6] See Dales (1957:30); Armstrong and Nelles (1986:206); Vigod (1986:191-193). Vigod relates in some details the close relationships between many members of the Premier Taschereau family and the Quebec Power (a subsidiary of the Shawinigan Power).

## THE CONSUMERS

Two quite different issues were at stake in the consumers' war against the «electricity trust». The rural population complained it was not served because private companies did not find it profitable to supply electricity to very low densily populated areas. The urban population was served all right but found excessive the prices it had to pay. They fought side by side in the thirties which is why the farmer's union, *L'Union des cultivateurs catholiques* is found lobbying with the group of municipalities, *L'Union des municipalités du Québec.*

The heart of the agitation against the power companies was however urban and was part of the movement that Armstrong and Nelles (1986) call «civic populism». The reason for the agitation was the high prices, especially for domestic electricity. By the 1920s, electric appliances and lighting had become common place in the cities with the consequence that high rates affected a majority of the urban population. Why were these rates considered excessive? Mostly because they were compared to Ontario's.[7] Figure 1 shows that the average residential rates in Quebec were then almost twice those of Ontario and were well above the Canadian average.[8] Rates for commercial lighting were about 150 % of the Ontario rates as shown in figure 2. Averages may hide many things as the Quebec electric companies were fond to reply. A comparison of city rates for a given level of consumption -and many were done in the debate- also shows some disparity. For instance, in 1925, a family consuming 40 kwhs a month would spend $2.61 in Quebec City and $1.55 in Montreal, but only $1.15 in the Ontario cities of Toronto, Ottawa or Hamilton or $1.20 in Winnipeg (another public system).[9]

However, while Quebec domestic and small power rates were higher than Ontario's, its industrial rates were lower. Dales (1957:45) showed this by comparing the proportion of sales and revenues by market in the two provinces in the 1930s. In Quebec, retail and small power markets accounted for only 5 % of the sales but more than 30 % of revenue. In Ontario, they represented 25 % of the sales and some 57 % of revenue.

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[7]    Even F.D. Roosevelt used Ontario as a yardstick to argue that the U.S. electricity prices were exhorbitant. See Emmons (1993:884).

[8]    Average revenue is shown instead of price because the complicated rate structure by level of consumption makes it difficult to select an average price. Data series differentiating residential and commercial rates are only available from 1930.

[9]    See Dominion Bureau of Statistics (1926) *Index Numbers of Rates for Electricity for Residence Lighting and Tables of Monthly Bills 1925*, Ottawa.

As a consequence, and this is a crucial one in a political economy framework, there was no united front of consumers -residential and industrial- lobbying against power firms in Quebec. As Armstrong and Nelles (1986:313) wrote: «by selling industrial power very cheaply, Herbert Holt [of the Montreal Light, Heat, and Power] isolated the business community and prevented it from mobilizing a public power movement as it had in Ontario. Lacking business support for such a step, the provincial government did not move against the private utilities, despite the complaints about high domestic rates and the financial manipulation of securities in the 1920s and 1930s.» Dirks (1981:17, 20) suggests that something similar was going on in Quebec City when she notes the opposition of the «big business» subset of the business community -represented by the Board of Trade- to the anti-trust campaign against the Quebec Power.

That left in the political battle only the consumers of domestic electricity: a large, unorganized mass, indeed a very good example of a Olsonian latent group. In this case however, their cause found two champions, Dr. Philippe Hamel and T.D. Bouchard, who led the movement against the «electricity trust» first together and from 1935 apart. Philippe Hamel was a Quebec dentist who was fond of reading the U.S. Federal Trade Commission documents to find out why the prices of the medicines he had to buy were so high. As a citizen, he began in 1929 to question the ten-year contract signed by Quebec City with the Quebec Power in 1925. After he lost the battle with the Quebec Power in late 1933, Hamel went on the provincial political scene.[10] He wrote the economic section of the social reconstruction program which was to become the platform of the new third political party, *L'Action libérale nationale* [ALN below], of which he was one of the leading figures. Hamel was the ideologist, the crusader who will turn out to be quite a naïve politician and an easy prey in the hands of Duplessis who will become Premier in 1936. T.D. Bouchard was a much more practical man. Mayor of St.Hyacinthe, a small town in the Eastern Townships, secretary and president of Quebec Municipalities' Union, Liberal M.P., he remained with Taschereau when other «anti-trust» dissidents left the Liberal Party to form the ALN and became Minister of Municipal Affairs, Industry and Trade in 1935. Bouchard was strongly advocating municipalization of electricity and was responsible for it in his town of St.Hyacinthe. Contrarily to Hamel who could not really be happy with anything less than nationalization, Bouchard was to be satisfied with a regulatory board.

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[10]    After three years of negociations, numerous threats of municipalisations, two municipal elections on the issue, three committees of inquiry, one attempt by the power company to get the provincial government protection, Quebec City renewed for another ten years a contract on not very different terms in December 1933. This incredible saga is described in much detail in Dirks (1981) and in Faucher (1992).

By their tireless efforts and innumerable speeches across the province, both Hamel and Bouchard rallied the population around the electricity issue. Undoubtedly, their actions decreased information and organization costs for the consumers. In that sense, they were an asset. However, Hamel's personality and writing (and one can guess, orating) style could also be a liability. This is Dirks' (1981:27) conclusion, worth quoting: «In the final analysis it was Hamel's zeal and the crusading nature of his attack on the electricity trust that provided Duplessis with the justification needed to deny Hamel the opportunity of transforming his theories into government policy.» It is hard to disagree with her after reading his most notorious writing, a 190-page memorandum to the Commission of Electricity of the Province of Quebec in 1934. The content matches the title which can be translated as «The Electricity Trust. Agent of corruption and domination. Center of the Economic Dictatorship» and almost half of it (90 pages) consists in an all-out attack of the National Electric Light Association, an American lobby group to which belonged many Canadian electric companies. The Association seems to have been a lobby group with much financial resources and a not too high level of morality. Yet, it should not be confounded with a trust like Hamel did.

A third factor playing against the political power of the urban consumers comes from the Canadian parliamentary system and the inequality of the electoral map. For almost a century after Confederation, urban interests were heavily underrepresented by their share of the seats. For instance, Montreal with 30 % of the population had only 17 % of the seats in 1930.[11] This rural bias was determinant for the outcome of some elections. Of particular interest here, it has been shown that the Taschereau government would not have won the 1935 election without it.[12] The fact is that the Liberals won in that election 28 of the least populated but only 3 of the 16 most populated ridings.

To sum up, the urban consumers of electricity did not have the political power to get what they wanted for three reasons: the business community was not really with them; one of their champions was often too zealous to be taken seriously; and the electoral map was strongly unfavorable to them. All this however does not mean that the government could brush them aside. It did something to calm the public opinion movement.

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[11]   Bernard (1977:36).

[12]   Adjusting for the inequalities between urban and rural ridings, Massicotte (1983:170) estimates that the Liberals would have obtained 37 seats instead of 48.

## THE PROVINCIAL GOVERNMENT

The Liberal Party was in power in Quebec since the end of the nineteenth century and Taschereau was Premier since 1920. All of the elections from 1900 to 1931 were won with at least 75 % of the seats and half of them with more than 90 % (see table 1).[13] During that period, electricity was basically unregulated even if a Public Utilities Commission was set up in 1909 to supervise electric as well as other utilities. Dales (1957), Armstrong and Nelles (1986) and even the Lapointe Commission of Inquiry (1935:8) judge it severely. «Blatantly transparent exercise in public opinion management,» «form without any real substance,» the commission seems to have accomplished little beyond providing some legitimacy to the financial manipulations of the biggest companies.[14]

As the Great Depression deepened, opposition began to grow against Premier Taschereau, even within his own party. In 1934, a number of young Liberals under Paul Gouin, son of former Premier Lomer Gouin (1906-1920), left the party they felt was impossible to rejuvenate to form a new one, *L'Action libérale nationale*. Its political platform called for social reconstruction and advocated protective measures for the poor, the old, the unemployed and the sick and government ownership and control of public utilities such as electricity. Philippe Hamel participated in the drafting of the program and joined the ALN.

In response to the pressures of consumers and municipalities led by their two ardent spokesmen, Hamel and Bouchard, the Taschereau government created a commission of inquiry into the electric industry in the fall of 1934. Ernest Lapointe, a highly influential federal Liberal, Augustin Frigon, dean of École Polytechnique, and G.C. McDonald, a Montreal accountant, were its members. In its report submitted in January 1935, the Commission did not recommend the nationalization the trustbusters had hoped for. Instead, it argued that a regulatory commission with powers to control the rates and to oversee mergers, stock issues, capitalization, and service extensions should be sufficient. If it turned out not to be the case, the government should then decide if it wishes to go further.

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[13]    The 1919 election was even won «by acclamation», that is 43 seats (on a total of 81) were unchallenged ! The provincial Conservatives were paying for the 1917 Conscription Bill of the federal Conservative Borden government.

[14]    See Armstrong and Nelles (1986: 203-6 and 210). For Dales (1957:30-31), «hydroelectric industry in Quebec has been allowed to develop in an environment of **unfettered** private enterprise that public utilities **seldom** enjoy [bold added].»

The power companies did not find this very threatening. On the contrary, they were relieved:

> «The failure of the utility group on the Montreal market to react in any way to the tabling of the Lapointe report in the Quebec legislature, indicated that the recommendations made therein were materially along the lines that were generally expected. There is nothing very drastic in the report as affecting the power companies, but, on the other hand, the strong expression of opinion that nationalization of power in the province should be avoided is a really constructive feature.»

and satisfied:

> «The whole report leaves the impression that the inquiry was designed largely to meet the anti-corporation agitations of politicians seeking to capitalize the unrest of the times and to satisfy public opinion, rather than to correct any flagrant mismanagement by the corporations which have been responsible for the development of the province's power resources.»[15]

Following these recommendations, the government set up the QEC in May 1935.[16] Its members were appointed only in October 1935. The chairman was Augustin Frigon, the highly respected dean of École Polytechnique who seated on the Lapointe Commission, and two other engineers were members.[17] Notice that Taschereau did not follow the recommendation of the Lapointe Commission (1935:17) that the QEC members should consist of an engineer, a company representative and a consumer representative, a composition typical of U.S. electricity commissions.

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[15] In the *Financial Times of Canada* (January 25 1935).

[16] In addition to the Act creating the QEC, two other acts were adopted. The first amended the Water-Course Act adding authority to generate and transmit electricity to the Quebec Streams Commission which since its creation in 1910 was responsible for the regulation of the use of water powers. The second concerned the municipalization of electricity giving the right to all municipalities to establish an electricity system if approved by the elector-owners and by the QEC.

[17] According to Vigod (1986:215), it was hoped that the appointment of Frigon would lend further credibility to the government's recent electricity legislation as Frigon was highly respected as Quebec's director of technical education for more than a decade, dean of Polytechnique, and originally trained as an electrical engineer.

Encouraged by a slight improvement in the economic conditions in the summer of 1935 and by the overwhelming victory of the Liberals in Quebec in the October federal election (60 seats to 5 for the Conservatives), Taschereau called an election for November 25, 1935.[18] The moribund Conservative Party had a new leader, the very astute Duplessis who knew quite well that his party did not have a chance. On November 7, Gouin and Duplessis caused a stir by announcing they were forming a coalition with the ALN program as a platform. If victorious, Duplessis was to be Premier and Gouin was to select a majority of the Cabinet. The coalition did not win the election but profoundly shattered the Liberals. For them, a mere 53 % majority of the seats (48/90) was quite upsetting compared to their usual majorities. According to Vigod (1986:224), the Liberals had clearly been saved by their rural base. He adds that they were virtually wiped out in Montreal, Quebec, Sherbrooke, and many other towns with only the Jewish, Irish, and English vote preserving them a few seats in Montreal and Quebec.

It is particularly important to note here that the ALN was responsible for the good performance of the coalition. It captured 26 seats from the Liberals while the Conservatives made most of their eight gains in ridings where they had always been strong and actually lost three seats they had in 1931. Although the ALN-PC did not win the election, the ALN strong showing marked the beginning of the end of the Taschereau regime. The election results seem to have worried the business community:

> «There is a great deal of speculation as to whether Mr. Taschereau will be able to carry on with a nominal majority (only six) and with indicated disapproval of certain of his policies.../The result, no doubt, was something of a shock to the business and financial community represented by «St.James Street» where, it appeared, the return of the government by a substantial majority had been complacently anticipated.»[19]

Soon enough, the electric industry could take comfort from the events on the political scene. The Taschereau regime was falling but the rising political star was Duplessis and not Gouin in what Quinn (1949:525) calls «a sharp turn to the right.» It is Duplessis who gave Taschereau the final blow with the Parliamentary Committee of Inquiry in the Public Accounts in May 1935. A month later, on June 11, Taschereau resigned, devastated by the scandal which touched him and many members of his family. His successor, the Minister of Agriculture Adélard Godbout called an

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[18]    Most of the information on the 1935 election comes from Vigod (1986:210-226).

[19]    *The Financial Times of Canada*, November 29 1935.

election for mid-August. Gouin quit the Union nationale one week before the election, leaving Duplessis in control. The Union Nationale swept the election with 77 of the 90 seats.

Less than ten days after the election, Hamel presented Duplessis with an ultimatum concerning the nationalization of the Beauharnois Company. Duplessis rejected it and a furious Hamel left the party, realizing that he had been fooled. Unsurprisingly, the financial circles reacted very favorably:

> «... [this] found reflection in a sudden demand for power stocks on the Montreal Stock Exchange on Thursday forenoon. Montreal Power was a factor advancing 1½ points within the first two hours of trading. The new Premier has given evidence that he does not intend to be dragooned into precipitate action by the more radical elements in the composite party he led into power. This in itself may be looked upon in financial circles as a constructive development.»[20]

That was the beginning of the end for the anti-trust movement. A good indicator that it had run out of steam is the partial election of March 1937 in a Beauce riding. Electricity was the theme of the campaign and the Union Nationale candidate easily won over Hamel's candidate. Duplessis was quoted in *The Financial Times* of March 19, 1937 as having said about the power campaign of the recalcitrant Hamel group:

> «They are blind to everything but electricity. The province faces many problems more urgent than nationalization of electricity.»

## THE COMMISSIONS

The QEC was only active for a year and a half (from December 1935 to June 1937). Its two annual reports show that it spent the first six months setting up and the rest of the time collecting information and undertaking a series of technical studies, in order to, as its President Frigon said in January 1936, «...act only with the fullest knowledge of the facts.»

In addition to general edicts issued to establish its control over new construction or capitalization, the QEC issued quite a large number of specific orders as table 2 shows. Many claims for rate revisions were however postponed until sufficient information on the particular circumstances was found. Moreover, the

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[20]    *The Financial Times of Canada,* August 28 1936.

Commission seems to have been overwhelmed by the number of claims: it was able to settle less than 40 % of them (360 of a total number of 956).

In May 1937, the Duplessis government passed three new bills repealing the 1935 Taschereau Acts and the QEC was replaced by the PEB. It is not easy to see why Duplessis wanted to set up his own regulatory board. A reason given by Bolduc *et al* (1984:115) is that the QEC's jurisdiction conflicted with the existing Public Service Commission (the new name since 1920 of the Public Utility Commission).

The Acts defining the powers and duties of the two commissions were very similar. But the legislation creating the PEB was much more precise. Perhaps the best example is the article on how to fix «just» rates: in the Act creating the QEC [25-26 Geo. V, c.24], it read:

> «All rates charged by a public utility should be established as much in the interests of the consumer than in the interests of the public utility and of its sponsors, and their determination should be in the economic interests of the province, and reflect the particular conditions of the utilization and quality of the said service, as well as providing a just and reasonable revenue to the public utility, taking into account however only the expenses really and equitably inherent to the said public utility.»

The same article in the Act creating the PEB [1 Geo. VI, c.25] was:

> «No distributor of electricity can ask for price higher than the necessary one to meet its expenses and to provide a reasonable return on its physical assets.»

This was followed by two articles defining physical assets and expenses.

In the fall of 1937, the PEB began to operate with five part-time members instead of three full-time. The PEB was able to settle some of the leftover claims (many were abandoned) and a much larger proportion of the ones it received (72 %). Like the QEC before, the PEB spent much time gathering information. It also rejected most of the requests for rate revisions on the basis of insufficient information. As its commissioners recognized, it was more an advisory board than a regulatory one.

From the evidence found in their annual reports, it does not look like neither commissions forced the power companies to reduce their rates. They seem to have believed that moral persuasion would be sufficient. The political economy model helps to explain why the government and the commissions were so lenient. The political struggle was quite unequal. The consumers, numerous but mostly unorganized, were not united because of the large gap between domestic and industrial

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electric rates and were disadvantaged by the inequalities of the electoral map. They were fighting a small and tight group of power companies with large financial means and close relationships with the government.

In the last ten years, the economic theory of regulation has been criticized by a growing literature on a new version of public interest, ideology, as a determinant of legislative behavior.[21] Ideology is clearly quite important in the electricity issue. However, it only reinforces the results of the political market as both premiers Taschereau and Duplessis were strongly pro-big business.

The narration of this section provides qualitative evidence. To supplement it, the rest of the paper formally tests in two different ways the (in)effectiveness of the electricity commissions.

## 2.    STOCK PRICE DATA ANALYSIS

### INTRODUCTION

In this section, we use stock market data to assess the impact of the QEC and the PEB on the four electricity companies at the center of the political debate in the 1930s : the Montreal Light, Heath & Power Consolidated Company (MLHP), the Shawinigan Water & Power Company (SWP), the Quebec Power Company (QPC), and the Southern Canada Power Company (SCP).

The use of stock market data to measure the effect of regulation on firms' performance goes back to Schwert (1981). Binder (1985a), Prager (1992) and Troesken (1995) - the latter in a historical context - are recent applications of variants of the traditional "event studies" methodology to the analysis of regulation. In a related context, Thompson (1993) has employed a stock market event study approach to investigate the impact on investors' expectations of the Canada-United States Free Trade Agreement. We use a combination of a variant of the classical event study methodology -the "dummy variable" approach- and the standard approach to answer the questions: Were the expectations of the investors in the electricity generating firms in Quebec altered by the regulatory changes? And, if so, what were the expected consequences of regulation?

The presence of negative abnormal returns is coherent with expectations of a binding regulatory regime on a monopolistic industry. But the absence of negative

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[21]    For instance, Kau and Rubin (1979) (1982) and Kalt and Zupan (1984). In this model, there is room for policymaker independence or «shirking» because of a slack in the principal-agent relationship between voters and legislators.

returns does not imply that the utilities were competitive. It could also mean that investors did not anticipate what would happen or that they anticipated that the regulators would be captured by the industry.

Consider the contingency table shown below. In only one scenario can we unambiguously expect negative abnormal returns: when a non-competitive industry is effectively (and unexpectedly) being regulated (top left corner). On the other hand, the failure to detect abnormal returns is compatible with many scenarios.

Consider first the possibility that the electricity generation market was contestable (bottom left corner). This would have been the case for example if municipalities had constituted a credible threat to the exercise of monopoly power. The utilities would then not have perceived the intrusion of a regulator as a threat to their "competitive" profits. However logically possible, this scenario is very questionable.

For one thing, the profitability of a "hit and run" strategy, which is essential for potential competition to become a credible threat, is very doubtful. Entry was not ultra free in the electricity generation sector in Quebec. There were substantial sunk costs and formidable political barriers to the entry of municipalities in the sector. Then the reaction times of the municipalities and of the power companies were contrary to what is required by a contestable market: the lead time to enter into the sector and build the capacity was rather long, and that to reduce prices to the level, say, of maginal costs, was very short. Consequently, we tend to think, like Dales (1957), that the utilities were not threatened in a significant manner by the municipalities. Hence, even if we cannot reject a priori, and without further evidence, the hypothesis of a contestable market, we will consider this a remote possibility.

A second possibility is that of disruptive regulation: regulators don't know the real costs and err in establishing rates either far below or far above the appropriate levels. This outcome is suggested in the bottom right corner.

|  | EFFICIENT REGULATORY REGIME | BENIGN REGULATORY REGIME |
|---|---|---|
| **MONOPOLY RENTS EX-ANTE** | REGULATORS WERE SEEN AS A THREAT: NEGATIVE ABNORMAL RETURNS EX-PECTED | REGULATORS WERE INEFFICIENT OR HAD BEEN CAPTURED: NO ABNORMAL RETURNS |
| **CONTESTABLE MARKET EX-ANTE** | REGULATION WAS USE-LESS: NO ABNORMAL RETURNS ARE EXPECTED | REGULATION WAS AT BEST USELESS, AT WORST D Y S F U N C T I O N A L : POSSIBILITY OF ABNOR-MAL RETURNS (+/-) |

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The top right corner corresponds to one of two "benign" or welcome forms of regulation. The first is the familiar "capture" theory, in which regulators become the agents of the industry, not those of the government. Given the relations between the political parties in Quebec and the business community in the thirties, this has to be considered a serious possibility. The other form of benign regulation is regulation that leads to nationalization. If the business community thought that regulation was only the fist step on the way to outright nationalization, and if the business community expected a fair price for the property rights, then the monopoly rents would have been capitalized in the price and no abnormal returns should be expected. The strong anti-communist sentiment prevailing in Canada and in Quebec in the thirties render the likelihood of nationalization dim, but that of a fair compensation great.

To sum up, the detection of negative abnormal returns would constitute some evidence that regulation was expected to curtail the monopoly profits of the utilities. On the other hand, failure to detect such returns should, in our opinion, be interpreted as a sign that regulation was expected to be benign, most probably because it had been captured. The failure to detect any abnormal returns is also consistent, though less likely in our opinion, with the hypothesis of an already competitive and contestable utility sector. It could also result from methodological problems.

The event study methodology rests on two key assumptions: (i) that capital markets are efficient; and, (ii) that one can identify one or many "events" which could not have been predicted and whose effects on stock returns can be attributed to the announcement of the events. According to the Efficient Market Hypothesis, stock prices at any time reflect all available information and adjust instantly to any news. Hence, unanticipated changes about the regulatory environment should result in stock prices adjustments that reflect the investment community's assessment of the consequences of the event. The change in firms' values should correspond to the perceived change in the present value of all future cash flows. In the empirical market model of security prices, the Efficient Market Hypothesis implies that:

$$R_{it} = \alpha + \beta R_{mt} + u_{it} . \tag{1}$$

where $R_{it}$ is the return on security i at time t, $R_{mt}$ is the return on the market portfolio at t, $u_{it}$ is a random term, and $\alpha$ and $\beta$ are parameters.

The principal advantage of event studies over other methodologies to infer the impact of regulation is that stock market data are more reliable than accounting data. In our case, for instance, it has been argued by some historians and observers that the electricity companies were manipulating their "accounting figures" in order to hide the fact that they were reaping monopoly rents (Faucher, 1992; Armstrong and Nelles, 1986; Dales, 1957). Also, security prices are available on a daily or a weekly basis, contrary to accounting data, which provides us with a greater number of observations.

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On the other hand, Binder (1985a:167) notes the following drawbacks. First, it is often difficult to determine <u>when</u> expectations change for many regulatory changes. This is because unlike catastrophes (Suret and Pauchant (1992)) or stock splits, one hardly finds a clear-cut single announcement for the change. For example, the creation of the QEC was preceded by many advanced signals: the Lapointe Commission in 1934, the 1935 electoral campaign. Second, the impact of regulation is more difficult to ascertain theoretically than many events such as the announcement that a major discovery has been made or that a merger is envisioned. This is because we do not know, a priori, whether the firms earned economic rents or how regulation would operate or the likelihood that the regulators could be captured by the industry.

In addition, in our case, we have many firms which could be affected simultaneously by the same regulatory change, thus the need to use a multivariate regression model system of equations. Each equation describes the behavior of one company's security.

## METHODOLOGY

We thus follow Binder (1985a) and Thompson (1993) and specify the following system of four equations in which the $\gamma$'s represent individual firms abnormal returns:

$$R_{it} = \alpha_i + \beta_i R_{mt} + \sum_{d=1}^{K} D_{itd}\, \gamma_{id} + u_{it} \,. \tag{2}$$

The $D_{itd}$ are company -and time- specific dummy variables. For a company i, the dummy equals one on the $d^{th}$ week in event window (of length K) $e$ and zero otherwise. $\beta_i$ is the systematic risk of the firm and $u_{it}$ is a zero-mean random term, assumed normally distributed. Notice that we estimate a $\gamma$ for <u>each</u> event week for <u>each</u> company. The estimated $\gamma$'s represent the abnormal returns to each company. Under the Efficient Market Hypothesis, the estimated $\gamma$'s are an unbiased estimate of the expected value of the impact regulation has on cash flows. The Seemingly Unrelated Regression technique (on SHAZAM 7.0) is used to estimate the system.

Abnormal returns are summed over event window $e$ (we use three-week windows, we come back to this point later) to obtain the cumulative abnormal returns $(CAR_{ie})$:

$$CAR_{ie} = \sum_{d=1}^{K} \gamma_{id} \,. \tag{3}$$

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We will test the significance of individual firms' abnormal returns and the joint hypothesis that cumulative abnormal returns are not different from zero for each event window:

$$H_o : CAR_{ie} = 0 \quad , \quad for \ all \ i \ . \tag{4}$$

Notice that the last hypothesis may be expressed as a linear constraint on the $\gamma$'s. We will also be interested in the behavior of total cumulative abnormal returns (TCAR) for all the firms. So, we will test:

$$H_o : TCAR_e = \sum_{i=1}^{4} CAR_{ie} = 0 \ . \tag{5}$$

When the null hypothesis is rejected for event e, we conduct a classical event study around event window e for the security prices of all firms to determine the time pattern of excess returns. Thus we estimate the market model (1) over a one-year period terminating 12 weeks before the first week of the event window and compute the weekly average abnormal returns $AAR_t$ :

$$AAR_t = (1/4) \sum_{i=1}^{4} \hat{u}_{it} \quad , \quad t = -1, 0, \ldots, 24 \tag{6}$$

where t= -1, 0, 1,... indicates the week before the event, the week of the event, one week after the event, etc. We do not use information in the 12 weeks prior to the event for estimation purpose to avoid any contamination problem. We use the statistic suggested by Chandra and Balachandran (1990) to test the significance of $AAR_t$ :

$$t = AAR_t / \hat{s} (AAR_t) \ , \tag{7}$$

which follows a Student distribution with T-1 degrees of freedom and where the standard error of $AAR_t$ is estimated by:

$$\hat{s} (AAR_t) = [ ( \Sigma AAR_t - \overline{AAR}_t )^2 / (T - 1) ]^{\frac{1}{2}} \tag{8}$$

where $\overline{AAR}_t$ is the mean of $AAR_t$, and T stands for the number of observations in the estimation (generally 52).

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Finally, we compute the cumulative average abnormal returns between t and t+m [CAAR(t,t+m)]:

$$CAAR \; (t,t+m) = \sum_{s=0}^{m} AAR_{t+s} .$$ (9)

Vermaelen (1981) shows that, assuming AARs are i.i.d., the estimated standard error of CAAR(t,t+m) is given by $m^{1/2}$ times the estimated standard error of the abnormal returns. Then, the following t-value can be computed:

$$t = CAAR \; (t,t+m)/\hat{S} \; (CAAR \; (t,t+m) .$$ (10)

## DATA AND EVENTS

We use weekly data on the security prices of the four companies and a composite index of stocks listed at the Montreal Stock Exchange from January 1932 to June 1940, the date at which the PEB was dissolved. We chose the MSE because the securities of the four companies were more heavily traded in Montreal than in Toronto. All the financial data were collected in *The Financial Times* (which was published in Montreal). The market index is an index constructed by the paper and computed every week.

Brown and Warner, in a celebrated article, remarked : "even if a researcher doing an event study has a strong comparative advantage at improving existing methods, a good use of his time is still in reading old issues of the Wall Street Journal to more accurately determine event dates" (1980:249). This remark applies with particular force to our methodology for, as was pointed out, regulatory changes are particularly difficult to trace back to a particular date. Great care was thus taken to canvass the financial press and the historical documents in order to uncover the events which may have contained information on the upcoming regulatory change.

The list and timing of events is presented in Table 3. We selected nine "potentially" significant events spanning just over three years (August 1934 to September 1937). From the creation of the Lapointe Commission of Inquiry to the beginnings of the PEB that replaced the QEC in the fall of 1937.

We then constructed a three-week window around each event. For example, consider the enactment of the PEB. The Board was created by an Act of Parliament on May 20, 1937. For this particular event, three dummies were generated. One took the value one the week preceding May 20, another took the unit value the week of the 20th of May, and the last dummy the week after. The justification for this procedure

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is that depending on the particular day on which the event occured, information may have leaked the week before or, on the other hand, the market may have adjusted only the week after (if the news was announced on a Friday, for instance). There are two exceptions: events A5 and A7, for which two "announcements" overlap. In those cases, the windows were expanded to four weeks.


## RESULTS

We present and summarily discuss three series of analyses: structural stability tests on model (2), the significance of CARs and TCARs, and the significance of AARs and CAARs.


### Structural Stability of the Estimated Model

Empirical market models are usually estimated over a 60-month period. There is no general rule pertaining to the "acceptable length" of the estimation period. Our estimation period spans more than eight years (January 1932 to July 1940). Estimation over 417 weeks appears to stretch to the limit the existence of a stable security price to market relation. We thus performed structural stability tests to determine if the $\alpha$'s and $\beta$'s were shifting over those eight years.

This is easily done by appending to Eq. (2) a number of terms like $a_{is} D_{is}$ and $b_{is} D_{is}$, where $D_{is}$ is a dummy taking the value one from week $s$ onward. Any statistically significant $a_{is}$ or $b_{is}$ means that the event was important enough to change the $\alpha$'s and $\beta$'s. When 417 observations were used, many shifts in $\beta$'s could be detected. We then proceeded to shorten to 292 weeks the observation period by dropping all observation points after March 1938, that is six months after the PEB began its activities.

When the same structural stability tests are performed over this estimation period, only two shifts appear barely statistically significant: an $\alpha$-shift for MLHP around May 20, 1937, the date at which the PEB was created (t-value of 2.01) and a $\beta$-shift for SCP around the general election of 1935 (t-value of 2.48). After a close examination of the pattern of the estimated shift parameters, we re-estimated the system of equations with $\alpha$ and $\beta$-shifts around only those two events. No significant shifts were then detected.

We conclude that the assumption of a stable market relationship over our 292-week period is not to be rejected and proceed to the computation of the CARs and TCARs.

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## CARs and TCARs

Table 4 presents the estimated $\alpha_i$ and $\beta_i$ for the system of estimating equations (2) for the four firms. The estimated parameters and goodness of fit statistics suggest that the estimated empirical market model fits the data rather well for SWP and QPC but less so for MLHP and SCP. The estimated $\beta$'s are inferior to one, as could be expected for utilities. This indicates that the returns to the electric utilities are less volatile than the stock market return (approximated by our index of stocks on the MSE). An analysis of individual firm-event abnormal returns reveals that abnormal returns are detected for the window around the beginning of the activities of the PEB (September 1, 1937) for MHLP, SWP, and QPC; and around the 1935 election day results for MLHP and QPC (weakly significant).

A more robust analysis could be done by computing the CARs and testing the null hypothesis that the sum of abnormal returns for all firms is zero for a given event window. Table 5 sums up the findings. It presents the results of a log-likelihood ratio test on the system of four estimating equations.

Binder (1985b) indicates that such tests may be biased against the null hypothesis when the sample contains 60 (and sometimes more) observations. We use 292 observations and feel confident in the asymptotic properties of the likelihood ratio test. Furthermore, the direction of the bias is known: if we cannot reject $H_0$, we can be very confident that no abnormal returns are present.

The election of 1935 (A5) in which the Liberal Party was nearly ousted from power and which announced the coming sweep of the Unionistes appears to be associated with significant (at the 5% level) abnormal returns. At the 10% level of significance, the beginning of the Lapointe Commission of Inquiry hearings (A2) and the beginning of the PEB operation (A9) could be associated with abnormal returns as well.

What are the signs and dimensions of those returns? Table 6 presents the results. All total cumulative abnormal returns are negative, which is consistent with the historical and theoretical points of view: the hearings meant that regulation would be considered, the election meant the possible end of a regime and the coming of the "left" on the political scene, and the beginning of the rate-regulating process might have suggested that prices would be checked.[22]

The estimated average TCARs suggest that all three events led to a market reaction of -9% to -11% over a three-week window. How much of this effect was to be permanent? How persistent were these expectations? If the regulatory changes

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[22] The last result is a bit confounding: why is it that investors had not fully anticipated that development since an Act of the Legislative Assembly was passed more than three months before.

induced significant changes in the expectations of the investment community, the computed abnormal returns should persist over some time period.

A drop in security prices that would be reversed a few days or weeks later is not a strong indication that the utilities shareholders' wealth has been reduced significantly. For example, in his event study of mergers, Eckbo (1986:252) finds significant cumulative abnormal returns in many cases over a two-year window. As pointed out by Suret and Pauchant (1992), it is virtually impossible to define with precision the time span over which cumulative abnormal returns should be statistically significant to conclude in favor of a permanent effect. On the other hand, it seems plausible that abnormal returns around a window that are reversed by abnormal returns of the opposite sign in the next few weeks suggest an overreaction of the stock market to a news and a subsequent correction.

### AARs and CAARs

In order to answer those questions, we estimated market models (see equation (1)) over a one-year period between weeks -12 and -64, week 0 being the event week for the three events for which the TCARs were significant, for our four firms and computed the average abnormal returns (AAR) and the cumulative abnormal returns for weeks -1 through week +24 (thus through a six-month period).

The results appear in Table 7. Panel A tabulates the average abnormal returns and the cumulative average abnormal returns around the beginnings of the Lapointe Commission's hearings. The only week characterized by significant negative AAR is week 1, the week following the first hearings. Returns dropped unexpectedly by nearly 6%. But this drop is followed by a sequence of positive and negative returns that are not statistically significant. As soon as week 2, cumulative abnormal returns are not statistically different from zero. CAARs are never statistically significant in a 26-week period. This evidence corroborates the historical record, which had it that the power companies did not feel threatened by the setting-up of the Commission (see page 8 supra).

Panel B deals with the 1935 election results and the beginnings of the QEC. Here statistically significant (and negative) cumulative abnormal returns can be observed up to 10 weeks after the election. In week 10, the CAAR is -0.2258, which is important. The CAAR tail off after week 10, but are still around -9% 24 weeks after the event. This clearly shows that the election results created instability and market uncertainty.

But it would be difficult to attribute the significant CAAR after 10 weeks to the prospect of regulation. Much was at stake in the 1935 election, and much was being expected of the incoming election (Taschereau resigned in June 1936). Even if we look at the event *per se*, abnormal returns persisting over only ten weeks are a

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weak indication of a fundamental change in expectations. On the other hand, the absence of significant CAARs after ten weeks along with the unimportance, in terms of abnormal returns, of events A6 and A7, suggest that the power companies soon saw that Taschereau's successor, Maurice Duplessis, did not represent a major threat. Otherwise, one would expect that Duplessis' election and the creation of the PEB would have had an impact.

Finally, the last panel of Table 7 shows that the beginnings of operation of the PEB has had little or no impact of lasting influence. The only statistically significant and negative average abnormal returns (-10%) occur in week 1 and are reversed in week 2 by a statistically significant unexpected abnormal return of 12%. At no point in time between weeks -1 and +24 are CAARs statistically significant. This is clearly not a significant event.

To conclude, only the election of 1935 appears to have had a significant but transitory impact on the returns of the electricity generating companies. None of the regulatory events appears to have changed the expectations of the investment community in a significant manner.

## 3. SOME EX-POST EVIDENCE

In this last section, we provide some further evidence on the impact -or lack of impact- of the regulatory commissions that came and went in the thirties in Quebec. We essentially characterize the evolution of the Quebec/Ontario ratio of revenues per KwH for the 1919-1940 period and check for shifts.

We hypothesize that if regulation curtailed the ability of the Quebec power companies to charge uncompetitive tariffs, it changed the relationship between revenues per KwH in Quebec and Ontario, where utilities continued to be publicly owned. A weak form of regulation would leave utilities operating in Quebec with some rents, but would arguably reduce the gap between rates in the two provinces (unless, of course, Ontario's utilities had become less competitive at the same time - which we assume away since there is no indication, statistical or historical, to the contrary).

Using yearly data from the Dominion Bureau of Statistics (57-202), we regress the ratio of revenues per KwH by commercial (that is non municipally-owned) utilities on an intercept, on a dummy variable for the effect of the 1935 provincial election and the operation of the first regulatory board -the QEC- (1936-1937), on a dummy variable for the operation of the second board -the PEB- (1938-1939), on a trend variable, and (in some cases) on the lagged dependent variable.

The results are summarized in Table 8. In the first regression the intercept and the TREND variable are significant, but there are clear signs of autocorrelations.

Since we are dealing with a time series, and to avoid any unit-root problem, we experimented with an AR(1) correction (Eq. 2) and with the inclusion on the right-hand side of the lagged dependent variable (Eq. 3).

The estimation of the second specification greatly improves the fit -as can be seen by a gain of 40 points in the R-square- and shows no trace of higher-order autocorrelation (we also regressed under an AR(2) hypothesis and obtained almost identical results). Again a negative trend, suggesting that prices in Quebec were slowly converging towards prices in Ontario, and a greater than one intercept are the only statistically significant variables. The regulatory dummies are not individually or jointly significant.

In the third specification, we introduced a lagged dependent variable. As could be expected, the coefficient on the lagged dependent was around 0.8 and very significant. None of the other variables proved significant. We do not report other results obtained under log-linear specification which lead to exactly the same conclusions.

The emerging picture is one in which rates in Quebec had been closing in on those in Ontario over many years. The source of this tendency is most likely to be found in the fundamentals of the two markets: the patterns of demands, the characteristics of users, etc. It is plausible that the commercial and residential sectors in Quebec were increasingly resembling those of Ontario in these years. Regulation does not appear to have introduced any structural shifts in this tendency.

Overall, the ex-post evidence on the observed revenues per KwH between 1919 and 1940 appears to be fully consistent with the evidence on stock price data. The regulation of the power companies, if it had any impact, did not seem to have had an impact on the revenues of the companies.

# CONCLUSION

No matter how we look at it, the two electricity commissions seem to have been ineffective. Both were apparently used by the Quebec government in a «window dressing» exercise aimed to calm down public opinion. This is clear enough from the political economy story. Completely consistent with it, our event study shows that only the November 1935 election appears to have had a significant -although transitory- impact on the returns of the electric companies. Finally, we could not find neither in 1936 nor in 1938 any structural break in the price differential between Quebec and Ontario.

These findings do not come really as a surprise. They confirm Dales' intuition that «the most charitable thing one can say is that [control by regulatory boards] has been minimal.» They also support the conventional wisdom in Quebec historiography that Taschereau and Duplessis were quite lenient towards big business.

More puzzling is how the two provinces of Central Canada could have followed so strikingly different roads in dealing with the electric power industry. One very important factor was undoubtedly the behavior of the Quebec business consumers of electricity who did not join in the demand for public control or ownership, like those of Ontario did, because of the relatively low levels of industrial power rates and the abundance and diversity of power supplies. In their Montreal-Toronto comparison of hydroelectricity in 1900-1930, Armstrong and Nelles (1983) identify three other factors playing against a strong public intervention in Quebec: Montreal had a more competitive industry at the beginnings, a divided municipal government, and there was some friction between the city and the provincial governments.

However, if we look at it within the larger context of North America, Ontario is the deviation from the norm, not Quebec. This is why Armstrong and Nelles (1983:10) write that: «Quebec more closely resembled the states of the U.S. northeast than the provinces to the east (Nova Scotia and New Brunswick) and to the west (Manitoba and Ontario), where public ownership had made significant inroads...»

Still, as time went by, Quebec moved towards the Canadian pattern of public ownership. The first stage was the nationalization of the Montreal Light, Heat and Power in 1944. What did happen to provoke such a dramatic change in the Quebec government hydro policy? Strangely enough, the episode has not been the object of economic analysis. This is next on our research agenda.

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# TABLE 1

## Provincial Election Results
## in Quebec, 1897-1936

| Election Year | Liberal Party | | Conservative Party | |
|---|---|---|---|---|
| | % seats | % votes | % seats | % seats |
| 1897 | 69,0 | 54,3 | 31,0 | 45,7 |
| 1900 | 90,5 | 56,3 | 9,5 | 43,8 |
| 1904 | 92,0 | 67,7 | 8,0 | 25,4 |
| 1908 | 78,3 | 55,3 | 17,5 | 39,9 |
| 1912 | 80,0 | 54,3 | 18,6 | 45,1 |
| 1916 | 92,5 | 64,6 | 7,5 | 35,1 |
| 1919 | 91,2 | 70,0 | 6,0 | 23,7 |
| 1923 | 75,3 | 55,3 | 23,5 | 44,4 |
| 1927 | 88,2 | 62,7 | 11,8 | 36,6 |
| 1931 | 87,7 | 55,6 | 12,3 | 44,2 |
| 1935 | 53,3 | 50,2 | 46,7 | 48,7 |
| 1936 | 15,6 | 41,8 | 84,4 | 57,5 |

**Source:** Quebec Statistical Yearbook (1966-67:159)

**Notes:**     *     In the 1935 election, the Conservative Party is in coalition with the Action Libérale Nationale. From this coalition is formed the Union Nationale led by Maurice Duplessis from 1936 to his death in 1959.

# TABLE 2

## Number, Source and Type of Claims Received
## by the Two Electricity Commissions
## 1935-1939

|  | QEC 1st report | QEC 2nd report | PEB 1st report | PEB 2nd report |
|---|---|---|---|---|
| **Source** | | | | |
| Individuals | 85 | 149 | 47 | 18 |
| Groups | 28 | 189 | 181 | 130 |
| Corporations | 14 | 29 | 8 | 6 |
| Public Utilities | 19 | 29 | 19 | 20 |
| Cities, villages, parishes | 178 | 236 | 55 | 9 |
| **Reason** | | | | |
| For rate revisions | 115 | 174 | 48 | 16 |
| For service extensions | 144 | 331 | 231 | 141 |
| For contract approvals | 28 | 55 | | |
| For municipalisation | 8 | 10 | | |
| Miscellaneous | 11 | 15 | 31 | 26 |
| **TOTAL** | 324 | 632 | 310 | 183 |
| [Number handled] | 52 | 254 | 189 | 168 |

**Sources:**   Quebec Electricity Commission [QEC], first annual report for December 1935 to June 1936; second annual report for July 1936 to June 1937.

Provincial Electricity Board [PEB], first annual report for September 1937 to December 1938; second annual report for January 1939 to October 1939.

# TABLE 3

## List of Events A1-A9

### A Historical Outline of The Regulation
### of Electricity in Quebec in the 1930s

| | | |
|---|---|---|
| **A1** | August 21 1934 | Appointment of a commission to «enquire into the question of electricity in the Province of Quebec» (Lapointe Commission). |
| **A2** | November 5 1934 | Beginnings of the Lapointe Commission's hearings. |
| **A3** | January 21 1935 | Submission of the Lapointe Commission's report. |
| **A4** | May 10 1935 | Ratification of the Act creating the Quebec Electricity Commission (QEC). |
| **A5** | November 25 1935 | Provincial elections: close victory of Taschereau's Liberals over the Duplessis-Gouin coalition (Action libérale nationale-Conservative). |
| | December 2 1935 | And beginnings of the activities of the Electricity Commission (QEC). |
| **A6** | June 11 1936 | Resignation of Premier Taschereau. |
| **A7** | August 15 1936 | Provincial elections: sweeping victory of Duplessis (Union Nationale). |
| | August 24 1936 | And Hamel's leaving the Union Nationale. |
| **A8** | May 20 1937 | Ratification of the Act creating the Provincial Electricity Board (PEB). |
| **A9** | September 1 1937 | Beginnings of the activities of the Electricity Board (PEB). |

# TABLE 4

## Parameter Estimates for the
## Empirical Market Models*

| COMPANY | ALPHA | BETA | $R^2$ |
|---------|-------|------|-------|
| **MLHP** | 0.0003 (0.20) | 0.488 (12.16) | 0.41 |
| **SWP** | 0.002 (0.80) | 0.996 (13.19) | 0.40 |
| **QPC** | 0.003 (0.90) | 0.654 (7.93) | 0.23 |
| **SCP** | 0.002 (0.59) | 0.382 (4.28) | 0.14 |

\*                t-statistics in parentheses

# TABLE 5

## Likelihood Ratio Tests on CARs and TCARs

| A. CAR TESTS | | $-2(L_o - L_1)$ | REJECT $H_o$: |
|---|---|---|---|
| **EVENTS** | | | |
| A1: | August 21 1934 | 3.32 | NO |
| A2: | November 5 1934 | 10.8 | YES* |
| A3: | January 21 1935 | 0.94 | NO |
| A4: | May 10 1935 | 1.68 | NO |
| A5: | November 25 1935 | 7.14 | NO |
| A6: | June 6 1936 | 1.18 | NO |
| A7: | August 15 1936 | 2.22 | NO |
| A8: | May 20 1937 | 1.4 | NO |
| A9: | September 01 1937 | 4.4 | NO |
| **B. TCAR TESTS** | | $-2(L_o - L_1)$ | REJECT $H_o$: |
| **EVENTS** | | | |
| A1: | August 21 1934 | 1.04 | NO |
| A2: | November 5 1934 | 3.46 | YES** |
| A3: | January 21 1935 | 0.1 | NO |
| A4: | May 10 1935 | 0.02 | NO |
| A5: | November 25 1935 | 4.24 | YES* |
| A6: | June 6 1936 | 0.14 | NO |
| A7: | August 15 1936 | 0 | NO |
| A8: | May 20 1937 | 0.04 | NO |
| A9: | September 01 1937 | 3.56 | YES** |

\*      at 0.05 level of confidence
\*\*     at 0.10 level of confidence

# TABLE 6

## Total Cumulative Abnormal Returns and
## Average Total Cumulative Abnormal Returns around three
## Events

| EVENTS | | TCAR | TCAR/4 |
|---|---|---|---|
| DATE | DESCRIPTION | | |
| 05-11-1934 | HEARINGS | -0.355 | -0.089 |
| 25-11-1935 | ELECTION | -0.453 | -0.113 |
| 01-09-1937 | RPE BEGINS | -0.359 | -0.090 |

# TABLE 7

**Average Abnormal Returns and**
**Cumulative Average Abnormal Returns**

| PANEL A) 05 NOVEMBER 1934 | | | | |
|---|---|---|---|---|
| PERIOD | AAR | t | CAAR | t |
| -1 | -0.018293 | -0.6869 | -0.018293 | -0.6869 |
| 0 | -0.000142 | -0.0053 | -0.184362 | -0.4895 |
| 1 | -0.058317 | -2.1900 | -0.076754 | -1.6641 |
| 2 | 0.033005 | 1.2395 | -0.043748 | -0.8214 |
| 3 | 0.001732 | 0.1518 | -0.042016 | -0.7056 |
| 4 | 0.013002 | 0.4883 | -0.029013 | -0.4448 |
| 5 | 0.015654 | 0.5879 | -0.013358 | -0.1896 |
| 10 | 0.046303 | 1.7389 | 0.119950 | 1.3000 |
| 15 | -0.016952 | -0.6366 | 0.069147 | 0.6298 |
| 20 | 0.002913 | 0.1094 | 0.058496 | 0.4683 |
| 24 | -0.020000 | -0.7511 | 0.024093 | 0.1774 |

| PANEL B) 25 NOVEMBER 1935 | | | | |
|---|---|---|---|---|
| PERIOD | AAR | t | CAAR | t |
| -1 | -0.020872 | -0.6666 | -0.020872 | -0.6666 |
| 0 | -0.048388 | -1.5454 | -0.069260 | -1.5641 |
| 1 | -0.051938 | -1.6587 | -0.121199 | -2.2348 |
| 2 | 0.022087 | 0.7054 | -0.099111 | -1.5827 |
| 3 | 0.012227 | 0.3905 | -0.086884 | -1.2409 |
| 4 | -0.083680 | -2.6725 | -0.170565 | -2.2239 |
| 5 | 0.362000 | 1.1561 | -0.134364 | -1.6219 |
| 10 | -0.008183 | -0.2613 | -0.225834 | -2.0821 |
| 15 | 0.013573 | 0.4334 | -0.180485 | -1.3980 |
| 20 | 0.037102 | 1.1849 | -0.145879 | -0.9933 |
| 24 | -0.009104 | -0.2907 | -0.139701 | -0.8750 |

| PANEL C) 01 SEPTEMBER 1937 | | | | |
|---|---|---|---|---|
| PERIOD | AAR | t | CAAR | t |
| -1 | 0.009832 | 0.2804 | 0.009832 | 0.2804 |
| 0 | 0.007398 | 0.2110 | 0.017230 | 0.3475 |
| 1 | -0.098775 | -2.8177 | -0.081544 | -1.3430 |
| 2 | 0.123129 | 3.5125 | 0.041585 | 0.5931 |
| 3 | -0.028301 | -0.8073 | 0.013284 | 0.1694 |
| 4 | 0.024446 | 0.6973 | 0.037730 | 0.4394 |
| 5 | -0.006039 | -0.1722 | 0.031690 | 0.3416 |
| 10 | -0.003057 | -0.0872 | 0.043821 | 0.3608 |
| 15 | -0.027586 | -0.7869 | 0.055452 | 0.3836 |
| 20 | 0.032947 | 0.9399 | 0.092857 | 0.5647 |
| 24 | 0.009561 | 0.2727 | 0.088588 | 0.4956 |

# TABLE 8

## Regression Results for the Quebec/Ontario
## Ratio of Revenues per Kwh Equation[*]

|  | (1) | (2) | (3) |
|---|---|---|---|
| LAGGED DEPENDENT VARIABLE | - | - | 0.83 (6.95) |
| DUMMY 1936-1937 | -0.035 (-0.22) | -0.109 (-1.18) | -0.001 (-0.17) |
| DUMMY 1938-1940 | 0.115 (0.86) | -0.056 (-0.60) | 0.058 (0.77) |
| TREND | -0.026 (-4.5) | -0.025 (-2.24) | -0.003 (-0.69) |
| INTERCEPT | 1.288 (15.9) | 1.332 (6.77) | 0.176 (1.07) |
| RHO | - | 0.86 (8.55) | - |
| D.W/D-H | 0.36 | 1.70 | 1.65 |
| $R^2$ | 0.45 | 0.84 | 0.81 |

\*        t-statistics in parentheses.

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# FIGURE 1

## Average revenue (per kwh) in real terms
## for residential service, 1930-1944
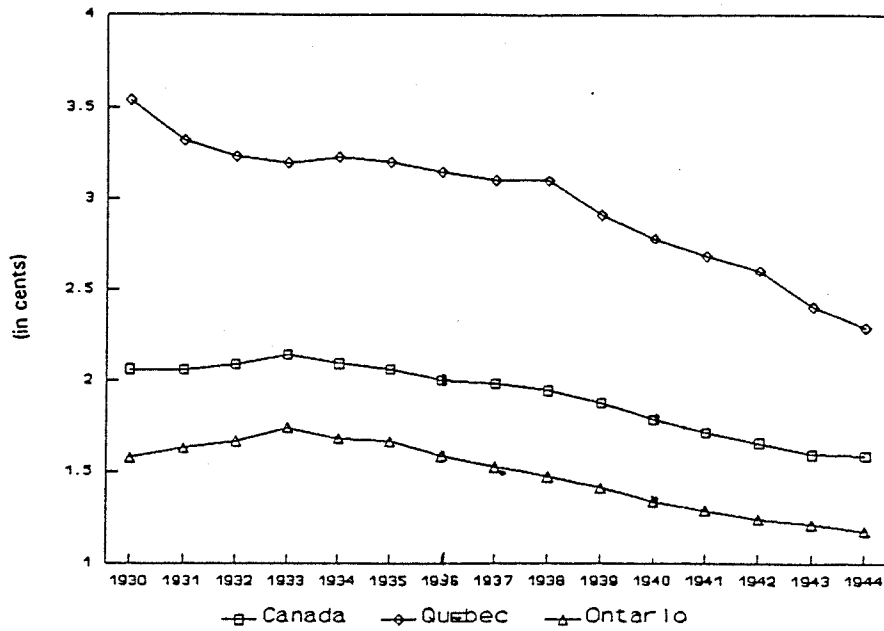


**Source:** Dominion Bureau of Statistics (57-202).

# FIGURE 2

## Average revenue (per kwh) in real terms
## for commercial lighting, 1930-1944
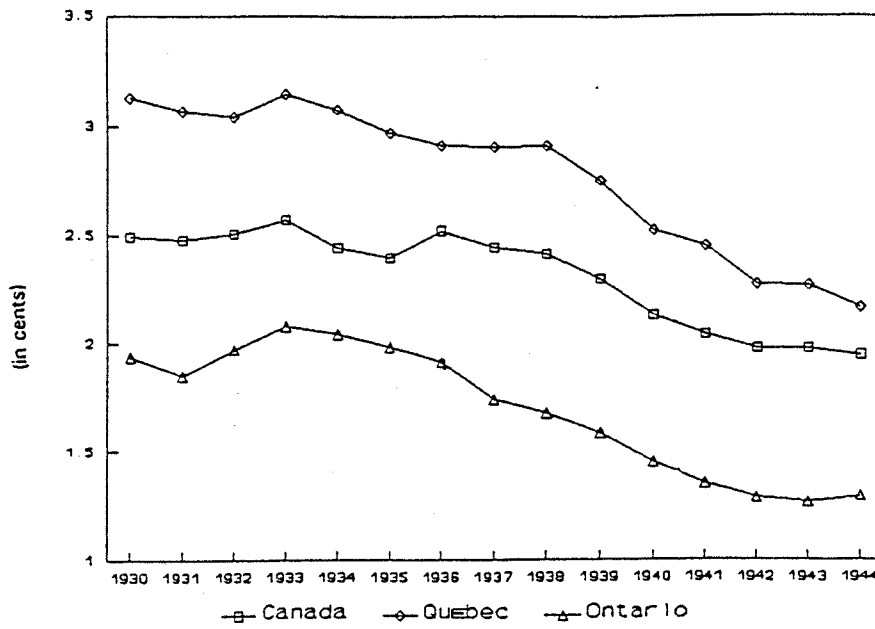


**Source:** Dominion Bureau of Statistics (57-202).

# FIGURE 3

## Main Transmission Lines in Quebec, c. 1940
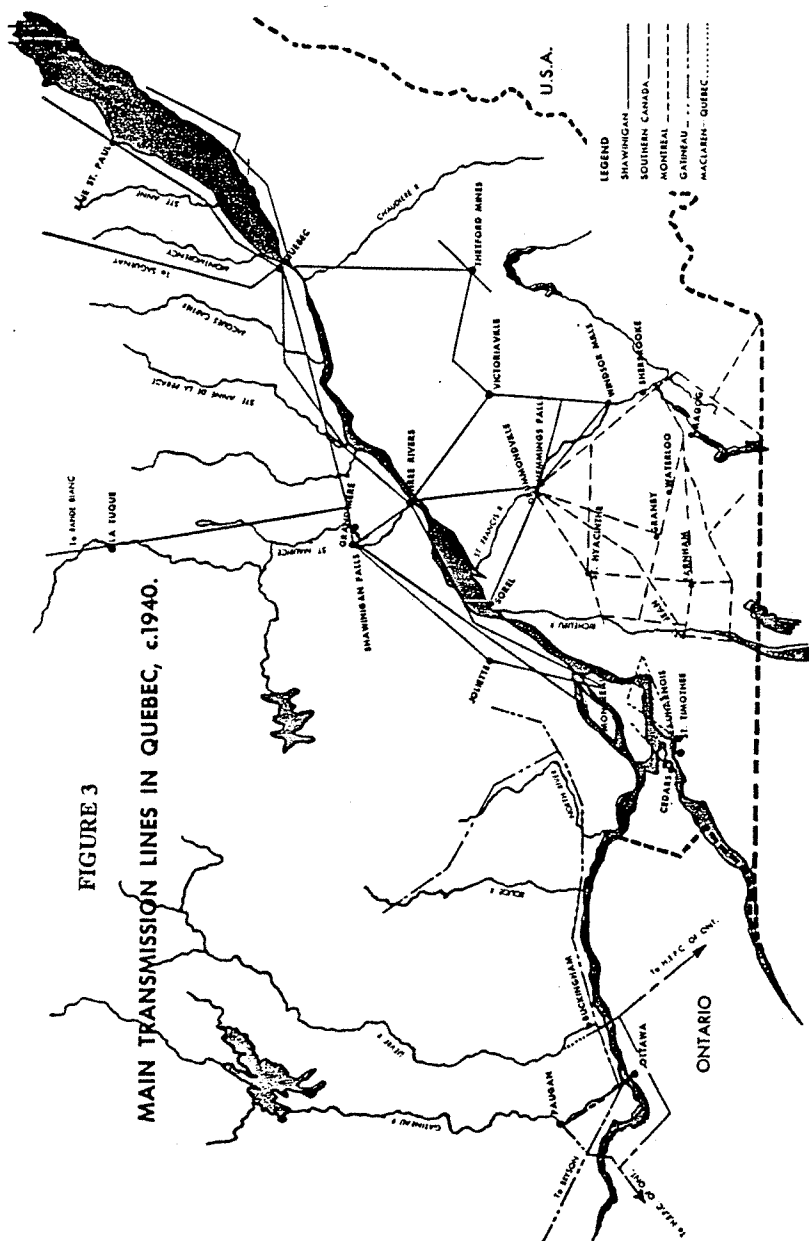


FIGURE 3

MAIN TRANSMISSION LINES IN QUEBEC, c.1940.

Source:    Dales, J. (1957) *Hydroelectricity and Industrial Development: Quebec 1898-1940.* Harvard University Press, p. 18.

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