Public Choice (2022) 193:35–61
https://doi.org/10.1007/s11127-022-00966-6

Regulatory capture and the dynamics of interventionism: the case of power utilities in Quebec and Ontario to 1944

Germain Belzile[1] · **Rosolino A. Candela**[1] · **Vincent Geloso**[2]

Received: 16 February 2022 / Accepted: 23 February 2022 / Published online: 26 April 2022

Abstract
To what extent are the outcomes of economic regulation intended and desired by its proponents? To address that question, we combine Stigler's theory of regulatory capture with the Austrian theory of the dynamics of interventionism. We reframe Stigler's theory of regulatory capture as an analytical starting point for a dynamic theory of interventionism, one accounting for the unintended consequences that emerge from regulation, even if the origins of such regulation were designed to benefit a particular industry or special interest group. Therefore, we argue that regulatory capture is not necessarily inconsistent with a dynamic theory of intervention. We illustrate our theoretical point by applying it to an econometric case study of electric utility regulation and its eventual nationalization in both Ontario and Quebec in the early twentieth century, resulting in unintended and undesirable consequences that deviated from the interests of the regulation's intended beneficiaries.

Keywords George Stigler · Regulatory capture · Electric utilities · Nationalization

JEL Classification B51 · H12 · P52

1 Introduction

To what extent are the outcomes of economic regulation intended and desired by its proponents? In this paper, we address that question by considering the process that led to the regulation and subsequent nationalization of electric utilities in the Canadian province of Quebec during the 1930s and 1940s.

Germain Belzile—Deceased.

✉ Rosolino A. Candela
rcandela@mercatus.gmu.edu

Germain Belzile
Germain.Belzile@hec.ca

Vincent Geloso
VincentGeloso@hotmail.com

[1] Mercatus Center at George Mason University, PPE 1A1, Fairfax, VA 22030, USA

[2] Department of Economics, George Mason University, Fairfax, VA 22030, USA

Since its beginning in the late nineteenth century, Quebec's electrical industry offered some of the lowest prices for residential electricity in North America, and even lower prices for industrial customers, owing to provincial geography conferring large cost advantages in the generation of hydroelectricity. Moreover, prior to 1928, the few municipal governments involved in the distribution of electricity privatized their power delivery services and few regulations applied to private firms. Quebec was exceptional because the trend in the rest of Canada was toward greater state involvement (both in terms of regulation and state ownership). Yet, Quebec's government changed rapidly starting with the adoption of important pricing regulations in the 1930s and nationalization in the 1940s. We argue that the rapid policy change in Quebec was the unintended and unforeseeable result of the nationalization of electric utilities—and distribution of electricity at cost—in the neighboring province of Ontario, which began in 1906 and was completed in the early 1920s.

Our work offers two contributions. The first is to the economic history of electric utilities and the economic history of Canada. Ontario's publicly owned electric utility was the first in the world to provide electricity at cost, motivating advocates of nationalization in both the rest of Canada and in the United States. Yet, those events have been understudied. Most of the literature on the economic history of electric utilities has focused on the United States in general and the Tennessee Valley Authority in particular. Canada's pioneering forays into publicly owned electrical utilities largely are ignored. Except for the work of Dupré and Patry (1998) and Geloso and Belzile (2018), very little of the Canadian economic history literature is "economic", most of it falling under the rubric of political and social history (Bellavance, 2003; Bernier, 2009; Dorion, 2000; Faucher, 1992; Giguère, 2018; Hogue et al., 1979). Our work thus fills an economic history vacuum.

The second contribution speaks to the theoretical framework we adopt. Relying on the insight of Thomas and Thomas (2021) regarding residual claimancy in regulatory decision-making, we combine two distinct theories of regulation and its effects: the theory of regulatory capture developed by George Stigler (1971a, 1971b; also see Peltzman, 1976) and the theory of the dynamics of interventionism developed by scholars from the Austrian school of economics (Mises [1929] 1976, [1940] 1988, [1950] 2008, [1949] 1966; Hayek, 1944; Kirzner, 1978; Ikeda, 1997, 2005, 2015). By pointing out the unappreciated complementarities between the two theories, we argue that applying them jointly allows us to study the long-term ramifications of regulatory capture and its unforeseen effects.[1]

The complementarities stem from the fact that both theories consider different time horizons. When describing his work on regulatory capture, George Stigler (1971b, p. 268, emphasis added) claimed that "[a]ll legislation with important economic effects is *the calculated achievement* of economic classes" based on their self-interest. In that view, not only are the regulations desired by certain actors, but also their consequences are fully understood and appreciated by those actors. That conclusion stands in marked contrast to the proponents of the theory of the dynamics of interventionism, which postulates that the long-term effects of a policy are unforeseeable and unpredictable. Regulations, the proponents argue, create distortions that redirect entrepreneurial efforts to less productive (or even superfluous) domains. Because such redirection can yield unclear outcomes in the long run, it may therefore be possible for the regulators and the regulated to be aware of the immediate effects but not the long-run effects. While the two theories seem to clash,

[1] Considering the time dimensions of regulation is an additional side benefit of our analysis in that we are adding to the small, but burgeoning empirical literature on the dynamics of interventionism (Benson, 2002; Holcombe, 2002; Czeglédi, 2014; Boettke et al., forthcoming; Candela & Geloso, 2020; Geloso, 2020a, b).

we argue that they differ only in the time horizons considered. They can be seen as complements: regulatory capture theory explains the origins of regulations (and its immediate effects), while the dynamics of interventionism approach focuses on the long-run evolution from their points of departure. It is entirely possible, we argue, for a policy to be desired and its immediate effects understood by all parties involved while also having unforeseeable long-run consequences.

We proceed as follows. In Sect. 2, we provide a theoretical overview that explores the potential for reconcilability between Stigler's theory of economic regulation and the Austrian account of the dynamics of interventionism. Section 3 illustrates the implications of our theoretical analysis by applying it to the history of the regulation of electricity in Ontario, and later Quebec. Section 4 builds on our qualitative analysis of electricity regulation in Ontario and Quebec by providing an overview of our econometric model, in which we explain our data and methodology. Section 5 discusses our results. Section 6 concludes with some implications for future research.

2 Complementarities between the dynamics of interventionism and regulatory capture

The causes and consequences of economic regulation can be categorized into two theories. The "public-interest theory" of economic regulation postulates that it originates in the benevolence of public officials, with the intention of correcting a particular undesirable outcome in the market process that would be observed in the absence of such intervention. In that view, the goal of regulatory policy is to create an outcome that benefits the public at large. Peter Aranson (1990) has noted two essential problems inherent in the public-interest theory of regulation. First, "its form is conditionally normative, and not necessarily positive (explanatory and predictive" (Aranson, 1990, p. 259). Secondly, a public-interest theory of regulation assumes away the knowledge problem that government intervention must overcome when it attempts to correct an alleged market failure. The result, according to Aranson, is that the knowledge problem not only remains but also that "government regulation merely removes it to a different forum" (Aranson, 1990, p. 260). Aranson's insights draw directly from Ludwig von Mises (1944) and Hayek (1945), and applies directly to the theoretical account of the dynamics of interventionism, developed in the Austrian tradition by Ludwig von Mises ([1929] 1976, [1940] 1988, [1950] 2008, [1949] 1966), F.A. Hayek (1944), Israel Kirzner (1978), and Sanford Ikeda (1997, 2005, 2015), which illustrates how publicly interested regulators, however well-meaning, unleash an unintended dynamic process that they themselves will not be able to control and eventually will find undesirable.

The fundamental basis for understanding the emergence of such unintended consequences is the ubiquity of entrepreneurial profit (and loss) that sets the market process in perpetual motion towards equilibrium. The competitive market process consists of incessant discovery of profits and the avoidance of losses by entrepreneurs within a context of private property and freedom of contract under the rule of law. The nature of economic regulation, therefore, never can eliminate such profit opportunities altogether. Rather, such intervention can change only the *manifestation* of such profit opportunities (Kirzner, 1978, p. 12; Wagner, 1989, p. 56). As a result, intervention redirects entrepreneurial efforts into unproductive activities such as rent seeking, regulatory avoidance, and industry exit, in accordance with the changing incentive structures.

Why is it, then, that regulators cannot foresee the long-run consequences of regulatory redirection? The answer lies in the assignment of property rights. Because they are not residual claimants to the profits or losses of their decision-making, regulators are precluded from accessing the knowledge necessary to anticipate the long-run consequences of their actions (Thomas & Thomas, 2021). Thus, even with the best intentions, regulators cannot anticipate how entrepreneurs will react to the new circumstances created by regulatory interventions, since regulators operate outside the context of knowledge that they unintendedly spawn.[2]

In the face of unintended consequences, regulators are left with two choices. They can admit failure and remove the existing regulation to mitigate its unintended effects. Or, if they assume that the unregulated outcome would be worse, regulators can introduce additional regulations to mitigate the unintended effects of prior interventions. The latter choice generates a destabilizing dynamic process that calls for more interventions and may slow down economic growth (Czeglédi, 2014).

The theory of regulatory capture differs dramatically from the theory of the dynamics of intervention. The difference results from the fact that George Stigler, the main proponent of the capture model, dropped the assumption that regulation is motivated benevolently to benefit the public in general. "As a rule, regulation is acquired by the industry and is designed and operated primarily for its benefit" (Stigler, 1971a, p. 3). That conclusion has implications that create two important differences with the dynamics of interventionism. First, Stigler (1971a, p. 4) assumes "that political systems are rationally devised and rationally employed, which is to say that they are appropriate instruments for the fulfillment of desires of members of the society." As such, if every society that is purposive "seeks to do efficiently whatever it seeks to do" (Stigler, 1975b, p. 286), then policy persistence reflects efficient outcomes. Second, the "announced goals of a policy are sometimes unrelated or perversely related to its actual effects, and the *truly intended effects should be deduced from the actual effects*" (Stigler, 1975a, p. 140; emphasis in original), implying not only that the causes, but also the consequences of regulation were intended.[3] Thus, if regulatory rules remain in place, their actual effects cannot be regarded as unintended but must be the deliberate results of rational actors optimizing their goals. Economic regulation then is said to be "efficient" based upon the logic of collective action (Olson 1965). The presumption that the overall economy benefits from eliminating economic regulation, such as the abolition of import tariffs, price controls, occupational licensing, or other measures that benefit special interest groups, according to Stigler, would imply that the economist has

[2] The consequences can be illustrated in myriad ways, one of the most potent of which is provided by Lucas and Fuller (2018) in their study of "cobra effects", a term coined from anecdotes of a regulatory policy that the British colonial authorities in India. The policy was implemented with the benevolent motive of eliminating venomous cobras. By offering bounties for cobra tails, the unintended result of the regulation was to increase the cobra population. By commodifying cobra tails, Britain's regulatory officials introduced a profit opportunity from raising cobras for bounties. Whereas entrepreneurs learned to identify profits and losses arising form that intervention, regulators operating outside the market context could not anticipate all of regulation's effects. Other examples include the effect of the US war on drugs (Redford & Powell, 2016), airline fare regulation (Douglas & Miller, 1974), anti-money laundering and demonetization rules in India (Rajagopalan, 2020), flour regulation in nineteenth century Canada (Geloso, 2020b), land-use planning in Britain (Pennington, 2005) and the nationalization of lighthouses in nineteenth century Britain (Candela & Geloso, 2020). Examples can be found in which a series of unintended consequences forced deregulation (Benson, 2002; Hirshleifer, Glazer & Hirshleifer, 2005, p. 265).

[3] As Stigler (1975a, p. x) states bluntly, to "say that such policies are mistaken is to say that one cannot explain them.".

not properly identified all of the costs of regulatory reform. Had it been cheaper for policymakers to require taxpayers to compensate interest groups for the lost capitalized value of the rents they derive from an existing policy, it would have been efficient to have done so already (see Stigler, 1992; Peltzman, 1976; McCormick et al., 1984; Shughart, 1999).

At first glance, the theory of the dynamics of interventionism and Stigler's capture theory of economic regulation seem to be mutually exclusive. The dynamics of interventionism postulates that regulations have unforeseeable and inefficient outcomes. Stigler's theory of regulatory capture implies that regulations have predictable and efficient outcomes. However, first glances are deceiving: both theories simply adopt differing time horizons over which a regulation's effects properly can be gauged. In terms of generating policy interventions in the first place, the theory of regulatory capture is an effective first step. After all, if regulators and industry act, it must be because they stand to gain immediately. They desire the proximate effects and a regulation's genesis thus is easy to explain. However, if regulators are not residual claimants to their decision-making, "structural ignorance" (Boettke et al., 2007) prevails in the sense that regulators are precluded from accessing the contextual knowledge necessary to respond to the long-run ramifications of regulation. As such, proponents of intervention may seek regulations for their own private interests, as Stigler would argue. However, the context-specific knowledge required to anticipate the long-run consequences of such regulation does not exist. Thus, the unintended consequences that arise from structural ignorance "are the key to understanding discrepancies between (open or concealed) intentions and actual outcomes" (Ikeda, 2005, p. 48).[4]

Reframing Stigler's theory of regulatory capture thus suggests that it can serve as an analytical point of departure for a series of regulatory dynamics, rather than as an endpoint for explaining an equilibrium state of regulatory affairs. Because it takes disequilibrium as its analytical starting point, the Austrian theory of the dynamics of interventionism is ideally suited for explaining how regulations generate unintended consequences. By emphasizing disequilibrium, the theory predicts that the regulatory process is unstable *over time* owing to the incessant pursuit of rents, which are created by regulatory discretion in the first place (i.e., the redirection of entrepreneurial efforts) and the lack of residual claimancy for regulatory decision-makers. As a cumulative destabilizing process (Czeglédi, 2014; Geloso, 2020b), the only logical endpoints are additional regulations or outright deregulation. That conclusion is illustrated well by Bruce Benson (2002, p. 249) in the context of the Interstate Commerce Commission's regulation of interstate trucking:

> ICC regulation of interstate trucking "survived" for over 40 years, suggesting that it must have been "efficient" in the political sense that the Chicago School stresses. However, it did so only through a[n] evolving process of "more regulation" as additional statutes were added, and the ICC's regulatory policies became increasingly complex. The fact is that the system really never achieved an equilibrium in any meaningful sense, as entrepreneurial discoveries in the competition for rents and

[4] A corollary is that the theory of the dynamics of interventionism can relax its assumption of benevolence on the part of regulators. That assumption, adopted for the analytical purpose of preserving value-free economic analysis, does not alter the conclusion. Indeed, the key component of the Austrian theory of the dynamics of interventionism is the problem of structural ignorance (i.e., the lack of residual claimancy in regulatory decision-making). Adding or removing the benevolence assumption entails "little or no loss of methodological integrity" (Ikeda 2005, p. 49).

efforts to reduce the dissipation of wealth produced continuous organizational, technological, and political changes.

As the passage above suggests, we are not the first to notice the potential complementarity between the two theories. An emphasis on the regulatory process through time naturally accepts departures *from* equilibrium at some point and lends itself to the idea that the regulation inherently will be unstable, resulting either in spirals of additional regulation or deregulation (Benson, 2002, p. 238). In fact, Stigler himself, at least implicitly, provides a *potential* reason for inserting a dynamic process of intervention into a theory of regulation, beginning with a story of capture that we describe in the next section.[5] Stigler (1971a, 1971b, p. 10) argues that when "an industry receives a grant of power from the state, the benefit to the industry will fall short of the damage to the rest of community." Given that the industry still is part of the community, the "damage" to which Stigler refers also must include the cost of foregoing profit opportunities that are created as unintended by-products of regulatory capture, which will trigger unwanted rent dissipation by other individuals competing for such rents.

Our synthesis of the two theories suggests that the origins of regulation may be found in catering to the interests of identifiable groups, the effect of which, in the short term, will be predictable and desired. However, because regulators are not residual claimants, longer-run consequences cannot be anticipated fully. The redirection of entrepreneurial efforts results from the fact that regulation will create rents that would not exist otherwise and, what is more important, are not intended to benefit the interest group that had captured regulation in the first place. From the standpoint of the intended beneficiary of regulation, such an outcome is regarded as undesirable and therefore inefficient. However, the outcomes conceptually are predictable: more regulations are added to deal with the earlier "unintended" effects of regulations.

3 Electricity nationalization in Ontario and spillovers in Quebec

The synthesis of the theories of regulatory capture and the dynamics of interventionism can be illustrated with the case of Quebec's electrical industry during the first half of the twentieth century. The claim we put forward is that the nationalization of electricity in one Canadian province (Ontario) laid the foundation for the nationalization of electrical utilities in another province (Quebec), where private provision previously had delivered consistently better service than all other private North American providers. Nationalization in Ontario clearly was desired by regulators and by the electricity industry's providers, in line with the theory of regulatory capture. However, nationalization produced unforeseen consequences in Quebec's market for electricity by causing upward pressure on residential rates. That effect led, at first, to the regulation of an industry that largely had been unregulated in Quebec. Later it led to the nationalization of the industry.

To understand the process, a brief historical overview in two steps is necessary. First, we must understand the characteristics of Quebec's electrical industry before regulation

[5] Perhaps the most overlap between Stigler's theory of economic regulation and the Austrian tradition of political economy has been identified by H. E. Frech III (1973), in his review of Murray Rothbard's *Power and Market* (1970), entitled "The Public Choice Theory of Murray N. Rothbard, a Modern Anarchist". As Frech (1973, p. 148) states, Rothbard's "view of economic regulation as a method of using the power of the State to exclude competitors anticipates Stigler's theory of regulation (1971a)".

(in 1935) and nationalization (in 1944), along with the frequently iterated views regarding the regulatory changes. Second, we must understand how the process of nationalization in Ontario affected Quebec's electricity market in ways that made regulation and nationalization more likely.

3.1 The drive for nationalization in Quebec

Quebec, the largest French-speaking Catholic province of Canada, always enjoyed a comparative advantage in producing hydroelectricity for three reasons. First, it possesses a dense array of wide rivers with flows sufficiently robust to generate large quantities of electrical power. Second, the gigantic forests of the northern parts of Quebec (where most of the rivers are situated) act as "storage for the heavy snowfall, which is thus released gradually in the spring", keeping the flows of rivers stable and, in turn, making power generation uniform and cheap year-round (Dales, 1957, p. 28). Third, many of the suitable power-generation sites are not geographically concentrated and tend to be located close to large urban centers, meaning that most cities had access to a cheap hydropower source nearby.[6]

Quebec was exceptional not only in terms of its "endowments" but also its policy environment. While municipal ownership of utilities was trending upward in the United States and Ontario during the 1910s and 1920s, privatization was the norm in Quebec: close to a dozen cities operated their own utilities and opted to privatize (Dales, 1957, p. 32; Bernier, 2009). The general trend towards privatization was matched by an exceptionally unregulated environment. Overall, the claim that Quebec's industry was regulated lightly was accepted by most observers. Neither price controls, nor quality of service or rate-of-return regulations, were in place (Murray & Flood, 1922). Exclusive franchises were granted, mostly for long terms, which limited hold-up problems from municipal authorities (Geloso & Belzile, 2018). State involvement was limited to cataloging hydraulic resource inventories (Bellavance et al., 1999). As such, state policy towards the industry has been described as a "policy of inaction" (Bellavance et al., 1999, p. 1) prior to the 1930s. On the eve of the Great Depression, the few large electricity-generating companies dominated regional markets.

The province's hydroelectric potential was established early on because supply costs were "considerably lower than in the northeastern United States, and have also, probably been somewhat lower than in Ontario" (Dales, 1957, p. 27). Figure 1 reproduces recent and systematic evidence assembled by Geloso and Belzile (2018) on electricity prices for residential customers between 1923 and 1925. The green, red and navy-blue bars represent rates in Quebec's cities, the rest of Canada and the United States, respectively. As can be seen, cities in Quebec—including the populous metropolis of Montreal—had very low prices from a North American perspective.[7] Geloso and Belzile (2018, p. 114) extend that dataset to rates for commercial and industrial customers, which were, on average, 36% lower than in Ontario. Moreover, US electricity prices were higher than those in Ontario,

[6] The City of Montreal alone represented 41% of total Canadian industrial employment during the 1950s. Adding the neighboring towns on the island of Montreal itself brings the percentage well above 50%. In contrast, Ontario's largest city (Toronto) accounted only for 21% of total national industrial employment at the same time (Raynauld, 1961, p. 241).

[7] As we will see below, by including the reported rates for cities in Ontario (shown in red), the figure understates the low *market* price nature of Quebec's electrical market.

meaning that Quebec clearly was offering the lowest industrial rates in all of North America (United States Congress, 1934, p. 456).

After leaving the industry largely unregulated for nearly four decades, the provincial government created a regulatory board in 1935 to review residential electricity rates. A mere nine years later, in 1944, the province's largest electrical producer—Montreal Light Heat and Power—was nationalized and folded into a crown corporation known as Hydro-Quebec. To explain that rapid reversal, historians tend to highlight two dissonant observations about electricity prices. The first is that heavy concentration of industry and population in urban areas meant that large cities were the targets of most electrification investments.[8] Rural communities and smaller cities complained that electrification was slow in coming to them (Dorion, 2000). When the Great Depression hit, those areas provided much of the political base for proposals that sought to regulate electrical utilities more aggressively (or even nationalize them). Secondly, Quebec's private electrical utilities engaged in very heavy-handed price discrimination. Industrial clients, such as producers of aluminum, paper, and pulp, were able to co-generate electricity for their own consumption (Gelly, 2003, 2010).[9] Their more elastic demands for power, relative to residential customers, meant that industrial clients were offered quite large price discounts—especially on volume (Geloso & Belzile, 2018). Such price discrimination attracted hostility from residential and rural consumers.

However, the explanations just summarized clearly are incomplete. Complaints by residential and rural customer groups were voiced as early as 1900, just as was true in the rest of Canada or the United States. Yet, changes in the direction desired by them only began three decades later and well after they had been implemented in the United States and the rest of Canada (Neufeld, 2016; Bernier, 2009; Boutet, 1999; Bellavance et al., 1999). Why such a long delay?

Geloso and Belzile (2018) proposed a complementary explanation that offers a possible answer. Noticing that many scholars invoked higher prices in Quebec than in Ontario to explain the success of calls for regulation, Geloso and Belzile realized that Ontario played a subtle role in shaping narratives *in* Quebec. They emphasized that the comparisons were biased by the fact that Ontario was a strange benchmark because it had, at the turn of the twentieth century, moved gradually in the direction of public ownership (see Sect. 3.2). By the early 1920s, the entire electrical generation business of Ontario was state-owned and geared to providing electricity at marginal cost. The effect was, as Geloso and Belzile noted, that Ontarians' power consumption was being subsidized. The difference between demand and supply had to be made up by undertaking further investments in electricity generation—which would be financed by taxes—or by purchases from private companies in other provinces—which likewise would be financed by taxpayers. As a result, the

[8] It should be noted that nationalization occurred during World War II. However, historians assign little to no importance to war considerations in the decision to nationalize the industry (Bellavance, 2003; Giguère, 2018). The historians emphasize that impetus for nationalization had more to do with consumer discontent.

[9] For the United States, Neufeld (2016, p. 21) points out that self-generation "initially dominated the demand for electrical equipment and remained important for decades." And while large industrial manufacturers would have consumed the lion's share of self-generated energy, "hotels and retailers", "transit companies" and "wealthy individuals" also engaged in self-generation. Little evidence exists that those electrical utilities charged "standby fees" for self-generating industrial clients. The only sources available (Gelly, 2003, 2010) do not go into details.

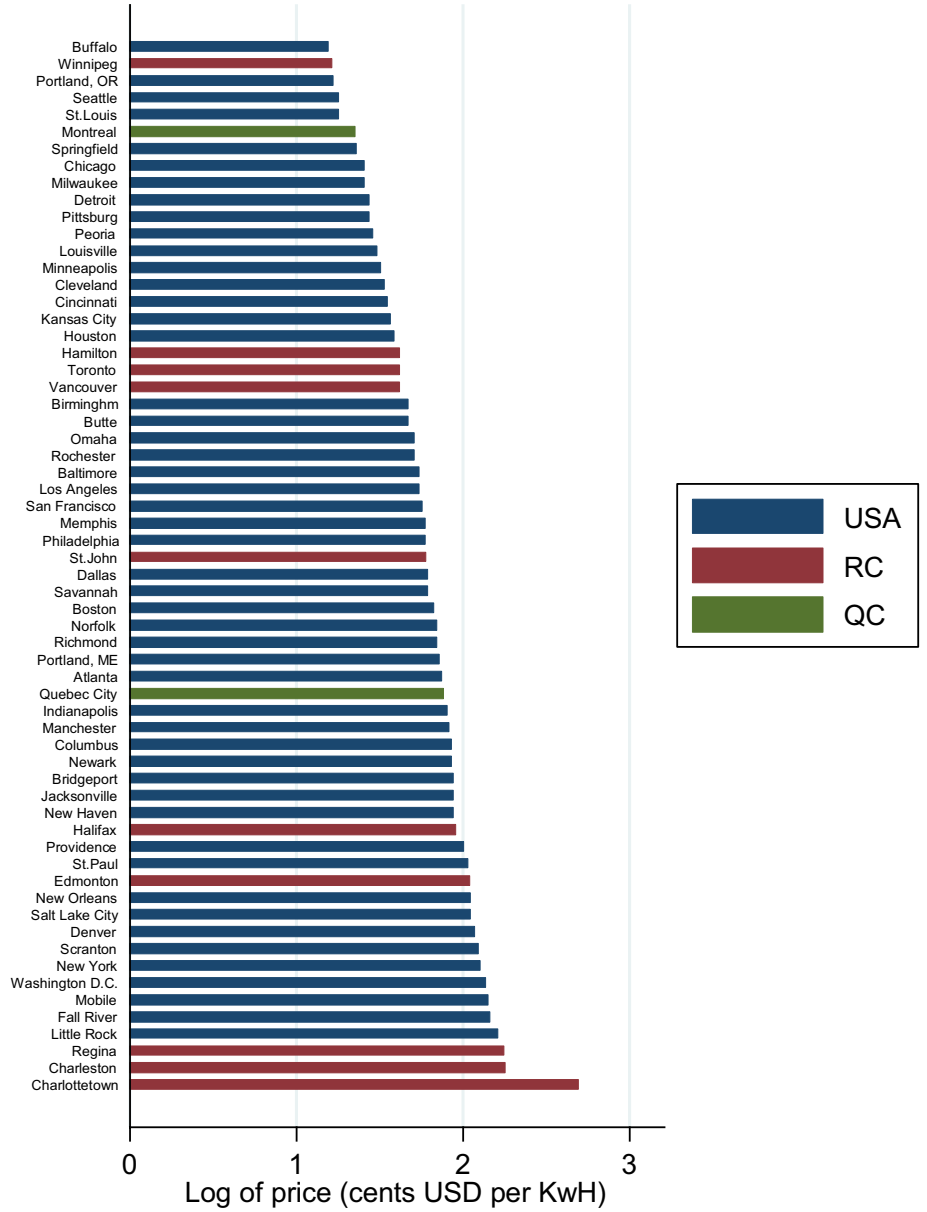

Fig. 1 Residential electricity rates (US cents per kwh), 1923–1925. Source: Data obtained from Geloso and Belzile (2018, p. 113)

electrical rates paid by consumers are poor measures of the "cost" of electricity because Ontarians paid for power in both taxes *and* rates.[10]

The foregoing explanation has a powerful implication that Geloso and Belzile (2018) mentioned but largely left unexplored and is tied directly to our theoretical framework in Sect. 2. If the subsidization of electrical consumption could not be met by production sites in Ontario, it would have to be met by sites elsewhere—including the low-cost and geographically close province of Quebec. As such, some of Ontario's excess demand essentially "moved" to the Quebec market, causing price increases there. In turn, those price increases later fueled enough political ire to motivate regulation and nationalization in Quebec, supplying the "dynamics of intervention" element of our story. Nationalization in Ontario destabilized markets in Quebec, ultimately leading to regulation and nationalization there. Thus, even a private sector with important natural cost advantages like Quebec was unable to withstand the distortionary ripple effects of nationalization in Ontario. To see why, we must now outline the process of electricity nationalization in Ontario, highlighting how it is explained by regulatory capture and how it then triggered a dynamic of interventionism that spilled over into Quebec.

3.2 The dynamics of interventionism and regulatory capture begin in Ontario

The push for nationalization in Ontario initially began in southwestern Ontario, where most of the province's population lived and relied on importing coal (at relatively high prices) from the United States. High prices, combined with American coal miners' strikes in 1897 and 1902, incited discontent in that area of Ontario, resulting in a push for developing alternative power sources. The area around Niagara Falls offered the potential for power at a lower cost than imported US coal; a high-capacity hydro plant was built in 1895 (Dupré and Patry 1998). The fact that inland towns paid higher prices for coal can help explain the interest-group origins of Ontario's involvement in electricity markets. As Brady (1936, p. 331; footnote and emphasis added) writes,

> [a]t the outset the drive for collective action in providing power came from the same class which supported the National Policy of the federal government; viz., *the small manufacturers and traders in Toronto and those congregated in the Boards of Trade or represented in the Municipal Councils of Western Ontario*…. But all the major municipalities soon became concerned in the collective action, and their initial activity determined in part certain salient features of the Ontario hydro[11] as an administrative system.

Two problems were created, however. First, Niagara Falls provides the bulk of Ontario's hydro power potential. As such, the distance from Niagara to any given city in Ontario was a key determinant of service provision. The first electrical companies were fast to connect the large Toronto market to Niagara's production sites but proceeded much more slowly in connecting other towns in southwestern Ontario (London, Sarnia, Waterloo, Guelph,

[10] Early criticisms of Ontario's publicly owned system (when it was municipalized) pointed to the fact that taxes were considerably higher in Ontarian cities than Quebec cities (Murray and Flood 1922), so that that when both taxes and rates were considered jointly, Quebecois enjoyed the lowest costs of electricity. That is why, in footnote 9, we argued that Fig. 1 understates Quebec's low electricity prices.

[11] As Nelles (2003, p. 119) writes, "Until recently, in Canada, the word Hydro was synonymous with electricity.".

Windsor). Second, the Niagara Falls sites provided easy access to the American market in which heavy reliance on coal meant higher prices for electricity. The electricity generated at Niagara Falls meant potentially major price reductions to the American market. Private firms at Niagara Falls thus keenly were interested in exporting to the American market (Nelles 1976; Fleming, 1992; Froschauer, 2005). The two factors combined to cause a "public power" movement to emerge in the towns of southwestern Ontario.

The main forces within that movement were manufacturers located southwest of Toronto who felt they were being disadvantaged (Fleming, 1992, p. 20). They were joined, later in the 1910s, by rural consumers who sought farm electrification (Fleming, 1992, pp. 25–38). The conservative mayor of London, Ontario, Adam Beck (himself a manufacturer), rapidly became a key figure in that movement and formulated a concrete plan for public ownership of the transmission lines (Nelles, 2005, p. 242). Through public ownership, Beck argued that power could be distributed "at cost" to the different cities of Ontario, especially those further away from Toronto and Niagara Falls. By 1905, Beck had become a provincial government minister. A year later, legislation was adopted creating the Hydro-Electric Power Commission (HEPC) and Beck was named as its first chairman (while still sitting as a member of the provincial legislature), a position he held until his death in 1925 (Brady, 1936, p. 333).

Initially, the HEPC's powers were to regulate private utilities, purchase electricity from them, and take charge of electricity distribution at cost to municipalities (Nelles, 2005, p. 242; Fleming, 1983, pp. 495–496).[12] Providing power at cost meant, essentially, subsidizing electricity consumption.[13] "Hitched to wider goals of public policy, it (the HEPC) pursued rural electrification programs and sought to stimulate consumer demand" (Evenden & Peyton, 2016, p. 257). By 1914, HEPC's purview expanded to engage in the production of electricity, in direct competition with private producers and with a tax-free advantage,[14] rather than merely distribution (Armstrong & Nelles, 1983, p. 9). The First World War hastened the move to a publicly owned monopoly (Dupré & Patry, 1998, p. 129) as the Hydro Electric Power Commission (nicknamed Ontario Hydro by then) was authorized to purchase the largest private electricity producers operating in the province. In 1917, it acquired the Ontario Power Company's assets at Niagara Falls (Dupré & Patry, 1998, p. 129). After the war, HEPC started negotiating "a clean-up" deal (Dupré & Patry, 1998, p. 129) by purchasing the remaining big private players. By the end of the 1920s, most private providers and producers were out of business (Fleming, 1992, p. 126). Electricity was supplied at cost by the HEPC for the entire province.

The development of the HEPC fits very well with the regulatory capture theory. Interest groups, among them non-Toronto manufacturers and rural consumers, banded together to lobby for nationalization to secure lower electricity rates. The burdens of taxation resulting from the purchase of private assets also were understood perfectly by legislators and

[12] Nelles (1976, p 472) points out "that under its statutory authority [HPEC] wielded tremendous power over the private companies. It had access to their books, could examine their contracts, and could even requisition power from them for its own customers…. Beck used his regulatory power to enhance the competitive position of his company whenever possible. In effect, he used his discretionary authority and his superior legal position to limit as much as possible the growth prospects of the private companies. When he was taken to court, he won all his cases, for his power rested upon the bedrock of provincial jurisdiction over property and civil rights.".

[13] The reductions were sizable, between 7 and 40% depending on the city (Murray and Flood 1922, pp. 43–45).

[14] Crown corporations are exempt from federal taxation, but private firms were not.

members of the interest group coalition. However, that was true only for the immediate effects. The HEPC had predicted large increases in electricity consumption after nationalization. However, the increases far exceeded expectations. By the 1920s, Dales (1957) points out that the HEPC feared that it would face considerable excess demand at the low rates it charged: "during the 1920s the demand for electricity in Ontario grew so rapidly that the Hydro-Electric Power Commission was forced to take steps to provide adequate power supplies for both the immediate future and the expected long-run increase in its load" (Dales, 1957, p. 151).

This unexpected excess demand for electricity after nationalization provides the analytical beginning of the dynamics of interventionism. The problem of the unexpected magnitude of the increase in quantity demanded was that, by then, the largest and cheapest power sites (such as at Niagara Falls) had been developed, meaning that the installed power-generating capacity of the province was able to meet the increase in electricity demand only up to a point. Electrical capacity is measured in kilowatts (kWs), but consumption is measured in kilowatt-hours (kWhs). Because electricity must be generated at the same instant it is used, installed capacity determines how consumption can be satisfied. However, if consumption fluctuates throughout the day, as it assuredly does, but prices are not varied around the clock, capacity may become unable to meet the quantity demanded at peak times. As such, large increases in quantity demanded can be satisfied only by investing in additional generating capacity. In other words, more state interventions were required to deal with the unforeseen consequences of the first round of state intervention (i.e., nationalization).

To cope with the unexpected increase in consumption, the chairman of the HEPC, Adam Beck, argued that three options were available, namely (a) building steam plants; (b) developing new—and more expensive—power sources; or (c) purchase power from Quebec.[15] Of the three, Beck argued that only the last one was viable (Dales, 1957, p. 151). Importing electricity from Quebec had never been considered beforehand because it was thought that production from the Niagara Falls area would be adequate. However, the increase in quantity demanded that had been expected from nationalization was significantly smaller than the actual increase. Ontario gradually ramped up its imports of electricity from Quebec as much as the existing low-tension lines allowed. As can be seen in Fig. 2, in 1919, 1.8% of Quebec's output was exported to other Canadian provinces (most of it being to Ontario).[16] By 1923, exports had surged to 2.8% and by 1925 they had increased to 4.2%.

The problem is that electricity losses along the low-tension lines were very large and most of the imports from Quebec would have to be delivered to the areas closest to Quebec (e.g., Ottawa and Cornwall). The solution would be to build high voltage transmission lines that experienced significantly smaller power losses. Such lines, while exhibiting lower marginal transmission costs, had high fixed costs, implying larger economies of scale. If deals could be struck with private generators in Quebec to increase their capacities, the construction of high voltage transmission lines would become a viable solution. As a result, the HEPC began negotiating deals with private firms in Quebec to induce them to develop hydropower resources along the Ottawa River and in the Beauharnois region and

[15] Technically, a fourth option to deal with excess demand was to increase rates to reflect market clearing prices. However, that option never was on the table politically, which meant that some form of income redistribution—through taxation—was necessary to meet excess demand.

[16] The numbers for exports out of Quebec include those to the province of New Brunswick but they appear to have been minimal.

to build high-voltage transmission lines that would connect with those of the HEPC and serve markets as far away as Sudbury (at the southernmost tip of Ontario). The first deal, with the Gatineau Power Co., which served the western portion of Quebec, was signed in 1926 (Biss, 1936; Hogue et al., 1979, p. 177). In October 1928, high-voltage transmission lines operated by the Gatineau Power Co. were installed, resulting in exports surging from 3.9% in 1928 to 8.2% in 1929 and then to 19% in 1934. Deals with other private Montreal firms followed quickly (Biss, 1936).

The solution of relying on Quebecois producers to meet the unexpectedly large increase in consumption essentially extended the dynamics of interventionism to Quebec. Tax revenues from Ontario were allocated to finance imports of electricity from Quebec's producers, who charged market prices. Ontario's excess demand was satisfied by Quebec's producers, but bid up the price for electricity in Quebec's market. Consequently, the rates on Quebec's electricity market were linked directly to Ontario (relative to areas unconnected with Ontario). Given that industrial consumers had more elastic demands, the effects of the larger electricity outputs were shouldered by the more inelastic residential and rural consumers. This upward pressure on prices in Quebec resulted from the HEPC's response to larger than expected increases in consumption from non-Toronto manufacturers and rural consumers. The unforeseen increase in electricity demand from Ontario, in turn, generated stronger demands for regulation and nationalization in Quebec. The ultimate regulation and nationalization of the industry in Quebec thus fit within the framework of the dynamics of interventionism following Ontario's own nationalization of electric utilities. However, spillover effects on Quebec by themselves do not constitute undesirable effects for those Ontarian interest groups desiring cheaper electricity.

As we explain in the next section, to the extent that Ontario's importation of cheap electricity from Quebec depended on private provision of electricity in Quebec, the Ontarian trend toward nationalization created a public backlash in Quebec. By causing higher prices in Quebec, Ontario's nationalization incited Quebecois consumers and farmers to clamor for more stringent regulations or nationalization. That political demand generated electoral forces powerful enough to allow a coalition of disgruntled liberals to ally with the Conservative Party of Quebec in 1936. In that year's election, the Liberal Party of Quebec, which had been in power continuously since 1897 and had opposed electricity nationalization in Quebec against liberal dissidents and the conservatives, was defeated. Thus, nationalization in Ontario created unintended political consequences in Quebec that went against the interests of those groups in Ontario that depended on the cheaper source of privately provided electricity from Quebec. In the next section, we also explain our empirical strategy to tie that effect to the political backlash against electrical utilities in Quebec. There, we evaluate the plausibility of our claim that the HEPC's response generated the predicted effects in the Quebec market.

4 Data and methodology

Our econometric strategy for assessing the effects of Ontario's nationalization on Quebec's electricity markets is based on the timing of contracts between Quebecois producers and the HEPC. The first contract was signed in 1926 (Biss, 1936, p. 551) with the Gatineau Power Co. In October 1928 (two years after signing the deal with the HEPC), the Gatineau Power Co. inaugurated its 230-mile transmissions (at a pressure of 220,000 V) connecting western Quebec to the Niagara network in Ontario (Stanton, 1929, p. 1120).

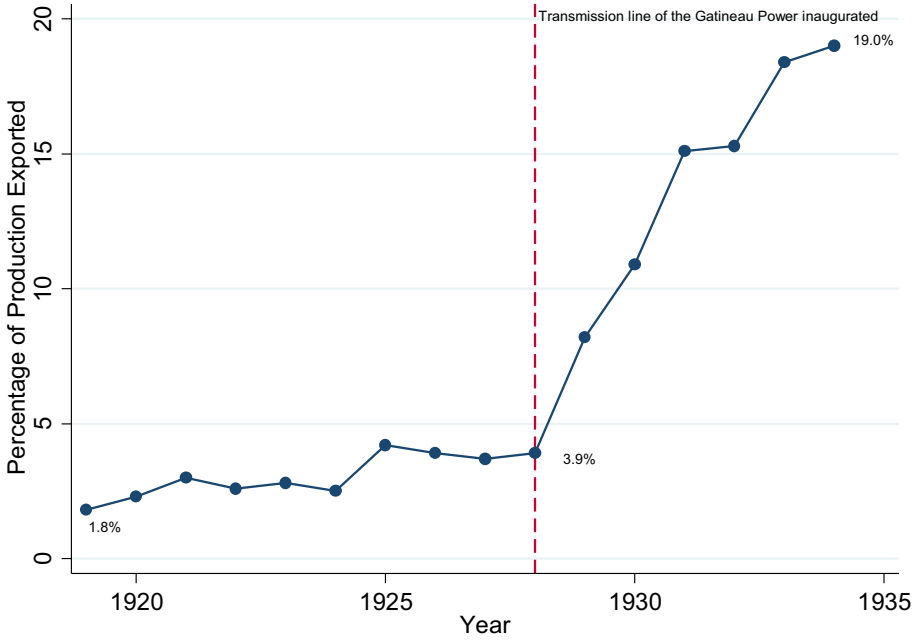

Fig. 2 Share of Quebec's electricity output exported to Ontario and New Brunswick, 1919–193. Source: Dominion Bureau of Statistics (1935, pp. 2–3)

Whereas exports into small portions of eastern Ontario began pre-1928, the entire province was from that moment able to receive electricity from Quebec. In 1929 and 1930, deals with the Ottawa Valley Power Co., the Montreal Light, Heat and Power and the MacLaren-Quebec Power Co. also were negotiated (Biss, 1936, pp. 551–552). All contracts provided for gradual increases in capacity until 1937, with the additional generating assets being paid for by the HEPC at pre-determined prices. By that time, imports from Quebec were expected to represent more than 20% of Ontario's consumption.[17]

Only regions in western Quebec were connected to Ontario's electrical market. The markets in central and eastern Quebec (representing close to 60% of the province's population) never were connected to Ontario. In fact, prior to the contracts being signed, only the small population of the Outaouais region (in western Quebec) was connected to Ontario's markets. After the contracts were signed, all of western Quebec (including the south and north shores of Montreal and Montreal itself) was connected to Ontario. If the HEPC's decision to import power from Quebec's electrical plants had an impact on Quebec's electricity prices, it would be observable in areas connected to Ontario's grid. The excess demand from Ontario would have materialized on those regional markets. That conclusion yields a simple empirical prediction: because of the excess demand from Ontario, prices in cities

[17] The Great Depression caused the Ontario government to try to renege on its purchase promises in 1935. However, after numerous court proceedings, new agreements were signed that continued power transmissions from private firms (Hogue et al., 1979, pp. 179–180). However, when adjusting for the sharp deflation of the Great Depression, the renegotiated price was roughly equal in real terms to the prices agreed to in the initial contracts.

connected to Ontario should have diverged from prices in unconnected cities after HEPC's decision.[18] If price movements differed by region as functions of connections to HEPC, we would have evidence for the mechanism proposed in Sect. 3.2, whereby Ontario's nationalization caused unforeseen consequences on Quebec's markets.

To test whether that was indeed the case, we apply two econometric methods. Both methods are imperfect and are forced on us by the ways in which the Dominion Bureau of Statistics (henceforth DBS) collected data about electricity generation. From 1926 to 1951, the DBS published *Index Numbers of Rates for Electricity for Residence Lighting and Table of Monthly Bills*, reporting rates for different residential monthly consumption bundles for 24 cities in Quebec continuously from 1926.[19] The quality of the price data is ideal for our purposes. As such, we collected the rates for the different consumption bundles (20, 40, 80, 100, 180, 300, 500 kWhs) for the 24 cities in Quebec from 1926 to 1941 and estimated the average price per kWh for residential service. We computed those rates in real terms, using the regional price indexes provided by Emery and Levitt (2002).[20] These data allow us to test whether being connected to the HEPC caused price increases in Quebec. We adopt the following specification for modeling pricing decisions by firms serving different markets (i):

$$logprice_{it} = \beta_1 connection_{it} + \beta X_{it} + \tau V_i + \varphi V_t + \theta V_j + \epsilon_{i,t} \quad (1)$$

Equation (1) essentially is a difference-in-differences model in which *connection* is our variable of interest—i.e., whether a city is connected to Ontarian markets by contracts. The approach has two downsides, however. The first is that no covariates are available at the city level with annual frequencies. We thus are restricted to relying on census years for the covariates entered in matrix X. Censuses were taken in 1921, 1931 and 1941, which explains our choice of the sample's endpoint as 1941, three years preceding the start of Quebec's nationalization process in 1944. Population and manufacturing output are the covariates on which we rely.[21] Thus, the prices for the earliest year (1926) in the *Index Numbers* publication are matched with the 1921 census covariates. The second problem is that the city data do not report any firm-specific information for 1931 or 1941. Thus, we have no information about the generating capacities, capital investments, or costs of the utilities servicing Quebec's cities. The reason, as we will see below, is that the directories of electrical firms that the DBS published regularly were discontinued after 1929. Thus,

[18] Whereas prior to HEPC's response, the same price trends would have been observed. It likewise should be noted that the major networks in Quebec were connected and could purchase power from one another. However, energy was lost along transmission lines between the different regional firms in Quebec (Piché 1937). Those losses isolated markets that did not share a direct connection with Ontario's HEPC.

[19] Some cities were added to the later editions, so that by 1941, 33 cities in Quebec provided price quotations for residential electrical services.

[20] Our results hold whether we deflate prices or not.

[21] The manufacturing productivity data are constructed from value added in manufacturing and the number of employees reported in Part II of the different annual Canadian censuses of manufacturing (Dominion Bureau of Statistics, 1921 to 1941). Their inclusion is motivated by the fact that value added and employment control for the type of industry dominating urban economies. High productivity industries also were capital intensive and high-energy consumers (Raynauld 1961). Thus, our variables speak to the industrial sector that utilities serviced in market *i*. Because industrial demand was more elastic and electric utilities engaged in price discrimination, we expect higher industrial productivity to be associated with higher prices for residential consumers. In other words, productivity is entered as a proxy (for lack of a better variable) for market structure. Population is a rough measure of the extent of economies of scale in delivering power to a city.

to control for idiosyncratic features specific to the utilities servicing the different cities of Quebec,[22] we rely on firm fixed effects, denoted by V_j, where j refers to the different electricity suppliers reported in various *Index Numbers* publications. We also enter city and year fixed effects, denoted by V_i and V_t. Table 1 reports the descriptive statistics for our empirical estimations.

It should also be noted that because we adopt a fixed effects approach to estimate the consequences of being connected to the Ontario market by HEPC's contracts, we cannot control directly for whether a city operates its own electrical utilities. That is because, with the exception of one city, the dummy variable representing publicly owned utilities is time-invariant.[23] Failure to control for municipal ownership is important because such utilities can be expected to be less inclined to increase rates in the face of growing demand from Ontario. Municipally owned utilities also are expected to charge lower rates for power (especially to small customers) than cities serviced by private operators, all else being equal (Bernier, 2009; Boutet, 1999). In order to control indirectly for municipal ownership, we re-estimate Eq. (1) by excluding all cities with municipally-owned utilities. The results are then compared with estimates when all cities are included in the analysis.

The second approach we apply is based on the different volumes of *Central Electrical Stations in Canada, Part II* (1923, 1929) published by the DBS. Those directories of all Canadian cities provide details about their populations and the electric utilities that serviced them.[24] Included in the directories are information about distribution networks, transmission mileages, generating capacity, types of stations, invested capital, and the rates charged for residential lighting. As such, we can produce a series of variables that would explain the pricing decisions of power companies in different municipalities. That sample is larger than the one based om the *Index Numbers* publications (249 municipalities with complete sets of covariates at the city and firm levels). Moreover, we can gain more knowledge about the features of the firms that service the different cities, so that the covariates do not have to rely on the assumption that firm-specific features are constant over time as is the case for specification (1).

Four downsides and one major upside are associated with our second approach. The first drawback is that the directories end in 1928, just as the HEPC contracts ramp up. Thus, our empirical examination is constrained to the period when exports to Ontario were limited to the low-voltage lines that existed at the rime. As we showed in Fig. 2, exports increased during that period—from 1.8% of Quebec's total output in 1919, to 3.9% in 1928. But that growth rate paled in comparison to the one that started when the high-voltage lines began being installed in October 1928. As a result, we expect weaker results because we are not capturing the substantial export increase post-1928. Secondly, unlike the panel data model

[22] Some firms, such as Montreal Light, Montreal Heat and Power, and Southern Canada Power, served more than two cities in our assembled sample.

[23] We pointed out above that many cities had privatized their services. But most of them were small ones that did not make it into the DBS's *Index Numbers of Rates* publications. The exception was the power company serving the city of Verdun (a suburb of Montreal), which started as a publicly owned enterprise, but which had been privatized after 1928 (the exact year could not be identified but it was between 1928 and 1933).

[24] We relied on Magnan (1925) to match city names between directories because of several iterations of Quebec's placenames, resulting from differences in the French-Canadian names of religious parishes, which not always were consistent. For example, census officials assigned the more accurate placename, while the survey of electrical stations chose a slightly different name or opted for one of its diminutives (e.g., Hemmingford versus Saint-Romain d'Hemmingford).

Table 1 Descriptive Statistics for Panel Regression Using the Dominion Bureau of Statistics' *Index Numbers of Rates for Electricity for Residence Lighting and Table of Monthly Bills,* 1926, 1931 and 1941 (Source: Dominion Bureau of Statistics, 1926 to 1943)

Variables	(1) N	(2) Mean	(3) SD	(4) Min	(5) Max
Municipalized	72	0.278	0.451	0	1
HEPC Connection	72	0.167	0.375	0	1
Log Real Price (1913$, cents per kWh)	72	1.286	0.400	0.544	2.234
Log of Manufacturing Productivity (1913$, output per worker)	70	8.043	0.398	6.981	9.013
Log of City Population	72	9.475	1.392	6.777	13.71

specified in Eq. (1), wherein *connection* indicates whether a city is affected by a HEPC contract, our *connection* variable here will indicate whether a city had a transmission line connecting to Ontario. That variable was created from the 1928 edition of the directory, which contains a map highlighting HEPC's transmission lines into Quebec (Dominion Bureau of Statistics, 1929, plate 17). Because the rapid expansion of the network to service the demands of the HEPC had not yet happened, only eight municipalities appear to have been connected directly with Ontario through the HEPC.[25] However, the few connected cities would have borne the brunt of the pre-1928 tripling of HEPC's demand for Quebec electricity.[26] The implication is that the effect of what seems to be a small increase in exports owing to Ontario's excess demand is going to be strong and concentrated on a small number of cities.

The third downside is that while the DBS produced data that speak to covariates in many of the large cities, the same details are not available for the smaller cities included in the directories. That omission is problematic because wide economic differences exist *within* Quebec, particularly in western Quebec between the areas of Montreal and the Gatineau River). For example, most of the industrial customers with high-energy usages were located in western Quebec, which also was richer than the rest of province (see Egnal, 1996). Both factors would have affected pricing decisions on these markets. To control for them indirectly, we alternatively restrict our sample to western Quebec.

The fourth downside is that only two directories report electricity rates: one for 1922 and one for 1928.[27] That is a severe handicap because it prohibits the serious use of a panel approach. Consequently, we are forced to estimating an Ordinary Least Squares model according to specification (2):

$$pricediff_i = \beta_1 connection_i + \beta X_i + \epsilon_i \tag{2}$$

[25] Some very small municipalities shared connections with Ontarian cities but not through the HEPC. That is the case for cities like Hawkesbury and Vankleek Hill. which were served by the Quebec-based Gatineau Electric Light Company and thus were unaffected by the HEPC's subsidization of consumption (Dominion Bureau of Statistics 1929, pp. 255, 374).

[26] The rising share of total production that is exported, depicted in Fig. 2, coincides with rising total production. The total quantity exported actually tripled and it would have been concentrated on those eight municipalities.

[27] Another directory was published in 1919, but the rate information contained in it is sparse.

In Eq. 2, *pricediff* refers to the price difference that emerged between 1922 and 1928 (we will measure the change in prices in those years in two different ways). Our variable of interest remains *connection* on the assumption that cities connected between 1922 and 1928 experienced price increases relative to cities that were not connected. The vectors of covariates include a direct control for whether a city owns its electrical utilities, the type of power station (non-generating or generating), transmission line mileages, city populations and capital invested by power companies.[28] All of those variables affect the production costs of electrical utilities. Table 2 provides the descriptive statistics for this approach.

While individually flawed, the two approaches taken together allow us to test whether connection to the nationalized Ontario market caused significant price increases following HEPC's decision to import electricity from Quebec. If both generate similar results despite the imperfections inherent in each strategy, then we can conclude that our estimations yield statistically significant findings.

Price-related findings are key to the dynamics of interventionism because increased Ontarian demand should cause higher prices in Quebec. However, such results are not enough to explain why Quebec eventually regulated and nationalized the industry. Specifications (1) and (2) account for the unforeseen effects of nationalization in Ontario, but imply nothing about Quebec's eventual interventions in electricity markets. To complete our account of the dynamics of interventionism, the higher prices resulting from Ontario's nationalization must lead to unexpected policy changes in Quebec that could undermine the original purpose of providing cheaper electricity in Ontario through regulation and nationalization. Thus, an additional step must be taken, which requires connecting the price increases to policy changes.

That link can be established by considering the seismic political changes of the 1936 provincial elections. In 1935, after being in office continuously since 1897, the Liberal Party of Quebec (LPQ) experienced a major schism. A fraction of younger party members split to form a new party, the Action Libérale Nationale (ALN). One of the new party's main planks was the nationalization of hydro-electric firms. It responded to a perception of increasingly higher prices and slow rural electrification.[29] The ALN forged an electoral alliance with the Conservative Party of Quebec (CPQ), whereby each party would not field candidates against one another. In the 1935 election, the Liberals were reduced to a thin majority. By the election of 1936, the ALN and conservatives had merged under the banner of the Union Nationale (UN); its main promises were to nationalize electrical utilities, provide electricity in the countryside, and reduce rates for urban residential consumers.[30] The UN won 57% of the vote in the 1936 election and 76 of 90 seats in the provincial legislature. The LPQ, campaigning lukewarmly against electricity nationalization, ended its decades-long reign. It obtained a mere 39% of the vote as opposed to 55% in the 1931 election, when it won 79 out of 90 seats, representing a negative province-wide swing of 16 percentage points between the two elections.

[28] The Montreal Light, Heat and Power Company and the Gatineau Power Company both refused to provide the values of their capital investments to the DBS in 1929. However, the directories from other years and other sources allow us to impute approximate values based on their stock issues (Hogue et al., 1979).

[29] In reality, nominal prices had remained the same throughout the period in most cities. The perception of rising prices was the result of the deflation observed for other goods and services during the Depression. Thus, *real* prices were increasing (Geloso & Belzile, 2018).

[30] While the UN reneged on its promise to nationalize the industry, it did create the Régie de l'Énergie to regulate energy prices. It was the Liberal Party, upon returning to power in 1939, that initiated the industry's nationalization.

Table 2 Descriptive Statistics for OLS Regression Using the Dominion Bureau of Statistics' *Central Electrical Stations in Canada Part II,* 1922 and 1928

Variables	(1) N	(2) Mean	(3) SD	(4) Min	(5) Max
Full Sample					
Log(Price 1928)–Log(Price 1922)	283	− 0.0570	0.369	− 1.309	1.825
Price 1928)/(Price 1922)	283	1.026	0.612	0.270	6.200
HEPC Connection, 1928	333	0.0240	0.153	0	1
Log of Capital, 1928	319	14.23	2.655	7.601	17.98
Log of Pole Mileage, 1928	330	4.465	1.732	− 1.386	6.087
Log of Population, 1921	302	7.132	1.088	3.970	13.34
Municipal Utilities, 1928	331	0.127	0.333	0	1
Non-Generating Station, 1928	330	0.276	0.448	0	1
Western Quebec Sample					
Log(Price 1928)–Log(Price 1922)	85	− 0.102	0.480	− 1.050	1.825
Price 1928)/(Price 1922)	85	1.070	1.024	0.350	6.200
HEPC Connection, 1928	106	0.075	0.265	0	1
Log of Capital, 1928	103	14.353	3.246	9.532	17.982
Log of Pole Mileage, 1928	106	4.116	1.667	0.405	5.888
Log of Population, 1921	95	7.102	1.333	3.970	13.335
Municipal Utilities, 1928	106	0.198	0.400	0.000	1.000
Non-Generating Station, 1928	106	0.623	0.487	0.000	1.000

The election of 1936 offers a way to operationalize how the HEPC's decision may have pushed Quebec towards regulation and nationalization. If the decision to import from Quebec helped push prices up *only* in regions connected to the HEPC, we should expect a larger swing against the LPQ in those regions. To test whether that was the case, we specifiuy Eq. (3). which relies on an ordinary least squares estimation approach:

$$swing_i = \beta_1 connection_i + \beta_2 rate_i + \beta_3 \left(connection_i * rate_i\right) + \beta X_i + \epsilon_i \tag{3}$$

In (3), *swing* is the change in vote share of the LPQ in each of Quebec's 90 electoral districts between the elections of 1931 and 1936, when it had faced the unified opposition under the banner of the UN.[31] The observations are based on the historical database of Quebec elections assembled by Pierre Drouilly (1985).[32] The *connection* variable indicates whether or not an electoral district was serviced by at least one firm that exported to Ontario by 1936. That variable provides a link to our account of the dynamics of interventionism. If a connection with Ontario meant a larger vote swing against the liberals, then the price increases obtained from specifications (1) and (2) can be tied to the political backlash and the eventual regulation of the industry.

[31] However, in two electoral districts, liberal members were elected by acclamation in 1936.

[32] The data are available online at https://www.donneesquebec.ca/recherche/dataset/atlas-des-elections-au-quebec

The *rate* variable is the rate reported in the 1928 directory relied on above for the largest private provider in that electoral district.[33] While electoral districts connected to the HEPC would have faced higher prices, the larger electricity outputs needed to meet the terms of the contracts between private firms and the HEPC also would increase employment among private electrical utilities in those districts, a consequence that would have benefitted the LPQ. Thus, we must remove the mitigating effect of greater employment to arrive at the net effect of connection on the LPQ's electoral performance. That is the purpose of the interaction term between the price level and connection to the HEPC.

Unfortunately, we can enter on one additional control variable: the percentage of the population that is French-Canadian. The proportion of French-Canadians in the entire population of Quebec is important since French-Canadians tended be very nationalist voters and the LPQ tended to be less nationalistic than the CPQ and ALN (Black, 1977).[34] No other covariates could be matched to electoral districts. Table 3 reports the descriptive statistics.

5 Results

The results from the panel strategy specified in Eq. (1) that rely on the *Index Numbers* publications for 24 cities in 1926, 1931 and 1941 are shown in Table 4.[35] The log of manufacturing productivity appears to have no statistically significant effect, while the log of population, which is indicative of market size and potential economies of scale in servicing a city, is negative and significant. Most important, our variable indicating connection with Ontario is positive. Cities connected to Ontario experienced a 13% price increase relative to cities that were not connected (and thus were unaffected by the deals). That upward pricing pressure is dampened by municipally-owned utilities, which purchased large quantities of electricity from private generators to supplement their own production, and then distributed it at below-market rates thanks to subsidization from city governments. As such, while the HEPC deals with Quebec's private utilities, it is likely that municipal politicians were reluctant to raise rates in order to avoid political discontent. It therefore is unsurprising that when the cities with municipally-owned stations are excluded, we find that the effect of connection with Ontario is larger, resulting in a 21% price increase (versus 13%) relative to cities that were not connected, and estimated more precosely.

Table 5 reports the estimates of Eq. (2). Without the ability to control for the features of the firms servicing different municipalities, that model contains an important flaw, which we address by entering a company-fixed effect term. Those results control for firm-specific features such as the value of capital stock, the type of power station (non-generating or generating), the mileages of transmission wires, the type of ownership (municipal or

[33] We were unable to find rates for two additional subdistricts in the 1928 directory (Magdalen Islands and Roberval).

[34] However, Drouilly was unable to compute the francophone share for four electoral districts.

[35] We estimated additional sets of results, such as staggered entry of fixed effects. Without year-fixed effects but with city-fixed effects, the connection with Ontario is significant and positive in both types of specification. However, when year-fixed effects are entered, connection still has a positive effect on prices, but its precision is slightly above the 10% threshold of significance. When firm-fixed effects (to control for the features of the power companies servicing the different cities) are introduced, one obtains the results depicted in Table 4. At the request of a referee, we also estimated our model without manufacturing productivity—the result was unchanged.

Table 3 Descriptive Statistics for OLS Regression Using the 1936 Provincial Election Results

Variables	(1) N	(2) Mean	(3) SD	(4) Min	(5) Max
Swing 1931 to 1936	88	− 13.95	8.702	− 39.89	4.930
Log Rate, 1928	88	1.952	0.381	0.993	2.708
HEPC Connection	90	0.311	0.466	0	1
Share of Francophones	86	82.87	20.07	21.01	99.64
Log rate × HEPC connection	88	0.524	0.806	0	2.485

private), and the log of population. The tradeoff is that, we must apply an OLS methodology wherein the dependent variable is either the difference between the logarithm of the 1928 price and the logarithm of the 1922 price, or the ratio of the 1928 price to the 1922 price.[36] We adopt both measures of relative prices because the latter standardizes the initial price levels (those in 1922) and the former simply models the percentage changes in price.

In columns 1 and 3 of Table 5, the results imply that sharing a connection with the HEPC increased utility prices relative to non-connected cities significantly. With the log-price difference, prices in connected cities were 92.6% higher than they had been in 1922, relative to non-connected cities. The difference based on the standardized measure of the price ratio is even larger. However, as we pointed out above, we can restrict the sample geographically to western Quebec. Doing so controls indirectly for the fact that the rest of Quebec differs economically from western Quebec. While the restriction cuts the sample size from 249 to 76 observations, the conclusions are the same as reported in columns 2 and 4 of Table 5: a connection with the HEPC meant larger price increases between 1922 and 1928. In fact, the coefficients are larger once we restrict the sample to the rich areas of western Quebec, thus confirming the presence of an omitted variable bias because of the unavailability of income data for small cities.

In Table 6, we report the estimates of Eq. (3), illustrating that the price increases shown in Tables 4 and 5 caused a political backlash against the ruling liberals, who opposed electricity nationalization. In the 1936 election, the LPQ saw its vote share collapse relative to the 1931 election in all but three of the 88 contested districts.[37] The LPQ experienced a swing in votes that was 23 percentage points larger in districts connected to the HEPC (relative to unconnected ones). However, we must remove the effect of the interaction term, which suggests that the higher prices mitigated some of that effect in the form of greater economic activity in the region. As speculated above, when private firms increased production to satisfy the demand from the HEPC, they likely increased employment in those electoral districts. More jobs mitigated the vote swing against the LPQ. In the districts connected to the HEPC, the total effect of connection is equal to the direct effect of connection minus the indirect effect (i.e., the interaction term). The net effect is that *connection* caused a swing of 4.3 percentage points against the LPQ. In those districts, the average swing against the LPQ was 14.4 percentage points. In other words, roughly a third of the swing was produced by a backlash resulting from the price-increasing effect of being connected to the HEPC.

[36] The mean price in 1928 (8.53 cents per kWh) was lower than in 1922 (9.17 cents per kWh).

[37] It is relevant to note that eight of the ten largest swings against the liberal party took place in districts that were connected to the HEPC.

Table 4 Regression Results Using the Using the Dominion Bureau of Statistics' *Index Numbers of Rates for Electricity for Residence Lighting and Table of Monthly Bills,* 1926, 1931 and 1941

Variables	(1) With municipal utilities	(2) Without municipal utilities
Log of manufacturing productivity	0.0778	0.0814
	(0.0680)	(0.0576)
log of population	− 0.388**	− 0.200*
	(0.148)	(0.100)
HEPC connection	0.129*	0.208***
	(0.0652)	(0.0454)
Constant	4.384***	2.714**
	(1.518)	(1.168)
Observations	70	51
R-squared	0.872	0.932
Number of cities	24	18
City FE	Yes	Yes
Year FE	Yes	Yes
Company FE	Yes	Yes

Robust standard errors in parentheses

*$p < 0.1$, **$p < 0.05$, ***$p < 0.01$

6 Conclusion and implications

We began this paper by asking about the extent to which the outcomes of economic regulation are intended and desired by its proponents. Combining the Austrian theory of the dynamics of interventionism with the theory of regulatory capture, we argued that a *direct* relationship exists between the intentions of regulation and its *immediate* effects. However, as a result of regulators not being residual claimants, they cannot foresee the long-run consequences of their actions, producing outcomes that are ineffective or counterproductive for the intended beneficiaries of regulation. To the extent that a capture theory of regulation provides an analytic anchor for understanding economic regulation, it pertains fundamentally to the origins of economic regulation, although not necessarily its long-run consequences.

We illustrated our Austrian-capture theory in the contest of the economic regulation of electricity in Ontario, Canada, in the early twentieth century. The nationalization of electricity provision (and the subsidization of its consumption) in Ontario, while originating from regulatory capture, generated unforeseen long-run effects in the form of unexpectedly large increases in power consumption. To deal with that unforeseen consequence, Ontario's government was forced to allocate tax revenues to purchase electricity at market prices from private Quebecois producers. Those purchases transmitted unexpected effects to Quebec's unregulated electricity markets. Ontario's excess demand meant an increase in demand for electricity on Quebec markets that were connected to Ontario's electrical network. As a result, those regions saw larger price increases than in unconnected regions. The effectd on price levels in Quebec fueled political demands for regulation and nationalization in Quebec (which eventually played out in steps between 1935 and 1944).

Table 5 OLS Regression Results Using the Dominion Bureau of Statistics' *Central Electrical Stations in Canada, Part II,* 1922 and 1928

Variables	(1)	(2)	(3)	(4)
	Log (Price 1928)– Log (Price 1922)		(Price 1928)/ (Price 1922)	
	All Quebec	Western Quebec sample	All Quebec	Western Quebec sample
HEPC Connection	0.926*	1.011*	2.933**	3.016**
	(0.544)	(0.549)	(1.260)	(1.292)
Log of Capital	− 0.0362**	− 0.0590**	− 0.0218	− 0.0408
	(0.0183)	(0.0287)	(0.0153)	(0.0293)
Log of Pole Mileage	0.0836***	0.0115	0.0668***	− 0.0139
	(0.0301)	(0.0614)	(0.0243)	(0.0665)
Log of Population	− 0.0468**	0.0250	− 0.0310	0.0526
	(0.0211)	(0.0344)	(0.0329)	(0.0685)
Municipal Utilities	0.0961	− 0.237***	0.0777	− 0.278**
	(0.0701)	(0.0894)	(0.0603)	(0.124)
Non-Generating Station	0.0737	0.286***	0.0659	0.273***
	(0.0447)	(0.0706)	(0.0418)	(0.0765)
Constant	0.355*	0.332	1.167***	1.047***
	(0.206)	(0.231)	(0.250)	(0.358)
Observations	249	76	249	76
R-squared	0.173	0.452	0.436	0.536

Robust standard errors in parentheses

*$p < 0.1$, **$p < 0.05$, ***$p < 0.01$

Table 6 OLS Regression results using the using the 1936 provincial election results

Variables	(1)
	OLS
Log of price	− 3.790
	(3.468)
HEPC connection	− 23.00**
	(9.563)
Francophone share	− 0.093
	(6.550)
Log of Price × HEPC Connection	11.36**
	(5.183)
Constant	2.182
	(9.998)
Observations	82
R-squared	0.057

Robust standard errors in parentheses

*$p < 0.1$, **$p < 0.05$, ***$p < 0.01$

Combining two theoretical approaches to understand how and why regulation emerges carries an important implication for future research on economic regulation. While the theory of regulatory capture clearly explains the initial decision to regulate, the dynamics of interventionism approach explains why subsequent decisions to regulate materialize. Incorporating the element of time into the regulatory process implies that the relationship between the actual outcomes of economic regulation and its intended effects is based on an *indirect* link between the optimizing behavior of an individual (or special-interest group acting collectively) and an equilibrium that emerges from competition that is unleashed as a result of regulatory discretion.[38]

Indeed, optimizing behavior implies that individuals will do the best they can, given their circumstances of time and place. If the marginal costs of seeking regulatory privileges fall relative to the marginal benefits, economic theory can predict that an individual decision-maker will optimize in accordance with the law of demand in ways that facilitate regulatory capture. However, such behavior is distinct from (though not mutually exclusive of) the pattern of interactions that will emerge from competition among individuals *after* regulation has been introduced. The equilibrium outcome of such *social* interaction never is directly reducible to the summation of the optimizing behavior of individuals, and therefore never can be perfectly anticipated by inferring the intentions of individuals from such an outcome. That conclusion is illustrated by the fact that higher electricity prices in Quebec emerged because of nationalization of electricity supply in Ontario, even though the purpose of nationalization in Ontario was to benefit a concentrated interest group of Ontarian manufacturers with lower electricity prices.

Acknowledgements We thank Jean-Thomas Bernard, Gérard Bélanger, Peter Boettke, Alexandra Foucher, Benjamin Powell, Diana Thomas, Kacey Reeves West and three anonymous referees for their helpful comments and feedback, which greatly improved an earlier draft of this paper. Special thanks are due to William Shughart II for both his editorial and substantive feedback. We also want to note that, in the process of writing this paper, Germain Belzile passed away. His input was vital to this paper and we will sorely miss him. Any remaining errors are entirely our own.

References

Aranson, P. H. (1990). Theories of economic regulation: From clarity to confusion. *Journal of Law & Politics, 6*(2), 247–286.

Armstrong, C., & Nelles, H. V. (1983). Contrasting development of the hydro-electric industry in the Montreal and Toronto regions, 1900–1930. *Journal of Canadian Studies, 18*(1), 5–27.

Bellavance, C. (2003). Les origines économiques et techniques de la nationalisation de l'électricité au Québec: l'expérience du régime mixte, de 1944 à 1963. *Annales Historiques De L'électricité, 1*(1), 37–52.

Bellavance, C., Levasseur, R., & Rousseau, Y. (1999). De la lutte antimonopoliste à la promotion de la grande entreprise. L'essor de deux institutions: Hydro-Québec et Desjardins, 1920–1965. *Recherches sociographiques, 40*(3), 551–578.

Benson, B. L. (2002). Regulatory disequilibrium and inefficiency: The case of interstate trucking. *The Review of Austrian Economics, 15*(2/3), 229–255.

Bernier, S. (2009). *Des réseaux locaux aux monopoles régionaux : la régionalisation des marchés de l'électricité au Québec, 1900–1935* (Doctoral dissertation, Université du Québec à Trois-Rivières).

Biss, I. M. (1936). The contracts of the hydro-electric power commission of Ontario. *The Economic Journal, 46*(183), 549–554.

[38] On this distinction between optimization and equilibrium, see Hirshleifer, Glazer, and Hirshleifer (2005, p. 94, fn. 1).

Black, C. (1977). *Duplessis*. McClelland & Stewart.
Boettke, P.J., Duncan, T.K., & Snow, N.A. (forthcoming). Competition for Antitrust: The NationalCivic Federation and the Founding of the FTC. *The Journal of Prices & Markets,* forthcoming. Available at SSRN: https://ssrn.com/abstract=2559755
Boettke, P. J., Coyne, C. J., & Leeson, P. T. (2007). Saving government failure theory from itself: Recasting political economy from an Austrian perspective. *Constitutional Political Economy, 18*(2), 127–143.
Boutet, D. (1999). *Le mouvement d'opposition au monopole de l'électricité à Québec dans l'entre-deux-guerres* (Doctoral dissertation, Université du Québec à Trois-Rivières).
Brady, A. (1936). The Ontario hydro-electric power commission. *The Canadian Journal of Economics and Political Science, 2*(3), 331–353.
Candela, R. A., & Geloso, V. J. (2020). The lighthouse debate and the dynamics of interventionism. *The Review of Austrian Economics, 33*(3), 289–314.
Czeglédi, P. (2014). The theory of interventionism as an Austrian theory of slowdowns. *The Review of Austrian Economics, 27*(4), 419–449.
Dales, J. H. (1957). *Hydroelectricity and Industrial Development: Quebec, 1898–1940*. Harvard University Press.
Dominion Bureau of Statistics. (1921 to 1941). *The manufacturing industries of Canada, summary report.* Ottawa: Department of the Interior.
Dominion Bureau of Statistics. (1926 to 1943). *Index numbers of rates for electricity for residence lighting and table of monthly bills.* Ottawa: Dominion Bureau of Statistics.
Dominion Bureau of Statistics. (1923). *Central electric stations in Canada, part II: Directory, Nov. 1, 1922*. Ottawa: Department of the Interior.
Dominion Bureau of Statistics. (1929). *Central Electric Stations in Canada, part II: Directory, May 1, 1928*. Dominion Bureau of Statistics.
Dominion Bureau of Statistics. (1935). *Production of Central Electric Stations in Quebec and Ontario*. Dominion Bureau of Statistics.
Dorion, M. J. (2000). L'électrification du monde rural québécois. *Revue D'histoire De L'amérique Française, 54*(1), 3–37.
Douglas, G. W., & Miller, J. C. (1974). Quality competition, industry equilibrium, and efficiency in the price-constrained airline market. *American Economic Review, 64*(4), 657–669.
Drouilly, P. (1985). *Atlas des Élections au Québec 1867–1985*. VLB Éditeurs.
Dupré, R., & Patry, M. (1998). Hydroelectricity and the state in Quebec and Ontario: Two different historical paths. In G. Zaccour (Ed.), *Deregulation of electric utilities* (pp. 119–147). Springer.
Egnal, M. (1996). *Divergent paths: how culture and institutions have shaped North American growth*. Oxford University Press.
Emery, J. H., & Levitt, C. (2002). Cost of living, real wages and real incomes in thirteen Canadian cities, 1900–1950. *Canadian Journal of Economics/Revue Canadienne D'économique, 35*(1), 115–137.
Evenden, M., & Peyton, J. (2016). Hydroelectricity. In R. W. Sandwell (Ed.), *Powering up Canada: A history of power, fuel and energy from 1600* (pp. 251–273). McGill-Queen's University Press.
Faucher, A. (1992). La question de l'électricité au Québec durant les années trente. *Actualité Économique, 68*(3), 415–432.
Fleming, K. (1983). The uniform rate and rural electrification issues in Ontario politics, 1919–1923. *Canadian Historical Review, 64*(4), 494–518.
Fleming, K. (1992). *Power at cost: Ontario hydro and rural electrification, 1911–1958*. McGill Queen's University Press.
Frech, H. E., III. (1973). The public choice theory of Murray N. Rothbard, a modern anarchist. *Public Choice, 14*(1), 143–154.
Froschauer K. (2005). Ontario's Niagara Falls, 1887–1929: Reversing theprivatization of hydro. *Journal of Canadian Studies, 39*(3), 60–84.
Gelly, A. (2010). Vapeur, thermoélectricité et hydroélectricité comme force mortice le long du corridor industriel du canal de Lachine, des années 1850 à la Seconde Guerre Mondiale. PhD thesis, Department of History, Laval University. Available online at http://theses.ulaval.ca/archimede/fichiers/27029/27029.pdf.
Gelly, A. (2003). A precipitous decline, steam as motive power in Montreal: A case study of the Lachine Canal industries. *IA: The Journal of the Society for Industrial Archeology, 29*(1), 65–85.
Geloso, V. (2020b). Dynamics of interventionism and economic development in Quebec before 1854. *SSRN Working Paper*, Available at SSRN: https://ssrn.com/abstract=3717700
Geloso, V. (2020a). Collusion and combines in Canada, 1880–1890. *Scandinavian Economic History Review, 68*(1), 66–84.

Geloso, V., & Belzile, G. (2018). Electricity in Quebec before nationalization, 1919 to 1939. *Atlantic Economic Journal, 46*(1), 101–119.
Giguère, W. (2018). Les influences transnationales sur la nationalisation de l'électricité au Québec (1934–1963). *Bulletin D'histoire Politique, 27*(1), 93–111.
Hayek, F. A. (1944). *The road to serfdom*. University of Chicago Press.
Hayek, F. A. (1945). The use of knowledge in society. *The American Economic Review, 35*(4), 519–530.
Hirshleifer, J., Glazer, A., & Hirshleifer, D. (2005). *Price theory and applications: Decisions, markets, and information* (7th ed.). Cambridge University Press.
Hogue, C., Bolduc, A., & Larouche, D. (1979). *Québec: un siècle d'électricité*. Libre expression.
Holcombe, R. G. (2002). Political entrepreneurship and the democratic allocation of economic resources. *The Review of Austrian Economics, 15*(2/3), 143–159.
Ikeda, S. (1997). *Dynamics of the mixed economy: Toward a theory of interventionism*. Routledge.
Ikeda, S. (2005). The dynamics of interventionism. *Advances in Austrian Economics, 8*, 21–57.
Ikeda, S. (2015). Dynamics of interventionism. In P. J. Boettke & C. J. Coyne (Eds.), *The Oxford handbook of Austrian economics* (pp. 393–416). Oxford University Press.
Kirzner, I. M. (1978). *The perils of regulation: A market-process approach*. Law and Economics Center, University of Miami.
Lucas, D. S., & Fuller, C. S. (2018). Bounties, grants, and market-making entrepreneurship. *The Independent Review, 22*(4), 507–528.
Magnan, H. (1925). *Dictionnaire historique et géographique des paroisses, missions et municipalités de la province de Québec*. L'Imprimerie d'Arthabaska Inc.
McCormick, R. E., Shughart, W. F., & Tollison, R. D. (1984). The disinterest in deregulation. *American Economic Review, 74*(5), 1075–1079.
Mises, L. ([1949] 1966). *Human action: A treatise on economics* (3rd ed.). Henry Regnery
von Mises, L. (1944). *Bureaucracy*. Yale University Press.
von Mises, L. ([1950] 2008). Middle-of-the-road policy leads to socialism. In *Planning for freedom: Let the market system work* (pp. 41–52). Liberty Fund
von Mises, L. ([1929] 1976). *A critique of interventionism: Inquiries into the economic policy and the economic ideology of the present*. New Rochelle: Arlington House Publishers.
von Mises, L. ([1940] 1988). *Interventionism: An economic analysis*. Irvington-on-Hudson: The Foundation for Economic Education.
Murray, W. S., & Flood, H. (1922). *Government owned and controlled compared with privately owned and regulated electric utilities in Canada and the United States*. National Electric Light Association.
Nelles, H. V. (1976). Public ownership of electrical utilities in Manitoba and Ontario, 1906–30. *Canadian Historical Review, 57*(4), 461–484.
Nelles, H. V. (2003). Hydro and after: The Canadian experience with the organization, nationalization deregulation of electrical utilities. *Annales Historiques De L'électricité, 1*(1), 117–132.
Nelles, H. V. (2005). *Politics of development: Forests, mines, and hydro-electric power in Ontario, 1849–1941*. McGill-Queen's Press-MQUP.
Neufeld, J. L. (2016). *Selling Power: Economics, policy, and electric utilities before 1940*. University of Chicago Press.
Peltzman, S. (1976). Toward a more general theory of regulation. *The Journal of Law and Economics, 19*(2), 211–240.
Pennington, M. (2005). The dynamics of interventionism: A case study of British land use regulation. *Advances in Austrian Economics, 8*, 335–356.
Piché, P. É. (1937). Régimes Et Tarifs D'électricité. *Actualité Économique, 13*(2), 17–30.
Rajagopalan, S. (2020). Demonetization in India: Superfluous discovery and money laundering. *The Review of Austrian Economics, 33*(1/2), 201–217.
Raynauld, A. (1961). *Croissance et Structure Économiques de la Province de Québec*. Ministère de l'Industrie et du Commerce.
Redford, A., & Powell, B. (2016). Dynamics of intervention in the war on drugs: The buildup to the Harrison Act of 1914. *The Independent Review, 20*(4), 509–530.
Rothbard, M. N. (1970). *Power and market: Government and the economy*. Institute for Humane Studies.
Shughart, W. F. (1999). The reformer's dilemma. *Public Finance Review, 27*(5), 561–565.
Stanton, A. L. (1929). The hydro-electric power commission of ontario. *Journal of the Royal Society of the Arts, 77*(4013), 1115–1130.
Stigler, G. J. (1971a). The theory of economic regulation. *The Bell Journal of Economics and Management Science, 2*(1), 3–21.
Stigler, G. J. (1971b). Smith's travels on the ship of state. *History of Political Economy, 3*(2), 265–277.
Stigler, G. J. (1975a). *The citizen and the state: Essays on regulation*. University of Chicago Press.

Stigler, G. J. (1975b). The goals of economic policy. *The Journal of Law and Economics, 18*(2), 283–292.
Stigler, G. J. (1992). Law or economics? *The Journal of Law and Economics, 35*(2), 455–468.
Thomas, M. D., & Thomas, D. W. (2021). Regulation, competition, and the social control of business. In S. Horwitz & L. Rouanet (Eds.), *A research agenda for Austrian economics.* Northampton: Edward Elgar.
United States Congress. (1934). *Surveys of the Great Lakes-St-Lawrence Seaway and Power Project*. Government Printing Office.
Wagner, R. E. (1989). *To promote the general welfare: Market processes vs. political transfers*. Pacific Research Institute for Public Policy.