

# The Canadian Experience with Deregulation

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## THE CANADIAN EXPERIENCE WITH DEREGULATION

December 13, 2004

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## A. INTRODUCTION

The 1980's and 1990's witnessed a substantial shift in industrial policy in Canada as in other developed countries. Policies were established to take a number of industries from rigid government regulation to greater reliance on market competition. Proponents of deregulation were especially optimistic about consumer benefits that would flow from competition in the telecommunications, electricity and airline industries. The transition in the supply of telephone services from a monopoly to competition from new entrants and a convergence of technologies across the telecommunications industry carried the promise of lower prices, greater innovation, and greater responsiveness to consumer needs.<sup>1</sup> Changing technology in electricity generation diminished the traditional natural monopoly basis for regulated prices in that industry, and in airlines it became increasingly accepted, especially with the increase in air travel, that a natural monopoly justification for price regulation was nonexistent even without substantial changes in technology.

This paper assesses the current state of deregulation in Canadian markets for telephony, electricity and airlines. It is an opportune time to review the Canadian experience. Enough time has passed since the inception of deregulation, and sufficient problems have arisen in the transition towards competition, that lessons are available. The problems are evident: shortages and consumer intolerance to high prices in electricity markets; a slow (relative to prior expectations) rate of entry of competitors into local telephone service; and bankruptcies in the airline industry. Yet enough distance remains in the transition towards greater reliance on markets, and uncertainty in even how far the transition will take us, that these lessons will prove valuable in the future.

We select telephony, electricity and airlines for our assessment because of the prominence of these industries within the Canadian economy and their central place in the deregulation movement. In addition, there is considerable overlap in the sets of policy issues

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<sup>1</sup> The promise of telecommunications competition in Canada and elsewhere is reviewed in W. Stanbury and S. Globerman and T. Wilson, "The Future of Telecommunications Policy in Canada," eds, May 1995; M.E. Cave, M.K. Majumdar and I. Vogelsang, "Structure, Regulation and Competition in the Telecommunications Industry," in Cave, Majumdar and Vogelsang, eds., *Handbook of Telecommunications Economics*, North-Holland 2002, W.J. Baumol and J. Gregory Sidak, *Toward Competition in Local Telephony*, American Enterprise Institute for Research in Public Policy Research, 1994; the promise of competition in the electricity sector is reviewed in Ontario Advisory Committee on Competition in Ontario's Electricity System, *A Framework for Competition* (1996); Ron Daniels (ed.), *Ontario Hydro at the Millenium: Has Monopoly's Passed?* (Montreal: McGill-Queen's Press, 1996); Sally Hunt and Graham Shuttleworth, *Competition and Choice in Electricity* (N.Y.: John Wiley & Sons, 1996).

that have arisen in the deregulation of each industry and hence considerable benefit from undertaking a cross-industry analysis.

The overlap in policy issues follows largely from the fact that each industry involves a network. The public telephone network serves as a conduit for telephony service; the transmission and distribution grid or network carries the flow of electricity to purchasers; and the network of airports and routes carries airline passengers. In all three industries, issues arise as to the appropriate boundary between the regulated sectors of the network and the sectors in which services are supplied competitively; the appropriate regulation of wholesale, or access, prices; the need for continued regulatory constraints on retail prices and pricing conduct; and the correction of inefficiencies in *relative* prices (for example business versus residential service in telephony or peak versus off-peak pricing in electricity). Of course, industry-specific issues also arise in the transition from regulation towards reliance on markets.

Our approach to assessing the Canadian experience with deregulation is to evaluate the experience in each industry in separate sections of the paper and then to summarize the cross-industry approaches to common challenges. In our assessment within each section, we address two general questions. First, is the perception of dismal performance of some deregulation policies justified, or are the regulatory policies in fact the optimal response to the issues delineated above? A wide variety of views have been expressed on this issue. Problems experienced in the transition are attributed to market failure and the misguided attempt to replace regulation by the political left, and to a failure of governments to truly eliminate unnecessary regulation and allow markets to work by the political right. We attempt to identify regulatory failures as well as problems that are simply inherent in the markets. Second, we outline the lessons for future progress towards efficient industrial policy that can be gleaned from a stock-taking of the experience so far.

Our cross-industry normative analysis is linked by a common benchmark that we adopt for the evaluation of government policy: the maximization of economic efficiency, as measured by the sum of benefits to consumers within an industry and to shareholders of the industry firms. Where regulation is designed to provide suppliers with a fair return on invested capital (“zero economic profits”), this objective translates into the maximization of the sum of benefits to all consumers within an industry from current products and prices and innovation to support future products. This objective sounds simple, but requires elaboration in two respects. First, it might

in theory be possible to increase consumer benefits by regarding capital invested by incumbent firms under traditional regulation as sunk and not requiring current prices to cover a fair return to that capital. We take it as given, however, that the government should not renege on the implicit regulatory compact it has with firms that invested capital under the original rate-of-return regulation. For the sake of long-run efficiency, the state's commitments must be credible. The legal basis for the regulatory compact is also well-established.<sup>2</sup> Second, a more subtle aspect of designing efficient government regulation is that one must, paradoxically, incorporate the inability of government to commit to the goal of efficiency in future regulatory policy. This gives rise to a need in the analysis for attention to political constraints.

Our analysis across industries is linked by the application of this common benchmark to our two general questions – the assessment of existing regulation and the development of lessons for future regulatory policy – and, as indicated, by the commonality of questions that must be addressed. On the issue of which elements of the networks remain natural monopolies, and appropriately regulated as such, we conclude that in electricity generation is potentially supplied competitively but transmission and distribution remain natural monopolies. In telephony, the incumbent ownership of public switch networks – the remaining natural monopoly - means that local telephone service, which is dominated by these incumbent suppliers, must still be regulated. Critics of telephony regulation who argue that the wide range of competitive alternatives have eliminated the need for regulation in the industry are, for now, wrong. Because of rapid technological change in telephony, however, the interesting question is how the boundary between the competitive and regulated sectors should evolve as competitive alternatives to traditional telephone service intensify. We offer some guidance on this issue. In airlines, the basic regulatory design mostly has it right. Airports alone have sufficient natural monopoly elements to remain regulated in spite of the presence of some network-related economies of scale in the provision of flights. Air travel can be and is competitively provided in the marketplace.

On the related question of whether vertical ownership links should be allowed between regulated and competitive sectors, separation of generation from transmission may well be needed in electricity to attract competitors into generation by ensuring fair access to transmission. In telephony, by way of contrast, we find no evidence to suggest that Canada has

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<sup>2</sup> *Northwestern Utilities vs. the City of Edmonton* (1929) SCR 186.

suffered from allowing (unlike the U.S.) incumbent owners of essential facilities to participate in the long distance market.

Given policy determination of the boundary between regulated segment of a network and the competitive segment, the question arises as to the need for continued regulation of prices and conduct of dominant firms in the competitive sectors. This is a contentious issue in all three industries. In electricity, even a moderate degree of concentration in generation can lead to the profitable exercise of market power through the withholding of capacity. In telephony, the regulatory agency constrains the wholesale prices of incumbents for access to essential assets and is leaning towards constraining both the selective discounts incumbents can set in response to competitive entry in long distance and the prices that incumbents can set on emerging alternatives for local service. In airlines, while the regulatory regime is in flux, the regulatory constraints facing the incumbent have also been against reducing prices, and have taken the form of challenges based on predatory pricing theories.

The role of political constraints in developing industrial policy in the current period of deregulation differs sharply across industries. Deregulation of telephony, for example, gave rise to much lower prices for long distance calls and given technological change, lower prices also for the average bundle of telephony services. Most consumers have unambiguously been better off in the period of deregulation than they were before deregulation, and as a result there has been little political resistance. In contrast, the sharp rise in some electricity prices that was required by a move to greater efficiency provoked a reaction on the part of citizens and on the part of politicians representing them that in turn led to major distortions in electricity prices. The political resistance to higher electricity prices, we suggest, is both a puzzle from the perspective of traditional political economy and a factor that must be dealt with in a successful transition to greater reliance on market forces

The most important lesson for future regulatory policy is that political constraints must be recognized in policy design. In electricity, for example, a solid commitment by the government never to intervene in constraining future price increases – were such a commitment possible – might attract enough generation capacity that future political pressure for limiting price increases would not arise. But the design of regulation today cannot pretend that the policy designed will be immune to future political pressures to protect particular groups from the shock of excessive prices. It must take politics seriously by incorporating the constraint of a lack of government

commitment in the future to an efficiency-maximizing policy designed today (often referred to as the problem of “time consistency”). A related and well-established problem is that even efficiency-enhancing policies may be politically infeasible if the policies also involve substantial transfers of wealth away from organized interest groups. Attempts at deregulation must anticipate political obstacles to reform even at the cost of some reduction in total efficiency. A less-than-ideal reform that is robust to future political pressures is better than an ideal reform that will not survive the political arena.



## B. TELEPHONY

### I. Introduction: Overview of Telecom Regulation

The telecommunications industry is in transition from a fully regulated industry to competitive industry not just in Canada but throughout the world.<sup>3</sup> The technology for delivering telephony service traditionally involved a single set of linked networks, from the local network to national and international networks. The technology involved a natural monopoly because it was most efficient to provide the service with a single public switched telephone network (PSTN), and the industry was regulated as a natural monopoly. Telecommunications technology has changed rapidly in the past three decades, however. Copper wire transmission has been replaced to a large extent by wireless and internet transmission, and substantial advances have been seen in electronic transmission equipment and communications software. The historical natural monopoly has evolved worldwide into a network in which some components of the network remain efficiently provided by a single supplier but other components can be supplied competitively. The three main sectors of the voice telecommunications industry – local fixed, or wireline, networks; local wireless networks; long-distance and international networks<sup>4</sup> – all currently make use of the PSTN, with calls being routed through this central network. Technology, however, is moving increasingly towards a “network of networks” model. For example, calls between wireless service providers can be routed directly between the two providers and calls between customers using Voice-Over-Internet-Protocol can also be connected without use of the assets of the traditional regulated incumbent telephone companies (“telcos”).

As the technology has evolved, so has regulation. The telecommunications regulatory body in Canada, the Canadian Radio and Telecommunications Commission (CRTC), has itself promoted the move towards greater competition; Canadian statutory policy on telecommunications has since the *Telecommunications Act* of 1993 been based explicitly on the premise that competition is preferred to regulation when conditions allow for it. Traditional

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<sup>3</sup> Twenty-six of the thirty OECD countries had, in 2001, unrestricted market access to all forms of telecommunications, compared to very few 10 years ago. See OECD, *Regulatory Reform in Canada: Regulatory Reform in the Telecommunications Industry*, 2002, p. 1

<sup>4</sup> Service provision over networks is sometimes distinguished as another sector (Mark Armstrong, “Competition in Telecommunications,” *Oxford Review of Economic Policy*, 13(1), (1997), p. 65).

rate-of-return regulation was replaced with price-cap regulation in a 1994 decision and incumbent telcos now face four main sets of constraints on prices:

- Price-cap regulation, which sets ceilings on several baskets of services. Under price-cap regulation the initial level of the price index under price-cap is set to cover costs including a fair return on capital, and is allowed to increase over the price cap term of 4 to 6 years at the rate of inflation minus the predicted rate of real cost decrease (total factor productivity increase) over the term. Constraints on individual prices are replaced to a large extent by constraints on the prices of baskets of services, thus allowing the telcos some price flexibility. Canadian incumbent telcos are into their second price cap term.
- Incumbents' prices on some individual services, for example the rates on basic local service, are set by regulation.
- Incumbents must "unbundle" their network assets and offer access, at regulated prices, to those assets which are essential for competitors to provide service.
- Price floor constraints or "imputation tests" are imposed on the rates that incumbents charge for competitive services such as long distance rates. The price floor for each service or service bundle is based on incremental cost plus an imputed contribution to joint costs.

The price cap regulation replaces rate of return regulation with a mechanism that allows telcos to capture a larger share of any cost savings achieved and allows greater price flexibility as well. The price floor constraints on incumbents are mainly for the purpose of preventing anticompetitive pricing in the form of undercutting competitors that try to enter or increase market share. An incentive to cut prices excessively can be created or magnified by the price cap constraint because lowering one price under the cap on a basket of services allows other prices to increase. The CRTC forbears from enforcing regulation of long distance rates, apart from imputation tests, and does not regulate wireless rates. Within the set of price constraints, the CRTC has at times enforced three sets of cross-subsidies: from long distance to local service, from business to residential, and from urban to high-cost rural bands. The first of these cross-subsidies has been eliminated through the CRTC's "rate rebalancing", the second remains to

some extent, and “postage stamp” pricing for rural areas is still enforced through a portable subsidy mechanism.

Two recent preliminary notices by the CRTC warrant particular attention. While the trend in the CRTC regulation has been towards relaxing regulation, in *Telecom Public Notice 2003-10* (December 2003) the CRTC stated that in its preliminary view the incumbents’ pricing of all retail services under the existing price floor mechanisms was too flexible. In particular, “that flexibility appears to have allowed the large ILECs to engage in targeted pricing in response to competitive entry, to the detriment of the development of competition.”<sup>5</sup> This targeted pricing takes the form of calling customers who have switched from the incumbent to a competitor and offering the customers a special rate to switch back. The CRTC is of the preliminary view that a higher mark up (25 percent) on regulatory-determined costs (“Phase II costs”) would be an appropriate imputation test, or price floor. The proposed increase in the price floor also responds to the CRTC’s concern that competitors using the essential facilities of an incumbent, e.g., the incumbent’s local loop, currently must pay an incumbent firm the cost of the local loop plus a markup of 15 percent whereas the incumbent can price a retail service based on the cost without the markup.<sup>6</sup>

The second notice concerns Voice-over-Internet-Protocol (VOIP), which is the most promising of the new alternative technologies for local telephony service. VOIP extends the technology of sending information over networks in packets to allow efficient transfer of high quality voice traffic. As a general matter, the CRTC’s regulatory policy is consistent with principles of competition policy, in the sense that decisions on whether to regulate or forbear are made on the basis of the conditions of the *market* (defined consistently with principles of competition policy) rather than by technology. This has led to a divergence between the Canadian and U.S. approaches to VOIP. The CRTC considers VOIP to be local exchange service to the extent that it connects subscribers through the PSTN and will regulate it as such, according to a preliminary notice in April 2004.<sup>7</sup> This means that large incumbent telcos are constrained to set regulated retail prices, while competitors are unconstrained. Not until this

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<sup>5</sup> *Telecom Public Notice 2003-10* (December 2003), paragraph 17.

<sup>6</sup> *Telecom Public Notice 2003-10* (December 2003), paragraph 24.

<sup>7</sup> CRTC Telecom Public Notice 2004-2, April 7, 2004. By contrast, the Chair of the U.S. Federal Communications Commission announced in June 2004 that VOIP providers would not be regulated as local service providers. The CRTC decision on its approach to VOIP is anticipated in early 2005.

market is sufficiently competitive, or to the extent that VOIP service by-passes the PSTN, will the regulator forbear, according to the preliminary notice.<sup>8</sup>

Telecommunications presents the canonical set of questions that must be addressed in the policy governing a network industry in transition from regulation to competition, including the following: What is the right test for identifying the appropriate boundaries between the competitive sector and the regulated sector? How are rates to be regulated at both the wholesale or access-pricing level and the retail level? The choice of a mechanism that is flexible enough to accommodate strong and unpredictable changes in technology is a particular challenge. The pace and pattern of deregulation in telecommunications have been matters of intense dispute in both Canada and the United States.<sup>9</sup> Some commentators have argued that the U.S. industry is more regulated than ever, and that government policy is hindering rather than helping an efficient transition to greater competition.<sup>10</sup> Critics claim that U.S. access prices and retail prices are so low as to discourage new technologies to the ultimate detriment of consumers. With recent evidence that retail prices for local service are much lower in Canada than in the U.S., this call has been taken up by critics of Canadian telecommunications regulation as well.<sup>11</sup>

In the following section, we review the empirical evidence on the performance of Canadian telephony and the extent to which each of the three main sectors of telephony – local exchange service, long distance service and mobile telephone - have progressed towards competition. We then assess four aspects of regulation of Canadian telecom: the general regulatory burden, the regulation of wholesale or access prices, the regulation of local exchange service prices, and imputation tests, including the CRTC’s preliminary views on targeted pricing and VOIP regulation. Finally, we summarize our “bottom-line” assessment of Canadian telephony regulation as well as lessons for future regulatory policy in the market.

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<sup>8</sup> The CRTC held a hearing on VOIP regulation in September 2004 and will publish a decision on the issue in 2005.

<sup>9</sup> See especially Daniel F. Spulber, “Deregulating Telecommunications,” *Yale Journal of Regulation*, 12(1), (1995), pp. 25-67; Robert W. Crandall and Jerry A. Hausman, “Competition in U.S. Telecommunications Services: Effects of the 1996 Legislation,” in *Deregulation of Network Industries: What’s Next?* (Sam Peltzman and Clifford Winston, editors, AEI-Brookings Joint Center for Regulatory Studies: 2000); J. Gregory Sidak, “The Failure of Good Intentions: The WorldCom Fraud and the Collapse of American Telecommunications After Deregulation,” *Yale Journal on Regulation*, 20(2), (2003), pp. 207-67.

<sup>10</sup> Sidak (2003), *Ibid.*

<sup>11</sup> Neil Quigley, “Dynamic Competition in Telecommunications,” C.D. Hoew Institute Commentary, February 2004; Valentin Petkantchin, “Do we still need to regulate telephone services?” Montreal Economic Institute, Economic Note, May 2004.

## II. Empirical Evidence on the Trends to Competition

The trends towards increased competition within the sectors of the Canadian telecommunications industry are summarized in the following tables on market shares. Local exchange service is split into residential and business in Tables 1 and 2; market shares in long distance are described in Tables 3 and the wireless sectors in Figure 1:<sup>12</sup>

**Table 1: Shares of Local Residential Revenues**

	1998	1999	2000	2001	2002
Incumbents	100.0%	99.9%	99.7%	99.6%	98.9%
Competitors	0.0%	0.1%	0.3%	0.4%	1.1%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

**Table 2: Shares of Local Business Revenues**

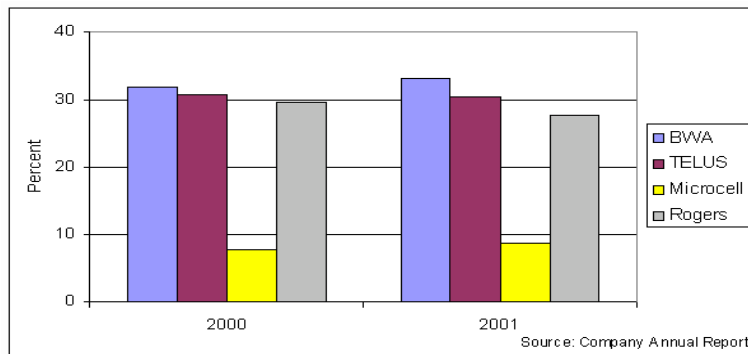
	1998	1999	2000	2001	2002
Incumbents	99.3%	97.1%	96.0%	94.7%	91.9%
Competitors	0.7%	2.9%	4.0%	5.3%	8.1%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

**Table 3: Shares of Long Distance minutes (within operating territories) of Incumbent Telcos**

	1995	1996	1997	1998	1999	2000	2001
Bell	74%	69%	63%	64%	62%	62%	61%
Telus	81%	72%	66%	70%	71%	75%	75%
MTS	-	-	75%	75%	76%	80%	80%
SaskTel	100%	-	-	92%	93%	84%	82%
Aliant	-	-	89%	82%	86%	81%	82%

<sup>12</sup> Sources for all tables and figure: CRTC, *Report to the Governor in Council, Status of Competition in Canadian Telecommunications Markets*, November 2003.

**Figure 1: Market Shares (revenue) of Major Wireless Service Providers**



The long distance and wireless sectors are considered sufficiently competitive that the CRTC does not regulate rates in these markets. Long distance rates have been unrestricted since 1990 and while entry was initially restricted in the wireless sector, wireless rates have been unregulated since the beginning of this market in 1984. It is clear to even a casual observer of pricing conduct in the Canadian telecommunications market that these sectors are even more intensely competitive than the market shares of Table 3 and Figure 1 would suggest. Local service, however, is a different story. Competitors have gained only about one percent market share since the CRTC established the framework for facilities-based local competition in 1997.<sup>13</sup> As discussed, the CRTC has been so concerned about the lack of competition in this sector that it announced, in a preliminary notice, a tightening of the price floors constraints faced by the incumbents in order to facilitate entry by competitors.

Against international standards, Canadian telecom markets are very efficient. The OECD, in a recent report on the Canadian Telecom regulation, found that Canadian telephony prices were 10<sup>th</sup> lowest among 32 OECD countries in the residential sector and 6<sup>th</sup> lowest in the business sector (using purchasing power exchange rates). The OECD concluded

“Canada is one of the leading OECD countries in terms of its performance in the telecommunication sector. Its best practice performance is largely due to its regulatory processes and frameworks and policy structures. ... [M]any of the contentious regulatory problems that have marred performance in other OECD countries have been largely resolved in the Canadian telecommunication context. Low prices, good quality service and relatively rapid diffusion of new technologies characterise the Canadian telecommunication landscape. The regulatory framework is transparent and allows for full participation of all interested parties.”<sup>14</sup>

<sup>13</sup> Moreover, a substantial fraction of this one percent is the sales of Eastlink, which is a Maritime cable company that supplies telephony services through telephone wires installed at the time that it was installing cables; this entry does not in itself signal the potential for cable companies to compete in telephony.

<sup>14</sup> OECD (2002): 5.

The OECD analysis of telecom rates found that for the residential sector, Canadian and U.S. rates were about the same in 2001, for a selected basket of local service and long distance service. A more recent study by SeaBrook Consulting Group found, however, that in the first quarter of 2003 Canadian rates were dramatically lower. On a purchasing power exchange rate basis, Canadian rates for a basic service bundle were *less than two-thirds* U.S. rates for a representative sample of cities.<sup>15</sup> This would strengthen the favourable conclusion of the OECD regarding the performance of Canadian telephony market – unless one believes that Canadian rates are *too* low, as critics of telecom regulation claim. In the following section, we discuss both the views of these critics as well as our own conclusions.

### **III. Assessment of CRTC Telecom Policy**

#### **1. Benchmark for Assessment**

As the benchmark against which to assess regulation we adopt the goal of maximizing total economic efficiency, or total gains from trade in the industry, subject to one constraint: the *regulatory compact* with incumbent firms. The regulatory compact provides incumbents with a fair rate of return on the investment made under regulation.<sup>16</sup> Government regulators could, in theory, ignore all of the sunk costs of incumbent firms by setting access prices extremely low and attempting to achieve an outcome as close as possible to marginal cost pricing. Ignoring the regulatory compact would improve efficiency in the short term in this industry, but the long run impact of the reduced credibility of regulation would be disastrous. Fairness considerations as well support the regulatory compact. The ideal policy, we suggest, is made up of the price levels, access conditions and entry regulation that maximize efficiency among all possible sets of policies that allow incumbent firms to earn a fair rate of return on capital invested in the rate base

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<sup>15</sup> SeaBoard Group (2003), *Communicating Pricing for Consumers: A Cross-National Survey*. The Canadian cities were Toronto, Winnipeg, Regina, Lethbridge, and Cornerbrook. The American cities were Chicago, Pasadena, Augusta, Tuscaloosa, Boston, Seattle, and Boise. This study's conclusion that Canadian rates were two-thirds U.S. rates was identical whether the services priced were a basic basket of local and (some) long distance or a basket of services with more long distance and many options.

<sup>16</sup> The regulatory compact does not guarantee a fair rate of return in each year of operation, but rather a projected rate of return at fair levels at the outset of a price-cap term. Should the projected productivity of the incumbent differ from forecast, the realized rate of return would differ. Most importantly, the compact should protect the incumbent from regulatory "hold-up" in which the regulator reduces prices below fair levels once the investment is sunk.

corresponding to rate of return regulation. Efficiency in regulatory or competition policy includes both static efficiency and dynamic efficiency. In our context, the goal of static efficiency means, briefly, that the overall price level in telecom should not be higher than necessary to meet the fair rate of return constraint, and relative prices should be as closely aligned with relative costs as the fair rate of return constraint allows.<sup>17</sup> Dynamic efficiency refers to the encouragement of efficient rates of innovation as well as investment in new capital in the market, to the extent that new investment, e.g. facilities-based entry, is superior to entry via resale.

## 2. The Excessive Burden of Regulation

A general theme in the U.S. literature, is that telecom regulation is simply too burdensome and too extensive. Critics point to an *increase* in expenditures by industry regulators and argue that the industry is regulated now more than ever.<sup>18</sup> Telecom public policy, as leading expert Robert Crandall has put it, assumes that government can do a better job of managing the transition from regulation to competition than the market itself can.<sup>19</sup> Crandall and Jerry Hausman write that “the enormous welfare gains that are potentially available from the development of ... new services and from the movement of the prices of traditional telecom services to competitive levels are being squandered in the belief that detailed regulation is the best route to competition.”<sup>20</sup> We have some sympathy with the idea that government regulation can be too intrusive and regulators too inclined to micro-manage.<sup>21</sup> The increased expenditure on regulation does not mean, however, that the decisions of telcos are more tightly regulated than during the old regime of monopoly carriers subject to traditional rate of return regulation. In the old regime, prices were set by the regulator. In the current transitional period, long distance

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<sup>17</sup> More precisely, prices should not be proportional to costs but rather the markup of prices over costs should be in line with the principles of Ramsey pricing.

<sup>18</sup> See J. Gregory Sidak, “The Failure of Good Intentions: The WorldCom Fraud and the Collapse of American Telecommunications After Deregulation,” *Yale Journal on Regulation*, 20(2), (2003), pp. 211-214.

<sup>19</sup> Robert W. Crandall, *Managed Competition in U.S. Telecommunications*, (AEI-Brookings Joint Center for Regulatory Studies: March 1999), Working Paper 99-1, p. 16.

<sup>20</sup> Robert Crandall and Jerry Hausman, “Competition in U.S. Telecommunication Services: Effects of the 1996 Legislation,” in Sam Peltzman and Clifford Winston, *Deregulation of Network Industries: What’s Next?*, AIE-Brookings Joint Center for Regulatory Studies, 2000. Crandall and Hausman’s criticisms of U.S. telecommunications regulation are focused especially on the impact of the 1996 Federal *Telecommunications Act*.

<sup>21</sup> This is an industry, to illustrate, where one of the most recent regulatory decisions in Canada was on the question of whether or not an entrant should have an escort when visiting its own facilities that are, by order of the regulator, located in a building owned by an incumbent local exchange carrier.



retail rates are constrained only by imputation tests and the rates of more and more services offered by incumbent telcos are entering the “non-tariffed” set of services. Moreover, the rates of competitive entrants are virtually free from regulation. The greater investment in regulatory resources in telecom is the result of the complexity of the regulatory environment during the transition towards greater reliance on market forces: price cap regulation is complex, with constraints on the prices of various baskets and sub-baskets. And the interaction of incumbent telcos with competitive entrants in the transitional phase gives rise to an entirely new level of regulation, access pricing, as well as price floors in the expanding set of markets in which incumbents compete with competitive entrants. The greater expenditure on regulatory resources is ironic given the increased flexibility that incumbent telcos have in setting prices compared to the traditional monopoly period of the industry, but in itself is not proof of increasing and excessive government regulatory burden on the industry. The efficiency of the industry regulation must be assessed by examining the necessity and appropriateness of each component of regulation. Criticism of the overall expenditure on regulation is misguided.

### **3. Access Price Regulation**

Crandall and Hausman criticize the access conditions and wholesale prices in the U.S. whereby, as in Canada, incumbent companies must unbundle their networks into a set of components or functions and offer them to competitors at cost-based prices. The authors complain that the FCC approach to setting wholesale prices does not take account of the sunk and irreversible costs of investment in telecommunications networks.<sup>22</sup> Neil Quigley criticizes the CRTC regulation of wholesale prices on the same basis.<sup>23</sup> Crandall and Hausman and Quigley criticize the low wholesale rates in part because the low rates allow entrants to avoid facilities-based entry in favour of the other two forms of entry: resale, or reliance on components of incumbents’ assets.

This criticism fails to take into account that the bulk of incumbents’ assets for local service, as sunk assets, have low social marginal costs. Subscribers have paid and are paying for investment in these assets via high prices, and providing that allowed retail prices and wholesale

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<sup>22</sup> Crandall and Hausman. We presume that the substantial decreases in U.S. telecom wholesale rates in the fall of 2002, after the Crandall-Hausman paper was written, would provoke even stronger criticism.

<sup>23</sup> Neil Quigley (2004), “Dynamic Competition in Telecommunications,” C.D. Howe Institute Commentary, No. 194, February 2004.

prices are adequate, then the incumbent firms will have earned a fair rate of return on the investment – even if the wholesale prices are based on incremental costs. Subject to the constraint that the entire set of regulatory price constraints allow a fair rate of return, wholesale prices *should* be low because the social opportunity cost of the assets does not include sunk costs. More precisely, the wholesale prices should only be marked up over incremental cost to the extent that the resulting retail prices of competitors reflects sunk costs to the same extent as do the retail prices of incumbents. It is important to emphasize, of course, the qualification that the set of regulatory constraints, current and historical, must allow the regulated incumbent a fair rate of return on invested assets. And a critical component of costs, for which incumbents must be compensated in regulatory rate-setting, is the economic depreciation of existing assets as technology produces superior substitutes. If the regulatory compact were violated, then the incentive for incumbents to renew assets would be compromised, as would incentives for any future regulated firms whose investments relied on regulatory compacts.

We question the proposition that *facilities-based* entry as such should be a goal. While it is explicitly an objective of the Canadian *Telecommunications Act* of 1993 (and the U.S. *Telecommunications Act* of 1996), and is likely to emerge in the long run, acceleration of facilities-based entry can be excessive. The social cost of incumbent assets is sunk; the investment of prospective entrants is not. Encouraging facilities-based entry as an end in itself runs the risk of wasting sunk assets that are available at very low social marginal cost. In short, access prices need only be high enough to cover the costs of the assets, including a fair return on investment, to be part of an efficient telecom regulatory mechanism. Given the low cost of sharing network assets already established, any access prices significantly in excess of this cost are inefficient, notwithstanding the acceleration of facility-based entry that such prices would induce.

#### **4. Regulation of Local Service Rates**

At the core of telephony regulation are the caps on rates for local exchange service. Incumbent telcos are constrained by these caps in addition to the ceilings on the index of prices for various services. Are regulated caps on local exchange service still warranted, given the clear increase in alternative products such as mobile telephone service and internet-based telephony? Does even the core telephony product lie outside the boundary of services that

should be regulated in the industry? We suggest that the task of identifying the appropriate boundary between regulated and competitive services in telephony should be based on competition policy principles. In competition policy, a standard benchmark is that a merger or business practice would lead to a substantial lessening of competition where the merger or practice caused a price increase of 5 percent or more. In telephony, the issue is whether removing regulation would allow the exercise of substantial market power on the part of the incumbents. With the typical retail rate for basic local exchange service in the order of 20 dollars per month, the test would then be that the rates should remain regulated as long as incumbents would be able profitably to raise price by 1 dollar (or 2 dollars, if the benchmark for a substantial exercise of market power is relaxed to a 10 percent price increase). As in competition policy, the starting point for evidence on this issue is data on market concentration. Table 1 and 2 demonstrate that incumbents have overwhelming dominance in the supply of local exchange service, with market shares in excess of 90 percent of local business exchange and 99 percent for the residential sector. The barriers to facility-based entry – under current technology – only add to the *prima facie* case for continued regulation of local exchange rates. This is not to say that technology will not change rapidly in the near future to eliminate dominance of local exchange incumbents and the need for regulation. As we discuss below, however, there is no compelling reason that price regulation should be removed for incumbent telecoms until competition is sufficiently established for a service to discipline the incumbent telco against exercise of market power.

Three objections to the regulation of local exchange service have been raised by critics. The first is that the premise for regulation – that competition is inadequate for some services including local exchange service – is wrong because it ignores the strong “competition for the market”, i.e., competition in the form of development of new technologies that are substitutes for local wireline exchange. Professor Neil Quigley goes so far as to attribute the strong industry performance of Canadian telecom to the existence of competition for the market<sup>24</sup> and thus explains the “apparent paradox” of its strong performance in spite of the fact that “competition is virtually nonexistent in all but our largest cities”, noting the low regulated prices for the service

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<sup>24</sup> Neil Quigley (2004), “Dynamic Competition in Telecommunications,” C.D. Howe Institute Commentary, No. 194, February 2004. Similar themes are developed in Valentin Petkantchin, “Do we still need to regulate telephone services?”, Montreal Economics Institute *Economic Note*, May 2004.

and substantial investment in infrastructure.<sup>25</sup> In our view, there is no doubt that low prices for local exchange service are due to the strong, consumer-oriented regulation in Canada. In the U.S., even with greater competition for the market,<sup>26</sup> prices are 50 percent higher because of more lax regulatory constraints. Incumbent telcos in Canada, facing similar demand and cost conditions, would raise their prices substantially if not constrained by regulation and in this sense do have substantial market power, contrary to Quigley’s claim that “the CRTC’s approach to the analysis of competition does not do justice to the extent of competitive pressure that currently exists for the supply of residential local access services.”<sup>27</sup>

The second objection is that rates are too low to meet the regulatory compact. As Professor Quigley frames this criticism, the incumbent telcos are the victims of a “hold-up” problem in which they are not being compensated fairly for sunk investment. As we have emphasized throughout, the regulatory compact is essential and the social costs and unfairness in its violation would be substantial. But has the regulatory compact been violated? The starting point for the price cap regulation was the allowed prices under rate of return regulation, which ended with the first price-cap period in 1998. We can exploit an economic relationship between the fairness of allowed rates of return (as perceived by investors) and stock market valuation under rate of return regulation, to uncover evidence on whether the regulatory compact has been met. Suppose that under original-cost rate of return regulation investors in a regulated firm have come to expect a rate of return that is fair. Then the market value of equity would be identical to the book value of equity for the firm, which is the original cost of investment minus allowed depreciation.<sup>28</sup> In other words, investor expectations of fair treatment by regulators result in a market-to-book ratio of 1. A ratio persistently above 1 indicates investor expectations of generous treatment by regulators.

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<sup>25</sup> Quigley (2004), p.2.

<sup>26</sup> Voice-over-internet-protocol, for example, is further developed in the U.S. than in Canada.

<sup>27</sup> Quigley (2004), p. 12.

<sup>28</sup> To see why this proposition is valid, suppose that the fair return on each dollar of investment by a regulated firm is 10 percent. Equity investors always discount future payments at a fair rate of return – i.e., a rate of return that includes an appropriate premium above long-term interest rates on government bonds. If the investors expect a future fair return of 10 percent on each dollar of investment, then the market value of each dollar of investment (i.e., of each book dollar) will be a 10 percent return discounted at 10 percent. This is identical to one dollar. That is, the market to book ratio is one under expectations of fair return. For a more detailed explanation, see Laurence Booth, “The Importance of Market to Book Ratios in Regulation”, NRRI Quarterly Bulletin, Winter 1997.

Table 4 below provides the earned rates of return by Canadian telcos as well as their market-to-book ratios for the period 1981 to 1996, just before rate of return regulation was replaced by price cap regulation.

**Table 4: Telco Earned Rates of Return and Market-toBook Ratios**  
**Canada, 1981-1996<sup>29</sup>**

Year	Telco ROE	Long Term Interest Rate	Premium earned	Market to BookRatio
1981	14.06	14.38	-0.32	0.92
1982	15.08	11.77	3.31	0.91
1983	15.58	12.75	2.83	1.16
1984	14.82	11.11	3.71	1.24
1985	14.11	9.54	4.57	1.39
1986	13.16	9.93	3.23	1.41
1987	13.03	10.23	2.80	1.31
1988	12.9	9.92	2.98	1.27
1989	12.79	10.85	1.94	1.32
1990	12.68	9.81	2.87	1.26
1991	12.72	8.77	3.95	1.34
1992	12.41	7.85	4.56	1.35
1993	11.98	8.58	3.40	1.41
1994	11.49	8.36	3.13	1.50
1995	10.25	7.54	2.71	1.33
1996	11.22	6.47	4.75	1.47

The evidence shows that the capital markets had become accustomed to generous treatment of Canadian telcos by the CRTC from the mid-1980's onwards. (The same test cannot be extended to the price-cap period, since the relationship between expectations of fairness and market-to-book ratios holds only under rate of return regulation.) We note, however, that the CRTC, with a history of reasonably generous treatment of regulated firms, found no reason to alter significantly the path of allowed prices at the end of the first price-cap period in 2002. In sum, the available evidence does not support the claim of regulatory "hold-up" in the form of inadequate returns to sunk investment.

The third objection of critics both in the U.S. and in Canada is the claim that regulated telco prices are too low to adequately encourage greater investment in alternative technologies.

<sup>29</sup> Source for telco data: Schedule 23 in Laurence Booth, "Fair Return for an Alberta Utility," filed with the Alberta Energy and Utilities Board, September 2003, on file with authors.

The argument is that higher prices would induce greater entry and investment in facilities-based entry, to the benefit of consumers. While some short-run loss would be suffered by consumers, the long-run benefits of the greater competition and greater development of new technology would dominate. Consumers on net would be better off tomorrow with higher prices today, and the constraint of meeting the regulatory compact would be non-binding.<sup>30</sup>

The standard presumption in economics is that consumers should be allowed access to the lowest quality-adjusted price available from suppliers at any time. Governments do not, for example, intervene in otherwise competitive markets by imposing price floors at higher-than-market prices in the expectation that the greater entry that these floors attract will lead, in the future, to lower prices than otherwise because of the dynamics of competition. Even in the Schumpeterian model of competition a firm cannot attract consumers from currently available suppliers until the firm has developed a product and offer that is more attractive to consumers. Consumers are not obligated to support currently inefficient suppliers through higher prices than the market would provide. It is true that intellectual property rights involves some theoretical tradeoff between “static inefficiency” and dynamic efficiency, but patent protection is of course equally available to new telecom technologies. Neither Schumpeter nor modern mainstream economists (at least outside the set of telecom regulation critics) advocate enhancing the intellectual property incentives for research and development with regulatory price floors. And the context of a regulated market does not lead to a violation of the principle that consumers should have the right to buy at the lowest price that would fairly compensate suppliers: regulation aims to mimic competitive markets in the sense of matching price and average cost, and there is no obvious reason why regulation should force prices above costs in such a market in exchange for the hope of accelerated innovation.<sup>31</sup>

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<sup>30</sup> As Professor Quigley states, in reference to the more formal development of this area in Evans, Quigley and Zhang (2003), “Optimal Price Regulation in a Growth Model with Monopolistic Suppliers of Intermediate Goods,” *Canadian Journal of Economics* 36 (2): 463-74, “The tradeoff between static and dynamic efficiency is captured by the fact that higher prices for the owner of the technology platform on which services are delivered to consumers results in more rivalry for incumbents, more innovations, and more economic growth, which increases social welfare but at the cost of reducing static efficiency.” (Quigley 2003), p. 9.

<sup>31</sup> In fact, an argument could be made that the tradeoff is even less likely to be in favour of higher prices in a regulated market. In a competitive market the initial social cost from constraining price slightly above the prevailing level is zero (to a first-order approximation) by the envelope theorem because such a market yields prices equal to marginal cost. This is not true in a regulated market, where prices equal average cost but exceed marginal cost because of economies of scale.

We are skeptical that even U.S. consumers would benefit from an increase in local service rates. In Canada, the possibility that consumers would benefit from a price increase is even more remote. Canada has a very small share of total world demand for local telephony services. The rate of innovation in alternative technologies for this service is, as a consequence, virtually independent of prices in Canada. Canadian consumers should therefore be allowed to wait for new technologies, such as VOIP, until those services can be offered at a price that is attractive to them. Commentators (and even regulators) are too often enamored with new technology, tending to view the development of new technology as the ultimate goal in an industry; consumer interests and fairness to suppliers are the goal. Technology that succeeded in a market only because prices were constrained above the cost of traditional technology would have entered at an inefficiently early date. Of course, there are market-specific fixed costs, not just innovation expenses, whose costs must be covered by prevailing prices before an entrant can succeed in a market; but this is true of any market. There is no basis for regulating prices above levels that cover costs including a fair rate of return on capital.<sup>32</sup> The low retail prices available to Canadian consumers of local telephony service are a mark of the success of the regulatory regime in Canada.

## **5. Imputation Tests (Price Floors)**

The arguments set forth by telecom regulation critics are more persuasive in regard to the two most recent significant (but preliminary) telephony notices of the CRTC. These decisions are the proposed tightening of the price floor constraint as a safeguard against targeted pricing by incumbents<sup>33</sup> and the inclusion of the voice-over-internet protocol (VOIP) as within the scope of the regulation of local exchange service.<sup>34</sup> The most important aspect of the second notice is the proposed constraint on incumbents against lowering prices on their own VOIP services in response to entry by competitors. Both decisions, in short, represent attempts by the CRTC to induce a greater rate of entry by competitors at the expense of constraints against lower prices in the short run.

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<sup>32</sup> It may appear that Canada would be *free-riding* on the incentives for innovation provided by higher U.S. prices, if these prices do induce greater innovation as Quigley and other critics claim. However, Canada and other countries, while obligated under international agreements to avoid free-riding by promoting and respecting intellectual property rights, face no such obligation to promote innovation by regulating prices above costs.

<sup>33</sup> CRTC Telecom Public Notice 2003-10.

<sup>34</sup> CRTC Telecom Public Notice 2004-2, April 7, 2004.

Any decrease in price on the part of an incumbent, whether through targeted pricing in the local exchange or long distance market or through an immediate response to entry into VOIP service by competitors, are properly viewed as a response not only to the realized competition of existing competitors but to the *potential competition* that new service providers represent. Potential competition can provide as strong a discipline on prices as actual market competition, and the low prices that the incumbent sets in response to the potential competition are to the benefit of consumers. It is true that targeted pricing or “fighting brand” strategies will inhibit the growth in market shares of competitive local exchange carriers. But it is wrong to identify the small market shares as indicators of a lack of competitive discipline on incumbents. Critics of the price *ceilings* imposed on incumbent telcos offered the theory that higher prices now would lead to lower prices later. We argued against this theory in favour of the standard benchmark that consumers should have the right to the lowest prices currently available in a market. The long-run benefits of higher current prices are, we argued, unlikely to be significant especially in the Canadian context. We have the same reaction to the CRTC’s proposals to tighten and extend constraints in the form of price *floors*. The CRTC’s theory in support of higher price floors on local service by incumbents may be that short run protection is required by new entrants in order to recover their costs of entry, establish a substantial presence in the market, and provide long run competitive discipline. The theory is that higher prices today may induce lower prices in the future – the same premise that the critics of telecom regulation relied upon to argue *against* the current price ceilings. The scope of this economic theory is very narrow. The theory that government intervention to induce higher prices in the short run so as to induce lower long run prices is at the heart of predatory pricing cases. As we explain in greater detail elsewhere, the circumstances where this theory applies are rare.<sup>35</sup> A necessary component of this theory is that capital requirements for entry into a service such as VOIP are so substantial that after an incumbent invokes a “fighting brand” strategy – successfully deterring entry – it will be able to maintain prices higher than if it had not dropped price, because future attempts at entry are also deterred.<sup>36</sup> The capital requirements for entry into the VOIP service or expansion of service are in fact very low. Entrants need not invest in any of the traditional infrastructure

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<sup>35</sup> M.J. Trebilcock, R.A. Winter, E. Iacobucci and P. Collins, *The Law and Economics of Canadian Competition Policy*, University of Toronto Press, 2002, p. 337.

<sup>36</sup> This is an essential element to the “fighting brands” version of predatory pricing theory. See Trebilcock, Winter, Iacobucci and Collins, *The Law and Economics of Canadian Competition Policy*, University of Toronto Press, 2002, Chapter 5.



associated with telecom service provision and Canadian cable television service providers as well as competitive telephone companies are well set up for entry into this service. The capital requirements are so low as to render implausible the fighting brands theory of anticompetitive price cuts. Regulators should not constrain incumbents against price responses to competitive entry. As Professor Donald McFetridge wrote in a comment on the recent CRTC public notice, “It is seldom the case, perhaps never the case, that inhibiting competition increases competition.”<sup>37</sup>

#### **IV. Conclusion**

We summarize our analysis of telecom regulation in Canada by addressing the two general issues raised in the introduction to this paper: a bottom-line assessment of regulation, including the sources of problems in the deregulation experience; and lessons for the future of deregulation. Is the regulatory performance in telecom as poor as some critics have claimed? The critics have pointed to the general increase in regulatory burden as measured by the resources spent on regulation. As we have discussed, however, the regulation of the telecom industry in transition is much more complex than under rate of return regulation. Flexible pricing constraints, a shifting boundary between tariffed and nontariffed services, access pricing constraints, imputation tests and a state of flux given rapidly changing technology are all new issues that must be grappled with in the transitional period. The increased regulatory expenditure as regulatory constraints are relaxed is ironic, but not surprising. Our bottom-line assessment is that the performance of Canadian telecom regulation under the CRTC has been very strong to date. The proof is not so much in the general decline in the real prices of telecom services – technological change is largely responsible for this – as it is in a comparison of Canadian telephony prices with rates in other countries, especially the United States. The prices in the United States for both basic and enhanced bundles of telephony services are 50 percent higher than in Canada. We considered the claim that this figure in itself signaled a violation of the regulatory compact and rejected this claim based on available capital market evidence.

The chief alleged problem with the telecom deregulation experience that is raised in numerous discussions is the very slow rate of entry of competitors into local exchange service,

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<sup>37</sup> Donald McFetridge, *Comments on Public Notice CRTC 2003-10*, Brief to the CRTC, January 30, 2004, p. 9.

especially in the residential sector. Incumbent telcos hold market shares in excess of 99 percent in most areas of the country. The argument has been made that if allowed prices were simply raised, more competitors would enter. The excessive regulation of the CRTC is in this sense holding back the progress towards a more competitive industry. We argued that under an efficient regulatory scheme, consumers have access to the most efficient technology at cost-based prices. New technologies have not achieved substantial market share because of the low cost of using sunk investment in traditional telephony technology – but this is as it should be. Arguments that technology would advance more quickly if prices were raised above cost-based levels are even less persuasive in the Canadian context, since telephony research and development is a world-wide phenomenon that would respond little to changes in Canadian incentives.

The competitive landscape for local service may well be on the verge of changing, however. Voice over internet protocol has attracted substantial entry in the U.S. and entry is emerging in this segment of the Canadian industry as well. The CRTC's role in enhancing or inhibiting this entry is critical, and in this area of the regulatory debate we side with the critics of telecom regulation. The CRTC should not constrain incumbents with price floors in their VOIP offerings. Such regulatory constraints would rely on the theory of a tradeoff of higher short term prices in exchange for a more competitive market in the longer run, and the conditions necessary for this theory do not hold for the telecom market. Canada has had very strong regulatory performance to date, but in terms of regulating the VOIP segment of the market, Canadian regulators would do well to adopt the more liberal U.S. approach.

## C. ELECTRICITY

### I. Introduction

In many jurisdictions, including Ontario and Alberta in Canada, the most controversial initiatives in economic deregulation and restructuring have been in markets for electricity. The three main components of the electricity market are generation, transmission and distribution. In the past, network effects and substantial construction and maintenance costs led many to consider all three sectors to be natural monopolies.<sup>38</sup> The operational and investment complementarities between generation and transmission were also believed to merit the integration of the sectors.<sup>39</sup> As a result, many jurisdictions chose to vertically integrate these segments into a government or private monopoly. To prevent the abuse of monopoly power governments commonly imposed price controls and/or rate of return regulation.

Over the past two decades, long-running inefficiencies associated with these monopoly arrangements, specifically extremely poor investment decisions (e.g., significant over-investment in nuclear power)<sup>40</sup> and cross-subsidization practices, have led many jurisdictions to re-evaluate the structure of their electricity markets. This motivation for restructuring involves the desire to shift the risk of investment from consumers/taxpayers to producers/investors.<sup>41</sup> A number of other factors have contributed to this drive for reform. First, during the 1980s and 1990s, it became accepted by many policy makers that competitive markets offered significant benefits over regulated monopolies. Second, technological change, such as combined cycle gas turbines, wind turbines and local generation (e.g., solar power), have created opportunities for small-scale electricity generation and competitive generation markets.<sup>42</sup> Such innovations led to the average costs of some new plants being less than the average costs of some of the existing plants of

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<sup>38</sup> It should be noted that some research questions the natural monopoly argument. See Gregg A. Jarrell, "The Demand for State Regulation of the Electricity Utility Industry," *Journal of Law and Economics*, (1978) 21, 269.; Robert L. Bradley, Jr., "The Origins of Political Electricity: Market Failure or Political Opportunism?" *Energy Law Journal*, (1996) 17, 59.

<sup>39</sup> Paul L. Joskow, "Electricity Sectors in Transition," *Energy Journal*, (1998) 19, 27.

<sup>40</sup> Matthew W. White, "Power Struggles: Explaining Deregulatory Reforms in Electricity Markets," *Brookings Papers on Economic Activity, Microeconomics*, (1996), pp. 218-9.

<sup>41</sup> Paul L. Joskow, "Restructuring, Competition and Regulatory Reform in the U.S. Electricity Sector," *Journal of Economic Perspectives*, (1997)11, 125.

<sup>42</sup> Michael Trebilcock and Michal Gal, "Market Power in Electricity Industry Restructuring," *World Competition*, (1999) 22, 125; White (1996), p. 213. Single and combined-cycle gas turbines allow power plants delivering 50 to 250 megawatts of electricity with lead times of 24 to 36 months. Wind turbines allow for smaller scale generation (e.g., 1.5 MW).

incumbent utilities,<sup>43</sup> although substantial recent increases in natural gas prices have negated some of those cost advantages. In some cases, smaller-scale generation may also serve as a substitute for transmission facilities as generators can be sited to deliver electricity directly into a distribution system or be used for self-generation by a large consumer. Further advancing the viability of competitive generation are innovations reducing energy losses during transmission, thus increasing the distance at which generators are able to compete with each other (e.g. generators in British Columbia are able to export electricity to California).<sup>44</sup>

The emergence of competitive electricity generation markets has created a new sector in the industry: retailing, the selling of electricity to end-users by retail intermediaries.<sup>45</sup> Retailing and generation are both potentially competitive. Despite the development of smaller-scale generation, however, both the transmission and distribution sectors are still considered ‘natural’ monopolies because of large sunk costs and network externalities.<sup>46</sup>

The expected gains from restructuring and deregulation are more efficient pricing and better-informed consumption and investment decisions.<sup>47</sup> However, a number of issues make restructuring and deregulation of this market particularly complex.

## **II. Challenges to Transition**

Numerous problems may occur when restructuring and deregulating an electricity market. Primary concerns include: (1) pricing by incumbent generators, transmitters and distributors; (2) discriminatory network access by monopoly transmitters and distributors; (3) the inelastic nature of electricity demand and supply at peak times; (4) the lack of real-time price notification and response by consumers; (5) the issue of stranded costs; and (6) political and consumer resistance to increases in retail prices. Moreover, a number of issues complicate new entry in to the generation sector (1) the time require to get a new power plant online often takes years; (2) the financing required to construct a new power plant remains substantial despite technological advances; and (3) plant financing can be extremely risky in an environment of

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<sup>43</sup> White (1996), p. 230. However, some small-scale generation, such as simple-cycle turbines and diesel generations are likely to have higher capital operating and environmental costs than some traditional large-scale transmission-based facilities; also see Jonathan A. Lesser and Charles D. Feinstein, “Distributed Generation: Hype vs. Hope,” *Public Utilities Fortnightly*, (2002) 140, 20.

<sup>44</sup> Severin Borenstein and James Bushnell, *Electricity Restructuring: Deregulation of Reregulation?* University of California, Program on Workable Energy Regulation, PWP-074, (February 2000), p. 3.

<sup>45</sup> International Energy Agency (IEA), *Electricity Market Reform*, (OECD, Paris: 1999), p. 12.

<sup>46</sup> International Energy Agency (IEA), *Electricity Market Reform*, (OECD, Paris: 1999), p. 19.

<sup>47</sup> White (1996), p. 206; Borenstein and Bushnell (2000), p. 6.

volatile prices.<sup>48</sup> Finally, because electricity cannot be stored (except in systems with hydro-based generation), supply and demand must continuously be balanced at every moment in time, leading to potential generation and transmission coordination problems in a competitive marketplace.<sup>49</sup> The failure to properly balance supply and demand can destabilize the entire transmission grid, affecting all consumers.<sup>50</sup>

Because short-run supply and demand is inelastic in electricity markets, small shifts in supply/demand can trigger extreme price movements, providing incentives and opportunities for generators to exercise market power either unilaterally or through collusion. Market power is exercised through withholding generation output from the market. By physically withholding output, an electricity producer may be able to shift the supply curve into the vertical portion of the demand curve during a period of peak demand. Borenstein has noted that, during peak use hours, firms with a generation capacity share as low as six percent may be able to unilaterally exercise market power by withholding generation and increasing prices significantly above competitive levels on remaining output.<sup>51</sup> This implies that the number of competitors necessary for effective competition in the electricity generation sector is higher than typically thought necessary in most markets. Where limited transmission capacity prevents imports from setting the price, a small share of a regional market can be sufficient for the exercise of market power.

An extremely contentious issue in the United States, where utilities are predominantly investor-owned, revolves around the issue of “stranded” costs. Prior to deregulation, regulated investor-owned utilities providing electricity services made investment decisions in a non-competitive environment with a rate of return specified by the industry regulator. When a jurisdiction decides to restructure and deregulate, the incumbent utility’s revenues are no longer guaranteed and may decrease because of competitive pricing, creating the possibility of stranded costs.

The regulatory commitment would be met if, at the time of deregulation, a utility was compensated for the non-depreciated portion of its historical investment (i.e., the book value of its assets). The gap between this book value and the market value of its assets (or present value

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<sup>48</sup> Borenstein and Bushnell (2000), pp. 9-10; Eugene P. Coyle, “Economists Stories, and Culpability in Deregulation,” (2002) *Electricity Journal*, (October), p. 91.

<sup>49</sup> William W. Hogan, *Electricity Market Restructuring: Reforms of Reforms*, Center for Business and Government, Harvard University, (May 2001), p. 8.

<sup>50</sup> Borenstein and Bushnell (2000), p. 7.

<sup>51</sup> Severin Borenstein, “The Trouble with Electricity Markets: Understanding California’s Restructuring Disaster,” (2002) 16 *Journal of Economic Perspectives*, p. 200.

of earnings on the assets) in the restructured and deregulated market is referred to as the utility's stranded cost.<sup>52</sup> In the U.S., these stranded costs are largely comprised of utilities' investments in nuclear power during the 1970s and 1980s. Estimates of these stranded costs vary from tens of billions of dollars to hundreds of billions of dollars.<sup>53</sup> In the absence of stranded cost recovery, the incumbent may not be able to afford the financing of its already incurred costs, potentially threatening the financial solvency of the firm and possibly compromising the future competitive structure of the industry. Alternatively, poorly designed recovery schemes can distort market prices, giving incumbents an advantage over new entrants or vice versa. Stranded costs cannot be eliminated by restructuring and deregulation; these costs will be borne by some party or parties (e.g., consumers, creditors, shareholders, taxpayers) regardless of the policy chosen.

The stranded costs issue is very different in Canada than in the U.S. In Ontario, the magnitude of stranded costs is large, approximately 20 billion dollars (the total electricity debt of the province was about 38 billion dollars, or about one-third of the provincial debt, prior to restructuring). Because the dominant generator and the transmission grid are Crown corporations, however, the only issue is whether electricity ratepayers specifically or taxpayers in general will pay for the gap between book value and market value. In theory, it could be efficient to have the stranded costs - a sunk cost - recovered from taxpayers, since this allows a larger base for the funding of the cost through taxes and therefore entails a smaller distortion in prices over marginal cost. The transfer from taxpayers to ratepayers, however, should never extend to the point where prices fall below marginal cost, as electricity prices have done recently in Ontario. Some balance may eventually be struck, but in any case since the sets of taxpayers and ratepayers overlap to a large extent, the stranded cost transfers are much less of an issue than in the U.S. in spite of the size of the costs. To the extent that stranded costs are borne by ratepayers, these costs should in principle be paid by all ratepayers, even those purchasing from

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<sup>52</sup> A simple example of original-cost rate of return regulation may be helpful. Suppose that a regulated utility invests 100 million dollars in a plant and is allowed to depreciate the plant on a straight line basis for 10 years. Each year 10 million dollars of the investment is returned to the utility via a depreciation charge to revenue requirements. The utility also collects a fair return on investment outstanding. After 7 years, the book value of the plant is 30 million dollars. If regulation is suddenly replaced by a market after 7 years with the result that the market value of the plant (or present value of earnings) is only 25 million dollars, then the gap of 5 million dollars is the *stranded cost*. If the market value of the plant is 35 million dollars then 5 million dollars is the stranded benefit and should be returned to ratepayers.

<sup>53</sup> White (1996), p. 242.

new entrants; the stranded costs should be recovered through a tax on all generation, not just that supplied by the incumbent.

As a result of the concerns noted above, and recent restructuring failures, some industry commentators have concluded that competitive electricity markets are currently unattainable, arguing that vertically integrated regulated monopolies remain the best available delivery option for reliable and affordable electricity provision.<sup>54</sup> This belief has spread rapidly in the United States since the disastrous restructuring efforts in California. On the other hand, some restructuring initiatives have been relatively successful: the U.K., Victoria (Australia), and Pennsylvania-New Jersey-Maryland (PJM).<sup>55</sup> In this paper, we focus principally on the Ontario experience.

### **III. The Ontario Restructuring Experience<sup>56</sup>**

Ontario represents an unsuccessful attempt by a jurisdiction to move from a regulated integrated government monopoly to competitive markets. The evidence suggests that the lack of commitment towards restructuring (i.e., to privatize and restructure the generation market) by the provincial government contributed to the tight supply-demand situation and volatile prices experienced in the summer of 2002 following market opening on May 1, 2002. A reduction in domestic generation capacity, an increasing reliance on imports, limited import capacity, and extreme temperatures all contributed to higher prices. These developments did not suddenly emerge in the summer of 2002; most were apparent years before Ontario's market opened to competition in May of 2002.

Prior to reform, Ontario had a vertically integrated government-owned monopoly, Ontario Hydro, responsible for electricity generation and transmission. The electricity generated and transported by Ontario Hydro was purchased and distributed by about 300 local municipally-owned utility companies to consumers (and to some customers by Ontario Hydro directly itself). Consumers were charged a fixed price per kilowatt hour (kWh) that bundled together generation,

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<sup>54</sup> Coyle (2002).

<sup>55</sup> See Michael Trebilcock and Roy Hrab, "Electricity Restructuring: A Comparative Review," Research Study for the Panel on the Role of Government in Ontario, March 2004. For a superb recent review of the U.S. electricity restructuring experience, see Richard J. Pierce, "Realizing the Promise of Restructuring the Electricity Market," *Wake Forest Law Review* (forthcoming). For a recent comparative assessment of North American experience, see Mark Mullins, "Power Jolt Required: Measuring the Impact of Electricity Deregulation," (Fraser Institute, Toronto, October 2004).

<sup>56</sup> Michael Trebilcock and Roy Hrab, "Electricity Restructuring in Ontario," *Energy Journal* (forthcoming).

transmission and distribution costs. In response to mounting debt problems facing Ontario Hydro through the 1990s, the Progressive Conservative government of Ontario embarked upon a restructuring program beginning in the mid-1990s.

In 1999, Ontario Hydro had a provincially guaranteed debt of approximately \$38.1 billion (about a third of total provincial indebtedness).<sup>57</sup> However, the value of Ontario Hydro's assets was only \$18.7 billion, leaving a "stranded" debt of \$19.4 billion. Through the 1990s, roughly 35 percent of the Ontario Hydro's electricity revenue went towards paying debt interest.<sup>58</sup> Much of this debt was incurred through over-expansion and major cost-overruns in the construction of nuclear generation facilities. For example, the Darlington nuclear station was completed between the years 1989 and 1994; construction was originally to be completed in 1983.<sup>59</sup> The final cost of the plant was \$14.4 billion, roughly 3.7 times more than the inflation adjusted expected cost.<sup>60</sup> Additionally, in 1998, eight of Ontario Hydro's 20 nuclear plants were out of service due to reliability and/or safety problems.<sup>61</sup> As a result of these problems the price of electricity in Ontario rose by 30 percent in the early 1990s before the government froze the price of electricity in 1993 for the balance of the decade.<sup>62</sup>

The provincial government appointed a Task Force in 1995 to explore the possibilities for reforming the province's electricity market. In 1996, the Task Force's report (referred to as the MacDonald Report) made various recommendations for realizing a more market-based electricity industry in the province, including the possibility of privatization and the break-up of Ontario Hydro.<sup>63</sup> Following the MacDonald Report a government White Paper was released in 1997, proposing full wholesale and retail competition by 2000 and the division of Ontario Hydro into two state-owned enterprises - Hydro One (transmission) and Ontario Power Generation

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<sup>57</sup> Michael Trebilcock and Ron Daniels, "Electricity Restructuring: The Ontario Experience," (2000) 33 Canadian Business L.J., 100 at 163; "Ontario Hydro's debt spirals up to \$700 million," *Toronto Star*, (September 5, 2002), p. E2.

<sup>58</sup> Ontario, The Ministry of the Environment and Energy, *Ontario Electricity Restructuring Forum: Hydro One, A Consultation Paper*, (May 2002), p. 3.

<sup>59</sup> Tom Adams, *From Promise to Crisis: Lessons for Atlantic Canada from Ontario's Electricity Liberalisation*, (Atlantic Institute for Market Studies: November 2000), p. 9.

<sup>60</sup> *Ibid.*; National Post, *Ontario Hydro bound for bankruptcy – again*, (November 17, 2000), p. C19.

<sup>61</sup> Trebilcock and Daniels (2000), p. 163; Adams (2000), p. 9.

<sup>62</sup> Ontario, *Direction for Change: Charting a Course of Competitive Electricity and Jobs in Ontario*, (November 1997).

<sup>63</sup> Ontario, Advisory Committee on Competition in Ontario's Electricity System, *A Framework for Competition*, (1996).



(generation) - but no further structural changes were encouraged.<sup>64</sup> The White Paper led to the creation of the Market Design Committee (MDC) in 1998.

The MDC was responsible for designing and recommending rules for wholesale and retail competition in the province's electricity markets. In 1998, the provincial government formally set out the framework for the reformed electricity market in the *Electricity Act*.<sup>65</sup> The government vertically deintegrated Ontario Hydro into its transmission and generation components. In 1999, these new firms, Hydro One and Ontario Power Generation (OPG), began their operations but remained fully state-owned. Hydro One commenced to buy up a number of local distribution companies (now reduced to about 95).

The government has two agencies to oversee the electricity market: the Ontario Energy Board (OEB) and the Independent Market Operator (IMO). The IMO operates the wholesale spot market, and performs the dispatch function; its independent Market Surveillance Panel monitors market power abuses. The primary mandate of the OEB is to regulate the monopoly segments of the electricity market (i.e., transmission and distribution rates).<sup>66</sup> The OEB was to implement a performance-based regulation regime for setting distribution rates. The cost of transmission continues to be recovered exclusively through a postage stamp transmission charge, although the MDC recommended that some form of zonal or nodal pricing be progressively implemented.

To prevent OPG from using its dominant position to exercise market power, the Market Design Committee recommended that OPG enter a Market Power Mitigation Agreement (MPMA) with the government.<sup>67</sup> The ensuing MPMA mandated that OPG be subject to a wholesale price cap. OPG must pay a rebate to consumers on 90 percent of its domestic sales where the wholesale price exceeds 3.8 cents per kWh.<sup>68</sup> The MPMA also required OPG to divest 65% of its price-setting generating units within the first three-and-a-half years after market opening, and 65% of its core or base-load facilities within ten years of market opening.<sup>69</sup> The

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<sup>64</sup> Ontario (1997).

<sup>65</sup> *Electricity Act, 1998*, S.O. 1998, c. 15, Sch. A.

<sup>66</sup> The OEB licenses all electricity market participants including generators, transmitters, distributors, wholesalers, retailers and the IMO. The Board's approval is also required for amalgamations, mergers, acquisitions and divestitures of distributors, and transmission line construction.

<sup>67</sup> Daniels and Trebilcock (2000), p. 170.

<sup>68</sup> Goulding et al. (2001), p. 24.

<sup>69</sup> *Ibid.*, p. 26. Marginal units are the units that are brought on-and off-line as needed to meet peak load capacity, whereas core or base load units are the units that are the main, steady source of power.

OPG rebate does not apply to divested capacity. In order to prevent monopolistic pricing and access restrictions by Hydro One and local distributors the *Electricity Act* states that “[a] transmitter or distributor shall provide generators, retailers and consumers with non-discriminatory access to its transmission or distribution systems in Ontario.” Additionally, Hydro One undertook to make best-efforts to increase inter-tie capacity with neighbouring jurisdictions by 50 percent within three years of market opening.<sup>70</sup>

In complying with the MPMA, OPG leased its Bruce nuclear power plants to British Energy/Bruce Power in May 2001 (following the insolvency of British Energy the Bruce plants were transferred to a new owner in February 2003)<sup>71</sup> and sold its price-setting Mississagi hydro-electric plants to Brascan in March 2002. During the summer of 2002, the province blocked the sale of two OPG coal-fired generating plants in Northern Ontario allegedly because the sale price was too low and the buyer refused to convert the plants to natural gas fired facilities.<sup>72</sup> OPG currently controls approximately 70 to 75 percent of the province’s generation capacity.

In December 2001, the province announced that it intended to sell Hydro One through an initial public offering (IPO). However, two unions successfully challenged the privatization of Hydro One, arguing that the *Electricity Act* did not authorize the provincial government to sell the firm’s assets.<sup>73</sup> In the summer of 2002, the Board of Directors of Hydro One resigned over allegations of excessive compensation packages for senior executives. The government appointed a new Board that fired Hydro One’s CEO and accepted the resignations of other senior executives. On January 20, 2003 the province announced that it would retain 100 percent ownership of Hydro One.<sup>74</sup>

In April 2002, the month before market opening, the IMO’s *10-Year Outlook* (from 2003 to 2012) stated that “[b]ased on existing and proposed facilities, Ontario is expected to have reliable supply of electricity for the ten-year period under a wide variety of conditions.”<sup>75</sup>

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<sup>70</sup> Daniels and Trebilcock (2000), p. 171.

<sup>71</sup> The new group is a consortium including the Ontario Municipal Employees Retirement System, the Power Workers’ Union, the Society of Energy Professionals, TransCanada Pipelines, and Cameco.

<sup>72</sup> “Ontario blocked sale of coal-fired plants: Industry questions commitment to creating market,” *National Post*, (November 4, 2002), p. FP2.

<sup>73</sup> Brian Payne, Communications, Energy and Paper Workers Union, et al. v. James Wilson and Ontario, (Unreported, April 19, 2002, The Superior Court of Justice of Ontario).

<sup>74</sup> “Tories scrap Hydro sell-off,” *Toronto Star*, (January 21, 2003), p. A1.

<sup>75</sup> IMO, *10-Year Outlook: An Assessment of the Adequacy of Generation and Transmission Facilities to Meet Future Electricity Needs in Ontario*, (April 2002), p. 43.

Ontario's electricity market opened to both wholesale and retail price competition on May 1, 2002 (market opening was originally scheduled for November 2000, but delayed to May 2001 and later May 2002 to ensure system reliability and to allow thorough testing of the hardware and software acquired by the IMO, wholesale market participants, service providers and retailers to implement the wholesale and retail market design.) In the open market wholesale electricity prices vary every five minutes in response to changing levels of demand and supply. Participation in the wholesale market is voluntary; consumers may directly enter into bilateral physical or financial contracts with wholesale sellers and generators. Under retail competition consumers were free to enter into fixed-price contracts with retail intermediaries. A consumer not establishing a relationship with a retailer purchased electricity through their local distribution utility, paying the average hourly spot market price. Almost one million of the province's estimated 4.4 million electricity customers entered into fixed-price contracts with retail intermediaries.<sup>76</sup>

When the market opened the average hourly wholesale price was 3.01 cents per kWh (all prices stated are the weighted average for the month) in May and 3.71 for June, both below OPG's 3.8 wholesale price cap. Prices began to increase as the summer progressed. In July the average hourly energy price (AHEP) was 6.2 cents. By August 2002 prices had reached 6.943 cents per kWh. The summer peak occurred in September 2002 with the AHEP being 8.31 cents per kWh. The weighted average wholesale price for the first year of the open market was 6.2 cents per kWh.<sup>77</sup>

In October 2002, the IMO stated that “[t]here is a serious shortage of generation capacity to meet Ontario's growing demand for electricity. If steps are not taken to address this situation, Ontario could face even more serious reliability problems next summer, leading to the possibility of supply interruptions and continued upward pressure on prices during periods of peak demand.”<sup>78</sup>

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<sup>76</sup> “Ontario government moves killed energy retailing, say executives,” *Canadian Press Newswire*, (November 13, 2002). It should be noted that consumers appeared to lack information about how to compare their prior bundled electricity charges with the unbundled rates following deregulation. As a result, some consumers signed retail contracts before the market opened to purchase unbundled electricity at nearly 6 cents per kWh, mistaking the energy price for the bundled rate.

<sup>77</sup> IMO, *The Ontario Wholesale Electricity Market: Year in Review*, (June 2003), p. 4.

<sup>78</sup> IMO, *Market Surveillance Panel Monitoring Report on the IMO-Administered Electricity Markets for the First Four Months, May to August 2002, Executive Summary*, (October 2002a), p. 2; see also IMO, *Market Surveillance Panel Monitoring Report on the IMO-Administered Electricity Markets for the First Four Months, May to August 2002*, (October 2002b).

In response to mounting criticism of the high summer electricity prices, on November 11, 2002, the province announced its intentions to rebate consumers for the high prices of the summer, freeze retail prices until 2006, and directed local utilities not to cut off service to customers who could not afford to pay their electricity bill.<sup>79</sup> The *Electricity Pricing, Conservation and Supply Act, 2002* was enacted on December 9, 2002.<sup>80</sup> The *Act* lowered and froze the retail price of electricity for low volume consumers (i.e. those using less than 150,000 kWh/year, such as families, small businesses, and farmers) and other designated consumers (i.e. municipalities, universities and colleges, public and private schools, hospitals and registered charities) at 4.3 cents per kWh, and includes those who signed fixed-price contracts with retailers. The freeze covers approximately half of the province's total electricity consumption.

The 4.3 cents per kWh rate was made retroactive to market opening, refunding any amount over 4.3 cents that a consumer had already paid.<sup>81</sup> All energy rates (i.e. transmission, distribution, wholesale market charge, and customer charge) were also frozen or capped.<sup>82</sup> Any changes to transmission or distribution rates require the written approval of the Minister of Energy. The wholesale market and customer charges are under review. Only wholesale prices remain determined by market forces. On March 21, 2003, the province announced that it was extending the frozen retail price to consumers using less than 250,000 kWh/year (approximately a further 7,000 consumers).<sup>83</sup> The first twelve months of the price freeze required the Ontario Electricity Financial Corporation, which has its debt guaranteed by Ontario taxpayers, to finance approximately \$730 million of difference between wholesale and retail electricity rates; OPG covered the remainder under its rebate obligations.

The Market Surveillance Panel (MSP) of the IMO conducted an analysis of the Ontario wholesale market for the May through August 2002 period to determine whether generators had abused market power during the summer of 2002. After examining almost all high-priced hours (all hours where the price exceeded \$200/MWh) the MSP came to the conclusion that there was no evidence that abuse of market power had occurred. The MSP concluded that the supply-demand imbalance during the summer was caused by "increased demand, a nuclear outage,

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<sup>79</sup> "Eves promises legislation to cap cost of hydro on Dec. 1 and provide rebates," *Canadian Press Newswire*, (November 11, 2002).

<sup>80</sup> *Electricity Pricing, Conservation and Supply Act, 2002*, S.O. 2002, c. 23.

<sup>81</sup> See *Electricity Pricing, Conservation and Supply Act, 2002*, as discussed in Ontario Minister of Energy News Release "Ontario Legislature Passes Legislation to Lower Hydro Bills" (9 December 2002).

<sup>82</sup> Ontario, Ministry of Energy, *Action Plan to Lower Your Hydro Bill*, (November 11, 2002).

<sup>83</sup> "Ontario rejects pleas for major expansion of electricity price cap," *Globe and Mail*, (March 22, 2003), p. B3.

deratings on fossil-fired generators due to environmental limits, and less hydroelectric energy available.”<sup>84</sup> The increased demand and diminished hydroelectric capacity were primarily the result of significantly above-average summer temperatures. The high temperatures increased the demand for electricity through the use of air-conditioners and lessened the available of water necessary for hydroelectric generation. From 1984 to 2001 the average annual growth of primary energy demand in Ontario was 1.6 percent.<sup>85</sup> During the first year of the open market Ontario experienced a demand increase of 5.5 percent.<sup>86</sup> The MSP also conducted an analysis of the Ontario wholesale market for the September 2002 through January 2003 period.<sup>87</sup> Again, no evidence of abuse of market power was found. The reasons for increasing prices over the period of study were virtually identical to those identified in the MSP’s first report (i.e. abnormal weather, import constraints, tight supply, etc.).

A large contributor to the supply deficiency was a substantial amount of nuclear power generation being taken offline between 1995 and 1998, with little new generation capacity built. The nuclear capacity removed from service was comprised of the 2060 MW of the Pickering Nuclear Power Station-A (Pickering) and the 3300 MW of the Bruce Nuclear Power Station-A (Bruce). In October 2002, the IMO reported that “the percentage by which total available capacity exceeds the summer peak demand for energy – has fallen from 19.2% in 1996 to -1.5% in 2002.”<sup>88</sup> In late 1998, Ontario Hydro announced plans to investigate the restart of the Pickering units for the winter of 2000/2001. The restart experienced numerous delays and substantial cost overruns, apparently due to safety and technical issues. The first Pickering unit to restart did not return to commercial service until September 2003. The numerous delays and cost overruns led the provincial government to announce in November 2002 that it would establish an inquiry into the restart.<sup>89</sup> In 1997, the restart of all four Pickering units was estimated to cost \$780 million with the first unit returning to service in June 2000.<sup>90</sup> The Pickering Review Panel found that if the Pickering restart continues returning all units would cost an estimated \$3 to \$4 billion, and that the last unit would be restarted between October 2006

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<sup>84</sup> IMO, (October 2002b), p. 22.

<sup>85</sup> IMO, *Ontario Demand Forecast from January 2003 to December 2012*, (April 2002).

<sup>86</sup> IMO (June 2003), p. 3.

<sup>87</sup> IMO, *Market Surveillance Panel Monitoring Report on the IMO-Administered Electricity Markets for the Period From September 2002-January 2003*, (March 2003), p. 104.

<sup>88</sup> IMO, (October 2002b), p. 132.

<sup>89</sup> “Energy minister to debt raters: ‘Wait until the dust has settled’,” *Toronto Star*, (November 14, 2002), p. D1.

<sup>90</sup> See Pickering Review Panel, *Report of the Pickering “A” Review Panel*, (December 2003).

and August 2008.<sup>91</sup> The findings of the Review Panel resulted in the provincial government accepting the resignations of OPG's chairman, CEO, chief operating officer and board of directors.

The IMO made emergency purchases of imported energy 38 times during the summer of 2002 to maintain system reliability.<sup>92</sup> Imports have been required to balance supply and demand during the summer for each year since 1997.<sup>93</sup> The large amount of imports strained transmission inter-ties with other jurisdictions. The province's inter-ties with Manitoba, Quebec, New York, Minnesota and Michigan all experienced varying degrees of congestion during the summer.<sup>94</sup> During some periods the province was importing the maximum amount of electricity (roughly 4000 MW) that the transmission system could physically accommodate.

Some consumers in the province reduced demand during the higher prices of the summer of 2002. Ontario has 90 industrial consumers that comprise approximately 15 percent of demand that are directly connected to the transmission grid and have interval meters that measure and report hourly consumption, allowing the user to be billed at the actual hourly spot price.<sup>95</sup> The IMO estimates that a further 20 percent of total demand is comprised of industrial consumers not directly connected to the grid but possessing interval meters.<sup>96</sup> According to the IMO, these interval meter consumers (representing roughly 35 percent of total consumption) reduced consumption in response to the rising prices of the summer, helping maintain system reliability.<sup>97</sup>

With the reduction of domestic capacity and increasing reliance on imports it would seem that profitable opportunities for private sector investment in generation existed in Ontario. However, little private investment in electricity generation has occurred. Only two new private generation projects (about 620MW) became operational during the first year of the open market. The delay in market opening and uncertainty over the final rules governing the market are claimed to be factors contributing to the failure of the province to attract private investment. Specifically, if market opening occurred in 2000 as originally planned, the crises of 2002 may have been partly avoided. The delay was costly because capital markets lost confidence in the

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<sup>91</sup> Ibid.

<sup>92</sup> IMO, (October 2002b), p. 48.

<sup>93</sup> Ibid., p. 131.

<sup>94</sup> Ibid., p.104.

<sup>95</sup> IMO, (October 2002b), p. 17.

<sup>96</sup> Ibid., p. 18.

<sup>97</sup> IMO, *18-Month Outlook*, (January 2003), p. ii.

electricity sector following the California crisis in the summer of 2000 and 2001 and the collapse of Enron during 2001 and 2002. As a result, investors who may have invested in generation capacity in 2000 came to view the North American electricity market as too risky, and were no longer interested in raising or able to raise sufficient capital for new generation capacity when the Ontario market opened.

However, conditions within Ontario prior to the California crisis contributed to a lack of private investment. During 1998 and 1999, the private sector expressed a reluctance to invest in Ontario's electricity sector because of continued OPG ownership and control of generation assets and the prolonged decontrol timetable.<sup>98</sup> In 2000, OPG owned and controlled approximately 90 percent of the province's generation capacity. The provincial government did little to allay investor concern regarding OPG dominance. In fact, the provincial government sometimes contributed to undermining investor confidence. For example, uncertainty as to the future status of the Pickering nuclear units in 1998 discouraged private investment. Additionally, in 2000, the province placed a temporary freeze on the sale of OPG's coal-fired generation plants, stating the need for environmental safeguards to be in place prior to privatization.<sup>99</sup>

The continued ownership and control of generation assets by OPG resulted in a large proportion of electricity sold in the province being subject to the MPMA rebate, reducing the incentives for consumers to enter into forward contracts with private generators. The lack of interest in forward contracts was evidenced by about 60 to 70 percent of electricity being purchased in the Ontario spot market during the first year of the open market.

Lastly, for technical reasons, accepted imports are scheduled one hour in advance of delivery, and cannot be dispatched on a five-minute basis as domestic generators can. The IMO does not use import prices to calculate Ontario's wholesale price. However, if an import is accepted, the importer is guaranteed the offer price in cases where the Ontario market clearing price is below it. The guaranteed-payment system was implemented to improve reliability. However, when Ontario demand is very high the guaranteed payment can create situations where it is more profitable to sell electricity to the Ontario market from outside than inside the

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<sup>98</sup> "New competitors shy of Ontario hydro market," *Financial Post*, (August 21, 1998), p. 5; "Hydro sale plan takes too long, group says," *Toronto Star*, (October 15, 1999).

<sup>99</sup> "Sale of coal-fired plants on hold pending review," *Toronto Star*, (May 18, 2000), p. A9.

province. For example, on one occasion in July 2002, out-of- province generators received \$2 per kWh for electricity while Ontario generators were receiving 47 cents per kWh.<sup>100</sup>

As a result of decisions by the new provincial Liberal government, elected in October, 2003, Ontario consumers will pay higher government-administered electricity prices. Beginning April 1, 2004, users covered by the 4.3 cent price freeze will pay 4.7 cents per kWh for the first 750 kWh of electricity consumed per month. For use above that level, consumers will pay 5.5 cents per kWh. The interim rate regime will prevail until the Ontario Energy Board develops a new electricity pricing plan by May 1, 2005. The new government has also announced that it will establish a new body called the Ontario Power Authority, which would assume some of the responsibilities currently assigned to the IMO (e.g., forecasting demand and supply) and more importantly would have the responsibility to contract with the private sector to build new generation capacity and reduce reliance on the spot-market as a signal for new investment (following recommendations of the Electricity Supply and Generation Task Force appointed by the previous government). The challenge of building new capacity is rendered more urgent by virtue of the new government's commitment to retire all of the province's coal-fired generation plants (approximately 25 percent of total provincial generation capacity) by 2007, for environmental reasons.

#### **IV. Conclusions: The Political Economy of Electricity Restructuring**

Having reviewed the failures of Ontario's electricity restructuring, we turn to the lessons from this experience. In light of the Ontario and broader comparative experience,<sup>101</sup> the following elements appear to be required to successfully manage the transition from monopoly provision to competitive markets: (1) significant *ex ante* generation market restructuring is required to mitigate market power problems and encourage future entry; (2) because of the government commitment problem sufficient transmission and generation capacity to deal with exogenous shocks (e.g., extreme temperatures) at the time of market opening is essential; (3) mandated non-discriminatory access to transmission and distribution facilities should deal effectively with access concerns (although such action may discourage self- and distributed generation investment); (4) market participants should face few impediments to short, intermediate and long-term bilateral contracting; (5) there is evidence that reliance on forward

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<sup>100</sup> "Price gap discourages Ontario generators," *Toronto Star*, (August 10, 2002), p. C1.

<sup>101</sup> See Trebilcock and Hrab, "Electricity Restructuring: A Comparative Review," *op.cit.*; Pierce, *op. cit.*



markets is preferable to heavy dependence on the spot market; (6) for reasons of political feasibility, it appears more prudent to incrementally deregulate the retail market; (7) ultimately, with or without retail competition, demand responsiveness must be expanded to most users through installation of interval meters; (8) in order to ensure adequate generation capacity, it may be necessary to consider capacity payments (as in the U.K. until recently) or obligations on all major load-serving entities to meet capacity reserve requirements through contract coverage (as in the Pennsylvania-New Jersey-Maryland (PJM) market); and (9) better integration of larger regional markets both internally (e.g., Quebec, Manitoba, Ontario) and externally (e.g., Ontario and the North-east of the U.S.) may be desirable to even out fluctuations in local demand and supply.<sup>102</sup>

As in other industries that have been deregulated, electricity liberalization also has the potential to move prices closer to marginal cost, but this often called for *higher* prices relative to the industry and regulatory status quo. Public ownership and regulation of the electricity industry in Ontario led to prices that did not reflect cost (indeed, prices were frozen for almost a decade prior to deregulation). Just as prices above marginal cost create social losses, since some consumers willing to pay the cost of a product are priced out of the market, prices below marginal cost also create social losses: resources are devoted to supplying consumers who do not value the product as much as it costs to produce. Liberalizing the market and allowing retail prices to rise not only creates efficient incentives to invest in generation and transmission capacity, but also increases static allocative efficiency by cutting value-reducing transactions at prices below cost. However, the Ontario experience revealed strong political resistance to higher electricity prices and the government responded by freezing prices at low rates. As a consequence, the Ontario government has been underwriting massive losses, no significant generation or transmission investment is taking place and incentives for consumers to conserve on electricity consumption have been severely attenuated, exacerbating existing supply-demand imbalances.

The reason for such apparently intense political resistance to higher electricity prices is not immediately obvious. To the extent that an Ontario consumer gains *qua* consumer through lower electricity prices, she on average loses even more (since subsidized prices lead to an

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<sup>102</sup> Pierce *op.cit.*

inefficient use of provincial resources) *qua* taxpayer because of higher taxes necessary to deal with the debt that buying high and selling low generates.

What explains the apparent oddity of citizens preferring a system in which they lose on net? Three candidate theories merit discussion. First, to the extent that some consumers are relatively intensive electricity consumers yet relatively insignificant taxpayers, the consumers could gain by an electricity subsidy paid out of general tax revenues. This does not seem to be a plausible description of the apparently widespread political resistance to higher electricity prices in Ontario, however. Second, it might be argued that consumers today rationally anticipate that the subsidy would be paid out of tax revenues only in the future and thus they may not bear the full cost of the subsidy since they may not be taxpayers then. This is not a sensible explanation. The strong political support in recent years in Ontario and elsewhere in Canada for balanced budgets indicates that voters do recognize the dire consequences of high public debt. Moreover, property values internalize the impact of future tax liabilities, at least for property-owning citizens.

A third reason, bounded consumer rationality, seems the most plausible explanation of the political salience of an inefficient electricity regulatory system. While calculating the impact of an electricity bill on one's budget is straightforward, assessing the effect of a \$700 million dollar annual government expenditure from selling electricity below cost on any given consumer is complicated. The higher price of electricity has a salience and obviousness that potentially higher future taxes do not and consumers are influenced accordingly. Indeed, Ontario electricity consumers are accustomed to very low and stable prices, because of the decade-long freeze that preceded attempts at deregulating. While consumers have grudgingly accepted volatile and increasing prices in similarly important industries like petroleum and natural gas, they are used to consistent low prices in electricity and easily recognize and resist any change to this situation.

The most obvious way to minimize political resistance to deregulation is to ensure that there is thorough publicity of the benefits of the plan. We acknowledge, however, that the benefits of pushing prices closer to marginal cost, particularly where this means a potentially dramatic increase, are unlikely to be easily understood by consumers who each as individuals have little to gain from such an understanding. Education is far from a panacea for political opposition. Yet there are some obvious pitfalls that should be avoided. Political representatives in Ontario, for example, advertised electricity deregulation as a policy change that would lead

immediately to lower prices. This only intensified opposition when prices increased. Even if citizens would not invest in understanding the benefits of avoiding deadweight losses from below-cost pricing, the government should have also emphasized the more obvious advantages of deregulation. First, it could have pointed to the enormous debt that the electricity industry has burdened Ontario with and argued that the status quo is unacceptable. Second, the government could have pointed to the obvious conservation benefits of allowing prices to increase. It is an irony of the major power blackout in the U.S. and Ontario in August 2003 that although it had nothing to do with privatization, it may advance the deregulatory agenda by reminding consumers of the enormous infrastructure and costs of the electricity industry, while also highlighting how consumers can easily conserve energy at the margin.

While education can be done badly as Ontario demonstrated, this is not to say that education done well will eliminate political resistance to deregulation. There may be losers from such a change who will resist regardless of the social good, and there also will be those who rationally do not invest in understanding the benefits. Another strategy that the government can pursue is to adopt policies that are irreversible, or at least very costly to reverse. Rather than attempting *ex ante* to persuade everybody of the benefits of deregulation, if the government can commit to a course of action citizens are more likely to learn about the benefits first hand. Moreover, some of the benefits of deregulation only arise if there is a firm commitment by the government to adhere to its agenda (time consistency). For example, to create incentives for investment in electricity generation, private actors need assurance that the government will not simply abandon floating electricity prices. Without such a commitment, generation capacity will not be built, which in turn makes higher prices and a government about-face on deregulation more likely.

There are several ways in which a government can make its commitment to deregulation stronger. An important step is privatizing whatever government corporations are involved in the industry (as was done in the U.K. and Victoria – two of the most successful electricity restructuring experiences). Privatizing creates a political constituency in favour of deregulation: the firms (and their workers) that have invested in competing in the liberalized market. Once this constituency is active, the government will face countervailing pressure not to renege on its deregulatory plans. The performance of the old Ontario Hydro and its two successor companies, culminating in the firing or resignations of their respective boards of directors and senior

officers, provides little basis for confidence in continuing public ownership and operation of this sector.

Another way of committing to deregulation may be, paradoxically, to involve the state directly in the market, at least at its inception. If the government, for example, were to offer up-front incentives to build electric generation capacity it would protect private investors from future regulatory reversals in two ways: it lowers the private investment required to enter the market and thus lowers the private cost of possible future changes in policy; and by contributing to the building of generation, the policy keeps prices lower and perhaps avoids future pressure to revisit deregulation. A similar approach is to pay generating firms, directly or indirectly, to maintain excess capacity in generation, which limits the chances of price spikes or blackouts which in turn lead to political opposition to deregulation; such a strategy has been used in the UK, PJM, and elsewhere. Such state intervention is not part of the textbook economic ideal of market allocation. The market and the prospect of high prices should do the job of providing incentives to invest in generation. But in the face of anticipated political pressure because of higher prices, these kinds of commitments may operate as sensible second-best strategies.

Another technique to manage political opposition to deregulation is to explicitly compensate losers. In Alberta, for example, following the initiation of restructuring in 1995, prices spiked from an average of \$42.74/MWh in 1999 to \$133.22/MWh in 2000. This led to some adjustments in the wholesale pricing system to exclude imports and exports from setting pool prices but more important politically the payment of rebates to retail consumers of \$40 per month for 2001 funded from the proceeds of the auction of Power Purchase Agreements. The government adhered to its commitment to restructuring and, partly as a result, approximately 2500 MW of new generator capacity was added to the Alberta system between 1998 and 2002<sup>103</sup> and approximately 5200 MW of new generation is expected to be added between 2003 and 2006.<sup>104</sup> The average wholesale spot price fell from \$133.22/MWh in 2000 to \$71.29/MWh in 2001 and to \$43.93/MWh in 2002.<sup>105</sup> Another technique for achieving efficient consumption while not relying on higher prices to penalize greater consumption is to pay consumers for the amount they reduce their consumption relative to some benchmark. This scheme is equivalent to

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<sup>103</sup> Terry Daniel, Joseph Doucet and Andre Plourde, *Electricity Industry Restructuring: The Alberta Experience*, (May 2001), p. 4.

<sup>104</sup> Daniel et al. (2001), p. 11

<sup>105</sup> "Price gap discourages Ontario generators," *Toronto Star*, (August 10, 2002), p. C1.

the design of residential electricity rates in California, where consumers pay a lower rate for electricity up to a percentage of a benchmark for their residence, a higher marginal rate for a middle band of consumption, and a much higher marginal rate for electricity consumption beyond 130 percent of the benchmark amount.<sup>106</sup> A similar alternative would be to continue to subsidize electricity consumption, but only up to some amount that covers very basic residential electricity needs, which would at least preserve conservation incentives at the margin (as the present Ontario government has done). Again, these alternatives are not as efficient as floating prices, since the regulator must assess the appropriate subsidies and benchmarks. But it avoids the absurd consumption incentives facing consumers paying prices well below cost for all their power, while managing political opposition by potentially lowering some electricity bills relative to the status quo.

With respect to the two basic questions posed in the Introduction to this paper, the performance of the electricity sector in Ontario post-restructuring has been very disappointing. Ontario, in contrast to the experience in a number of other jurisdictions, has faced higher not lower prices. Higher prices have in part resulted because administered prices were set at inefficiently low levels for almost a decade prior to restructuring, but also because policy instability has resulted in minimal new private sector investment in the sector. Lack of investment has created a vicious circle dictating more rather than less government intervention to mitigate rising prices, further attenuating private sector interest in the sector. As to lessons to be drawn from the Ontario experience, credible and politically sustainable regulatory commitments to effective restructuring emerge as easily the most important determinant of success or failure, even if such commitments may require economically second-best policies to mitigate political economy impediments to effective restructuring.

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<sup>106</sup> In California, baseline quantities for most customers are set at 60 percent of the total average usage (within each of ten geographical areas) for either summer or winter. For “all-electric” customers, it is set at the 70 percent level. The baseline rate structure was designed by the California Legislature in the early 1980s, well before the California energy crisis.

## D. AIRLINES

### I. The Regulatory Framework

The early history of Canadian aviation involved government participation in the industry in almost every conceivable way. From the 1930s on, the Canadian government regulated conduct extensively, setting fares and service conditions, such as frequency of service and airplane size, approving entry by new airlines only if there was an unambiguous need for the services that the entrant would provide,<sup>107</sup> which the government rarely found,<sup>108</sup> and requiring federal approval for participation on any given route. The government also owned and operated all the airports in the country<sup>109</sup> as well as the air traffic control system. Finally, the government influenced the industry by owning Air Canada (the dominant carrier).<sup>110</sup>

Deregulation began in the early 1980s and truly became significant in Canadian aviation with the *National Transportation Act*, which was passed in 1987 and became law in 1988. Entry was substantially deregulated, with potential entrants needing only to meet a “fit, willing and able” standard, involving insurance coverage, certified aircraft and pilots and 75% Canadian ownership.<sup>111</sup> Exit restrictions were eased as well, with airlines only required to give 120 days notice of their intention to abandon a route. Fare levels and conditions of service were completely deregulated in southern Canada, and regulation was eased, but did not disappear in the north, with continuing government oversight of fares, exit and entry. Another important liberalizing step was taken in 1988 when Air Canada was privatized.

There have been some steps in liberalizing the market to foreign competitors, but these have been tentative at best. For example, the “Open Skies” agreement signed with the U.S. in 1995 permits Canadian and U.S. airlines to compete over routes between the countries. But other strict barriers to foreign participation remain. Foreigners cannot own more than 49% of any Canadian airline, thus eliminating the prospect of a foreign carrier buying or otherwise

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<sup>107</sup> See D. Gillen, *The Future of Canada’s Airline Industry: Frills, No-frills or Walmart* (Draft Manuscript, 2001, Van Horne Institute) at 20.

<sup>108</sup> See D. Gillen, *supra* at 20.

<sup>109</sup> Gillen, *supra* at 1.

<sup>110</sup> Gillen, *supra* at 12 suggests that public ownership of Air Canada was probably more influential than regulation in shaping commercial aviation in Canada. Gonenc and Nicoletti, *infra* study the impact of regulation on airline performance around the world; they rely on state ownership of airlines as an indicator of the degree of regulation in that country.

<sup>111</sup> Gillen, *supra* at 25.

establishing a Canadian airline and competing with Air Canada. Moreover, foreign carriers are restricted from carrying passengers point-to-point within Canada (cabotage).

In recent years regulatory attention has focused on the competitive conditions in the industry. Air Canada acquired Canadian Airlines in December 1999 and emerged as a clearly dominant firm, with a domestic market share by seat kilometer of around 73% in 2002, and a market share by seat of 64% in 2002.<sup>112</sup> Concerns were raised about Air Canada's conduct given its dominance and Bill C-26 was passed in 1996, which "re-imposed a form of regulation on the airline industry, particularly Air Canada."<sup>113</sup> For example, Bill C-26 empowers the Canadian Transportation Agency to review prices on monopoly routes and to disallow and roll back any "unreasonable" fares.<sup>114</sup> Conversely, the government also took steps to ensure that Air Canada did not set prices too low by creating special provisions in the *Competition Act* addressing predatory pricing in the airline industry. The Competition Bureau now under s. 104.1 has the power to issue temporary cease and desist orders in the face of alleged predation by a dominant airline without prior review by the Competition Tribunal. It also has the power to impose administrative monetary penalties of up to \$15 million on any airline that has abused its dominant position. In airlines, as in telephony, there has been manifest concern on the part of the government about low pricing, including selective price cuts by the incumbent designed to match competitors' prices on some routes. Recently, however, the government has proposed changing course by eliminating all airline-specific provisions in the *Competition Act*.<sup>115</sup>

Aside from regulation of the airlines themselves, there has also been extensive state participation in the airport business. There are 726 airports in Canada, with the 24 airports that hold "national" status accounting for 90% of all scheduled passenger and air cargo traffic.<sup>116</sup> The federal government originally owned and operated the airports, but pursuant to a recent privatization scheme the airports are now operated by non-profit corporations that lease airport facilities from the government. Increased direct oversight of airports, including price regulation, is contemplated in the recently proposed *Canada Airports Act*.

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<sup>112</sup> Debra Ward, Independent Transition Observer on Airline Restructuring, *Airline Restructuring in Canada: Final Report* (September 2002) at 76.

<sup>113</sup> Ward, *supra* at 76.

<sup>114</sup> The Canada Transportation Act Review Panel, *Vision and Balance* June, 2001, recommended the elimination of this provision (<http://www.reviewcta-examenlct.gc.ca/english/pages/finalreport.htm>).

<sup>115</sup> See Minister of Industry, "Minister of Industry Tables Amendments to Strengthen Competition Act," press release, November 2, 2004.

<sup>116</sup> Gillen, *supra* at 144.

A final element of state participation in the airline industry is the operation of the air traffic control system. The Canadian government recently relinquished control of air traffic to Nav Canada, which is a non-profit corporation with representatives on its board from a variety of stakeholders, including airlines and labour unions.

Deregulation has clearly had a significant impact on the airline industry. Our bottom-line assessment is that deregulation has been a success. While it is difficult precisely to identify the reasons for price movements, up or down, following deregulation, it appears that real prices have fallen. For example, in recent years Lazar reports that fares, net of taxes, airport fees and Nav Canada fees, have fallen since the acquisition of Canadian by Air Canada in 1999, likely because of the growth of discount airlines.<sup>117</sup> There is abundant evidence that deregulation has had a remarkable impact on the kinds of service being offered. Tourist fares were only introduced in the 1950s and were initially set at 80% of first class fares.<sup>118</sup> Perhaps because of the restrictions on wide disparities in pricing, first class passengers outnumbered those in tourist class as late as 1961.<sup>119</sup> Since deregulation, and particularly in recent years, there has been a remarkable proliferation of low fare, low amenity service. WestJet has been the most successful provider of low fare service, increasing its market share as measured by seat-kilometre from 4% to 14% between 1999 and 2002.<sup>120</sup> In total, low fare service reached 36% of the market by 2002.<sup>121</sup> In summary, as a recent newspaper account put it, discount airlines have “pretty well blanketed” Canada with discount flights and are increasingly entering cross-border routes.<sup>122</sup> Changed market circumstances, including the success of rivals to Air Canada, have induced the Minister of Industry to propose abandoning airline-specific provisions in the *Competition Act* that were designed to discipline Air Canada.<sup>123</sup>

Not only is the evidence suggestive of a downward pricing trend as the result of more competition, deregulation clearly altered the price-quality mix of airline services. Deregulation creates social benefits by allowing airlines better to respond to demand for a variety of price-quality combinations. These conclusions are consistent with experience in other jurisdictions.

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<sup>117</sup> Lazar, *infra*.

<sup>118</sup> Gillen, *supra* at 21.

<sup>119</sup> Gillen, *supra* at 21.

<sup>120</sup> Ward, *supra* at 76.

<sup>121</sup> *Ibid.* at 21.

<sup>122</sup> Brent Jang, “West Jet Spreads Wings Further with Launch of Flights to U.S.” *The Globe and Mail*, September 20, 2004, p. B4.

<sup>123</sup> See Minister of Industry, Press Release, *supra*.



For example, Gonenc and Nicoletti examine the effects of deregulation in a number of jurisdictions and conclude that, “air transport reforms aimed at liberalizing entry...and prices involve significant benefits for all categories of travelers.”<sup>124</sup>

While the evidence on airlines is suggestive of the benefits of deregulation in Canada, prices for air traffic control and airport services, such as landing and parking fees, have clearly increased following privatization of Nav Canada and airports. Nav Canada’s fees doubled between 1997 and 1998.<sup>125</sup> Revenue at the eight largest airports increased by 9.7% in 2001, even while the total number of passengers did not change.<sup>126</sup> The Canada Transportation Act Review Panel expressed concern that the airports were exercising monopoly power in setting prices.<sup>127</sup>

## II. Anti-Competitive Conduct

Two competition concerns in deregulated airline markets have arisen. First, there was a significant merger of the leading airlines. Second, Air Canada has been accused of setting unreasonably low prices for the purpose of eliminating competitors; that is, predatory pricing. Anti-competitive conduct has occupied the most prominent place in the deregulatory agenda.

Mergers had occurred in the airline market prior to the acquisition of Canadian by Air Canada in 1999; Canadian itself emerged from a merger between Wardair and Canadian Pacific Airlines. But no prior acquisition created the same impact on the market as the 1999 merger of the two leading airlines in Canada. The Competition Bureau reviewed the acquisition carefully and concluded that because of Canadian’s imminent failure, the acquisition was permissible notwithstanding its potential impact on competition. The Bureau imposed some conditions on Air Canada, including the divestiture of Canadian Regional Airlines (which never took place given the apparent absence of a credible buyer), and the ceding of airport slots to other airlines. In part because of new entry, and in part because of WestJet’s growth, Air Canada’s share of total domestic air travel fell between 2000 and 2002. However, it only fell from 77% to 73% as

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<sup>124</sup> R. Gonenc and G. Nicoletti, “Regulation, Market Structure and Performance in Air Passenger Transportation” (2001) OECD *Economic Studies* No. 32 183 at 216.

<sup>125</sup> Gillen, *supra* at 43.

<sup>126</sup> Lazar, *supra* at 7.

<sup>127</sup> *Vision and Balance* at 152.

measured by seat-kilometres, while falling from 70% to 64% if the unit is seats.<sup>128</sup> (Air Canada on average has longer flights than its rivals.) Air Canada remains the dominant player in domestic air travel and indeed is the only carrier on several routes within Canada.

While few would dispute Air Canada's historical dominance within Canada, the question of whether it has engaged in predatory pricing is much more contentious. Air Canada was accused of setting unreasonably low prices that were intended to cause its competitors to lose money and thus exit the market.<sup>129</sup> Differentiating predatory from vigorously competitive, but non-predatory, pricing is difficult not only in practice, but also in principle. If a firm has a cost advantage in a market, is it predatory to set prices below its rivals, and below where it otherwise would have set prices, but above its own costs for the purpose of eliminating a rival? Some would describe this as simply competition manifest;<sup>130</sup> others as predatory.<sup>131</sup> While a complete discussion of the issues here is beyond the scope of this paper, suffice it to say that the academic consensus is that predation will rarely occur. For example, successful predation requires that there be limited entry in the future. But if the industry is profitable and the only reason the first victim exited was insufficient financing, a better-financed firm than the victim's might enter and limit the predator's future profits. There are some reasons for predation, like developing a reputation for predation that deters entry, but it is likely to be rare.<sup>132</sup>

We are very skeptical that Air Canada engaged in predation. Its bankruptcy suggests that such a strategy, if followed, was apparently unsuccessful in yielding supra-competitive profits. But just as the CRTC has expressed concern about selective price cuts by Bell aimed at meeting the competition, the federal government generally, and the Competition Bureau in particular, have taken the threat of predation in airlines following deregulation to be credible and serious. A variety of legal measures have been taken to combat perceived predation. Bill C-26 took a number of steps designed to address Air Canada's conduct following its takeover of Canadian. The Governor-in-Council was given the power to specify anti-competitive acts in the airline industry that would be relevant to the general abuse of dominance provisions in the *Competition*

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<sup>128</sup> Ward, *supra* at 76.

<sup>129</sup> For an extensive discussion of the law and economics of predatory pricing, see M. Trebilcock, R. Winter, P. Collins and E. Iacobucci, *The Law and Economics of Canadian Competition Policy* (Toronto: University of Toronto Press, 2002).

<sup>130</sup> The Competition Bureau's various iterations of guidelines on predatory pricing all require a showing of below-cost pricing.

<sup>131</sup> See, e.g., A. Edlin, "Stopping Above Cost Predatory Pricing" (2002) 111 Yale L.J. 941.

<sup>132</sup> For a fuller discussion of predation, see Trebilcock et al., *supra*.

*Act*, ss.78 and 79. Regulations came into force that specified a variety of airline-specific abuses of dominance, including provisions directed at predatory pricing.<sup>133</sup> For example, regulations specify that it is an anti-competitive act for a dominant airline to operate capacity on a route that does not cover the avoidable cost of providing the service.<sup>134</sup> It is also an anti-competitive act to use a second-brand carrier without covering avoidable costs, and to use commissions, incentives, loyalty marketing programs or other inducements to sell seats with the purpose of harming competitors. In addition, the Competition Bureau was given the power to make temporary cease and desist orders. Section 104.1 grants the Commissioner the power to make a temporary cease and desist order with respect to perceived predatory pricing.

The Competition Bureau, in response to its statutory authority, promulgated *Draft Enforcement Guidelines on Abuse of Dominance in the Airline Industry*.<sup>135</sup> While these *Guidelines* do not have independent legal authority, they indicate the approach the Commissioner intended to take in enforcing the statute. The *Draft Guidelines* attempt to clarify several aspects of the statutory provisions, including market definition and avoidable costs. They define the market by reference to specific point-to-point routes, noting that two airports in the same area could compete in such markets if they are in reasonable proximity to each other; the *Guidelines* mention Pearson International in Toronto and Hamilton International as an example of this possibility. With respect to avoidable costs, the *Guidelines* specify that the unit of analysis is not the cost of a seat, but rather the cost of an entire flight. The question is whether a dominant firm earns revenues from a flight that exceed the cost of making that flight. Because the Regulations specify that failing to cover avoidable cost is an anti-competitive act, the *Guidelines* do not have to resolve the question of whether conditions must be such that recoupment of the alleged predator's losses would be possible from higher prices in the future. This recoupment test has been a bedrock element of Canadian predatory pricing law since earlier general guidelines on predatory pricing were issued in 1992, but was set aside in the Bureau's most recent draft guidelines on unreasonably low prices.<sup>136</sup> Given the difficulties in

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<sup>133</sup> We discuss provisions dealing with other possible abuses of dominance below.

<sup>134</sup> Avoidable cost is the additional cost that the airline incurs by adding a flight to a route.

<sup>135</sup> February, 2001.

<sup>136</sup> See E. Iacobucci, "Predatory Pricing and the Recoupment Test"

distinguishing competitive from predatory prices, abandoning the recoupment test is not sensible policy in airlines or in other industries.<sup>137</sup>

These airline-specific predatory pricing provisions did not sit idle. CanJet and WestJet launched complaints about predatory pricing when Air Canada matched their prices on several routes they had entered. The Bureau agreed that Air Canada was engaging in predation on several routes. There is evidence that CanJet had undercut Air Canada significantly, and evidence that Air Canada was willing to drop its prices considerably in response to the competitive pressure. For example, on the Montreal-Halifax route, prior to CanJet's entry in 2000, Air Canada's lowest two-way fare was \$373.<sup>138</sup> CanJet offered a \$99 one-way fare. Air Canada responded by matching this rate for its 14-day advance purchase, although did not further drop its fare to \$89 when CanJet set an even lower price.

The parties agreed to bifurcate the hearing before the Competition Tribunal. The first phase of the hearing was to determine whether Air Canada set prices below avoidable cost; the second phase would determine the balance of the application, including deciding whether Air Canada engaged in an abuse of dominant position under s. 79 of the Competition Act. The Tribunal found that Air Canada indeed set prices below avoidable cost.<sup>139</sup> Since Air Canada was a dominant airline maintaining capacity on which it could not cover avoidable cost, the Tribunal found that Air Canada committed an anticompetitive act under s. 78. The second phase of the case was abandoned by the Bureau as the result of changed circumstances in the market, including the "entry and growth of low cost carriers."<sup>140</sup>

In our view, the Tribunal's decision in *Air Canada* and its aftermath demonstrates the folly of defining an anti-competitive act for airlines (or any industry, for that matter) by reference exclusively to a comparison of price and avoidable cost. There are several reasons why this is not good policy. In determining whether a firm is losing money on a sale, the appropriate comparison from an economic perspective is whether the seller is failing to cover the marginal opportunity cost of the sale. This can be a remarkably complicated and sometimes outright arbitrary process which does not provide a solid foundation for a legal test. As Trebilcock et al.

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<sup>137</sup> *Ibid.*

<sup>138</sup> *Commissioner of Competition v. Air Canada* (2003), Comp. Trib. 13 at para. 317.

<sup>139</sup> *Commissioner of Competition v. Air Canada* (2003), Comp. Trib. 13.

<sup>140</sup> Competition Bureau, "Competition Bureau Settles Case with Air Canada" press release, October 29, 2004.

discuss, opportunity costs from a sale could be lower than production costs.<sup>141</sup> Air Canada argued that attracting customers on a route can be profitable for the airline because of revenues from that customer on other routes. The Tribunal accepted this argument in principle, but observed that little evidence had been offered on these “follow-on” benefits of serving a particular route and thus did not account for them in its decision. It was reasonable for the Tribunal to react to a lack of evidence as it did, but consider what would have been required to amass such evidence. The Tribunal correctly held that only net follow-on profits would offset losses from a route; thus the prices and costs of passengers on follow-on routes would need to be known, plus net revenues from follow-on traffic from these routes, etc. At the limit, the inquiry could require per-passenger marginal profit for Air Canada passengers all over the world. This is far too complex a task to be accomplished with precision at a reasonable cost. (We note that hearings for the first phase of the complaint even without such considerations took forty days and involved 6 expert witnesses and 499 exhibits).

Aside from complexity, an avoidable cost test is arbitrary in several respects. The unit of analysis for comparing price and cost could be a passenger, a flight, or a route. All costs can be avoided in the long run so there must be some arbitrary time limit for deciding what costs should be considered avoidable from canceling a particular flight. And there are several costs that are incurred in servicing more than one flight – an arbitrary allocation of these costs must be made to determine any specific flight’s avoidable costs. The Tribunal heard competing experts on each of these considerations and chose one view or another in reaching a decision. While the experts and the Tribunal generally acted reasonably, the enormous variance implied by competing reasonable definitions of avoidable cost further casts serious doubt on the sense of relying exclusively on price-cost comparisons to draw a legal conclusion about predation. It is better policy to follow the Bureau’s original approach to predation, which involved both an examination of price-cost comparisons and an analysis of the plausibility of successful recoupment given market conditions.

The federal government’s current (but not proposed) approach to competition policy in airlines leave ss. 78 and 79 of the *Competition Act* potentially internally inconsistent. Section 78(1)(j) sets out that it is an anticompetitive act for the purposes of s. 79 for an airline to commit an act specified in the regulations, which in turn provide that operating capacity that does not

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<sup>141</sup> Trebilcock et al., *supra*.

cover avoidable cost is an anti-competitive act. As the Tribunal pointed out in *Air Canada* at para. 54, “the wording of paragraph 78(1)(j) is clear: once a party fails the avoidable cost test, its conduct constitutes an anti-competitive act.” Section 79, on the other hand, requires that there be a finding of a practice of anti-competitive acts that substantially lessen competition for an order to be appropriate. As we have discussed, a seller may not cover avoidable costs for reasons that have nothing to do with predation. It would be open for the Tribunal, therefore, to find that an airline has engaged in a practice of anti-competitive acts as a matter of law since it has not covered avoidable cost on some capacity, but not make an order because there are business justifications for the practice, or other economic conditions like very low barriers to entry that imply that the practice does not lessen competition substantially. This would invite the obvious question: if the act in question does not lessen competition substantially, why is it considered anti-competitive in the first place? Legally defining an act to be anti-competitive does not make it so.<sup>142</sup>

Because of changing market conditions, including the bankruptcy of Air Canada and the strength of Air Canada's rivals, the Competition Bureau announced in October 2004 that it would abandon the claim against Air Canada after the first phase finding anti-competitive acts, and at the beginning of November 2004 the Minister of Industry proposed repealing airline-specific rules. One could conceivably conclude that the government acted appropriately by enacting tough rules when Air Canada appeared dominant and by repealing these rules when its dominance had shrunk. But in our view the appropriate inference from the change in course by government is that these rules were never appropriate. The first phase of the case which concluded that Air Canada had committed anti-competitive acts was decided in July 2003. If market conditions could change sufficiently that the Bureau would decide not to pursue its claim of abuse against Air Canada, and that the Minister would propose changing the *Act*, only one year after a finding of a dominant airline committing an anti-competitive act, there is a powerful

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<sup>142</sup> Perhaps because of this inconsistency, the Tribunal in *Air Canada* signaled a willingness to consider economic justifications for below-cost pricing in the second phase of the hearing into Air Canada's behaviour. Specifically, the Tribunal stated at para. 55 that it may “consider legitimate business justification, among other elements, when determining whether a ‘practice’ of anti-competitive acts has occurred pursuant to s. 79 of the Act.” This expansive approach to “practice” would not be consistent with past jurisprudence on the meaning of “practice” in abuse of dominance cases, which has simply asked whether the acts were “more than an isolated act or acts”: *Canada (Director of Investigation and Research) v. NutraSweet* (1990) 32 C.P.R. (3d) 1 at 35 (Comp. Trib.). Yet such a course may be understandable given a natural reluctance on the part of the Tribunal to find as a matter of fact and law anti-competitive acts that do not lessen competition substantially.

suggestion that the case never should have been brought in the first place. A key element of predatory pricing, as well as any other anti-competitive strategy, is that there are barriers to entry that preserve market power. The rapid change in market conditions in airlines suggest that these barriers do not exist, nor did they when the airline-specific rules were enacted. The change of course by the government is welcome not because of changing market conditions, but because its approach was wrong-headed to begin with - the potential for such change in the market existed when the rules were first enacted, leaving the rules at best unnecessary.

Perhaps because of political pressure to be seen to be responding to concerns following on from the Air Canada/Canadian merger, the primary source of remaining regulation in the airline industry in recent years has been predation policy. Yet the amendments to predatory pricing law that the federal government enacted in the face of apparent public pressure were not desirable additions to Canadian competition policy. The proposed about-face by government to repeal the airline-specific rules would be welcome because the approach was misguided from its inception.

### **III. Elements of Natural Monopoly**

Aside from nationalistic motivations, one of the central reasons that the extensive regulatory structure of airlines was established in Canada (and elsewhere, for that matter) was the perception that airlines were a high fixed cost, low marginal cost industry.<sup>143</sup> While this is no longer accepted, there are some elements of natural monopoly remaining in the aviation industry.

Economies of density suggest that airlines that use a particular airport as a hub will have an advantage over their rivals on flights to or from the hub – their unit costs will be lower and the range of flights that they offer will be greater. For example, having passengers fly from Vancouver to Toronto to Halifax means that Vancouver-Toronto and Vancouver-Halifax passengers can share the flight between Vancouver and Toronto. This in turn suggests that there are elements of natural monopoly on routes emanating from a hub, which in turn could result in higher prices despite the lower cost structure. The empirical evidence tends to support the existence of higher prices at hubs, though these hub premiums appear to be fairly modest.<sup>144</sup>

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<sup>143</sup> Gillen, *supra* at 29.

<sup>144</sup> See Gillen, *supra* at 149-153.

One U.S. study found that fares on routes out of concentrated airports (that is, those used as a hub by one or two dominant airlines) were 23% higher than on similar flights out of unconcentrated airports.<sup>145</sup> However, this effect depended on the participation of Southwest Airlines, a highly successful discount airline in the U.S., in the unconcentrated airport routes.<sup>146</sup> While the precise extent of the problem is difficult to evaluate, it is probable that hubs create some market power.<sup>147</sup>

With the demise of price regulation in Canada came the demise of any regular review of prices charged by airlines with hub-derived market power. (In Canada, this may currently describe Air Canada's service out of Pearson International in Toronto.) Instead, regulation has come mainly in the form of intermittent interventions by the Competition Bureau to protect Air Canada's competitors from unreasonably low prices, as described in the previous section. It is difficult to see how this would remedy any longer term advantages that accrue to Air Canada as the result of economies of density. The other residual source of regulation of a firm enjoying natural dominance emanates from the power of the Canada Transportation Agency to review "unreasonable" fares on monopoly routes. But such *ad hoc* price regulation will be difficult. Defining what a "reasonable" price is requires not only extensive knowledge of demand and operating costs (both actual and potential, since monopoly profits may be consumed by higher costs) on the route in question, but also the cost of capital and a notion of how the route in question contributes to the overall return of the airline. The Canada Transportation Act Review Panel recently recommended scrapping this authority because of the complexity of the question.<sup>148</sup>

Another possible source of natural monopoly lies with airports themselves. Barriers to entry into airports are high, involving significant capital expenditures many of which are sunk. While there may be some imperfect competition between airports in the same region, it is not reasonable to expect a perfectly competitive market for airports in most geographic markets. Privatization has brought substantially higher fees, suggesting, though not proving, the existence of market power. The recently proposed *Canada Airports Act* would establish principles for the

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<sup>145</sup> S. Morrison and C. Winston, "The Remaining Role for Government Policy in the Deregulated Airline Industry" in S. Pelzman and C. Winston, eds., *Deregulation of Network Industries: What's Next?* (Washington: AEI-Brookings Joint Center for Regulatory Studies, 2000) at 6.

<sup>146</sup> *Ibid.*

<sup>147</sup> *Ibid.*

<sup>148</sup> *Vision and Balance, supra.*



airport authorities to follow in setting fees, including the principle that fees should be set to cover the airport's costs only, would require airports to give advance notice of increases, and moreover would give the Canadian Transportation Agency authority to hear disputes about alleged violations of pricing principles (just as it does for Nav Canada).<sup>149</sup> The proposed *Act* also requires airport authorities to grant "equitable access" to its facilities, thus potentially addressing anti-competitive effects of a shortage of airport capacity, such as available slots and gates, on airline competition.

#### **IV. What Regulatory Measures Are Appropriate?**

The challenge for policymakers is to maximize the benefits of competition, while minimizing the costs of residual market power that is either impossible, or undesirable, to eliminate. Aside from airport capacity constraints, there is little reason to suppose that airlines cannot compete vigorously in the absence of regulation. It is clear, for example, that economies of scale are not particularly important - bigger does not always mean lower cost.<sup>150</sup> And there has been significant entry in recent years in airlines, as well as notable gains by WestJet in market share, suggesting that innovative approaches can succeed. Yet a quick glance at the regulatory landscape in Canada reveals considerable exertions to control the market power of the dominant firm, Air Canada. The federal government expanded predatory pricing rules with respect to the airline industry. In addition, the federal government continues to harbour concerns about high prices, granting the Canadian Transportation Agency the power to review "unreasonably high" prices on monopoly routes. While precise price regulation is no more, it is apparent that at least dominant firms can only operate within a band of prices that are neither unreasonably low nor unreasonably high.

The fundamental problem with current Canadian airline regulation is the following. Rather than taking the natural step of remedying competition concerns (to the extent that they exist) through the lowering of barriers to foreign competition, the government has chosen instead to address competition issues through a crude combination of anti-gouging and anti-predatory

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<sup>149</sup> Proposed on March 20, 2003.

<sup>150</sup> See, e.g., Douglas W. Caves, Laurits R. Christensen and Michael W. Tretheway, "Economies of Density versus Economies of Scale: Why Trunk and Local Service Airline Costs Differ" (1984) 15 *Rand J. Econ.* 471 (economies of density can give firms an advantage on particular routes, but the size of the airline does not reduce unit costs).

pricing statutory measures. Despite counsel from commentators such as Ward and Gillen, and similar advice from the Canadian Transportation Act Review Panel and the Canadian Competition Bureau (which recommended that the federal government review its cabotage restrictions when assessing the Air Canada/Canadian Airlines acquisition), there have been no steps taken to liberalize foreign participation, either through foreign ownership of “domestic” carriers or through foreign carriers’ activity in Canada. Instead, the federal government’s blueprint for transportation policy, *Straight Ahead: A Vision for Transportation in Canada*, expresses concern about domestic carriers’ ability to compete with foreigners.<sup>151</sup> The “vision” revealed is that the government will pursue gradual liberalization of competition through bilateral agreements, at least where there are net benefits to Canada from doing so.<sup>152</sup> Given the high risk of error associated with attempts to determine unreasonably low or high prices by domestic firms, and thus the chilling effect on vigorous competition that the current regulatory framework creates, the failure to take the most obvious step to enhance competition is striking.

There are three counter-arguments to the call to liberalize foreign participation. The first is that foreign entrants would not be interested in Canadian markets and thus liberalization would not increase competition. As Ward astutely states, “It is not the role of government to increase competition. It is the role of government to establish the environment, and let the realities of the market play out...”<sup>153</sup> If foreign competition does not influence the market, then the government may wish to act, but in the meantime it makes sense to see what foreign competition could bring.

In response to the possible claim that entry, foreign or otherwise, is not likely no matter what the regulatory barriers to entry are, it is worth noting that there has been a great deal of domestic entry in recent years in Canadian aviation. Since 1989, Intrain, Vistajet, Greyhound, Royal Airlines, CanJet, JetsGo and Roots Air have all entered the market. While some of these entrants have failed, others, most notably WestJet, have been profitable and have grown considerably. The growth of these smaller airlines resulted in the government's decision to propose repealing the airline-specific provisions in the *Competition Act*. The fact that so many firms are willing to enter the market suggests that while aviation presents a risky venture, the barriers to entry are relatively low. One is reminded of the restaurant market: the vast majority of new restaurants fail, but barriers to entry are sufficiently low that the prospect of establishing

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<sup>151</sup> *Straight Ahead*, at 30.

<sup>152</sup> *Ibid.*

<sup>153</sup> Ward, *supra* at 11.

a successful restaurant is enough inducement to encourage a steady stream of new entrants. Admittedly, the model of competition in airlines is in a state of flux, with full hub-and-spoke airlines generally struggling relative to point-to-point carriers,<sup>154</sup> but the evidence is that the airline industry is not a difficult one to enter, though it may be a difficult one in which to succeed. Removing regulatory barriers to entry, particularly those restricting foreign entry, would further encourage competition.

Another argument against foreign competition is that foreign competitors would “cherry-pick” the best (i.e., most profitable) routes and leave domestic carriers with marginal routes.<sup>155</sup> But this is precisely what we would want from new entry: increased competition in those routes where there are profits; in only marginally profitable routes, new competition is unlikely to be of social value. Since there is no obligation on Canadian carriers to serve unprofitable destinations, the notion that new competition on the profitable routes would undermine incentives to serve marginal routes is without coherent foundation.<sup>156</sup> As Ward states, “There is absolutely no onus on our airlines to serve a greater good. They do not have to serve communities if they do not wish to do so... The Maple Leaf on the tail of an Air Canada plane is not a symbol of our national identity. It is a corporate logo.”<sup>157</sup>

Such an insight does not prevent some from suggesting that foreign competition would undermine Canadian sovereignty. Lazar concludes that foreign entry would jeopardize the survival of Air Canada and WestJet. He continues, “But should it matter to Canadian consumers and Canadians in general whether any Canadian airline survives to provide domestic service? My unequivocal answer is yes it does matter!”<sup>158</sup> A bare conclusion about the desirability of a Canadian airline is insufficient. Why is the “Canadianness” of an airline important? Why is buying airline services from foreign-owned airlines any different from buying cars from Ford, or consulting services from McKinsey, or clothes from the Gap, or hamburgers from McDonald’s, and so on? Some theory of why in particular Canadian airlines should be singled out for protectionism is missing from the sovereignty line of argument.

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<sup>154</sup> See David Gillen and William Morrison, “Regulation, Competition and Network Evolution in Aviation” (2003).

<sup>155</sup> See Ward, *supra* at 10.

<sup>156</sup> *Ibid.* at 10.

<sup>157</sup> *Ibid.* at 9.

<sup>158</sup> Lazar, *supra* at 25.

Crass political explanations of the present state of airline (as opposed to airport) regulation in Canada are most plausible.<sup>159</sup> None of the domestic carriers wishes to see foreign competition permitted. Moreover, all past and present domestic carriers other than Air Canada would support enhanced restrictions on predatory pricing. By not only deterring predatory behaviour, but perhaps also vigorous price competition, the recent expansion of predatory pricing concepts in airlines benefits Air Canada's rivals. Since domestic carriers are in a strong position to lobby through trade organizations and their corporate organizations themselves, government is likely to be vulnerable to their influence. On the other hand, consumers of airline services are likely to be disorganized and dispersed, making it difficult to counterbalance the airlines' political influence. It is consistent with public choice theory that the obvious approach, increased foreign competition, would be forsaken in favour of an approach that not only maintains protectionist barriers, but may also chill intense price competition among domestic firms.

Liberalizing foreign entry, while sensible policy, will not remove all competitive concerns in the industry. Of particular concern is the existence of economies of density at hubs, which may lead an airline to enjoy dominance on some routes because of market forces. Some regulatory proposals might address the problem of natural dominance at hubs, like requiring airlines to facilitate interlining with other airlines.<sup>160</sup> We are sceptical of such proposals, though they are not obviously wrong. The problems with them are the following. First, requiring airlines to interline with other airlines may not be consistent with an airline's business model.<sup>161</sup> WestJet's point-to-point approach, for example, leads it to avoid interlining.<sup>162</sup> Second, when one firm is compelled or encouraged to allow access to its facilities by a rival, there is a danger that the rival can free ride on the efforts of the host firm. An airline may make considerable investments to attract customers, which could be rendered less valuable (and thus diminish such incentives going forward) by requiring the airline to allow rivals to share to some extent in its success. Third, while the emergence of a hub may lead to some market power, it is not clear how significant this market power is in practice, particularly if competitors could set up hubs elsewhere, or take advantage of pre-existing hubs in the U.S. Regulation responding to natural

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<sup>159</sup> See E. Iacobucci, "Public Choice Theory and Recent Developments in Canadian Competition Policy" in *Selected Topics in Corporate Litigation* (Kingston: Queen's Annual Business Law Symposium 2000, 2001).

<sup>160</sup> See Lazar, *supra* at 26, discussing *Straight Ahead*, *supra*.

<sup>161</sup> *Ibid.*

<sup>162</sup> *Ibid.*

monopoly at hubs can only be justified if the costs of the regulation, including those resulting from diminished investment incentives, are less than the benefits. We are sceptical that this would be so.

We are less sceptical about regulation that responds not to economies of density at hubs, but rather to the bottlenecks created by airport capacity constraints. It would be far too costly to establish competition among airports in most cases, so airports are likely to enjoy market power. And while non-profit airport management corporations may not be able to distribute their earnings to shareholders, having more resources through monopolistic fees will be attractive to airport managers for a number of reasons, including the potential for greater pay. As noted above, the proposed *Airports Act* would establish cost-based pricing principles and would require airports to make facilities available on an equitable basis to airlines. In addition, airlines themselves have property rights in some existing airport facilities, including the grandfather principle controlling slots and ownership of gates. To address these concerns, the *Competition Act* and associated regulations forbid airlines from pre-empting scarce resources and require them to make facilities available to rivals on reasonable terms. These regulations are sensible; there is no purely market-driven solution to the competitive problem that limited airport capacity might create. As Gonenc and Nicoletti conclude following their review of airline performance, regulation and competition, for deregulation to bear fruit, “constraints on airport access must be relaxed and strategic behaviour by incumbents (*e.g.* through... slot dominance) must be kept in check by appropriate competition policies.”<sup>163</sup> Moreover, the concern about hurting *ex ante* incentives to invest are attenuated when it comes to airport facilities. Requiring an airline to cede slots that it never paid to obtain in the first place does not have any undesirable incentive effects. Requiring airports, whose facilities were in many cases built by the government, to open its facilities to encourage downstream competition also does not result in an appropriation of private investment, though there may be concern about future investment in airports – it is essential that access to facilities come with an appropriate fee that compensates for these investments.

## V. Conclusion

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<sup>163</sup> Gonenc and Nicoletti, *supra* at 216.

We identified two questions in the Introduction to be addressed with respect to each industry: how has the industry performed under deregulation efforts? What lessons can be learned going forward from problems encountered to date?

The performance of airlines has clearly improved following deregulation. Prices have fallen in Canada and elsewhere, and the growth of discount airlines has led both to lower prices and also to a greater array of price-quality combinations, which also benefits consumers. Even if there once were economies of scale or density justifications for airline regulation, they do not exist today. In contrast, airport privatization and deregulation has not obviously led to improved performance. Rather, it appears that higher prices have resulted; indeed, the Canada Transportation Act Review Panel has identified this as an area of concern.

The problems with airport performance stem from a *lack* of regulation. Airports, because of geographical locations and the cost of an airport, are often essential facilities. Relying on the market in such a context will not generate competitive prices. In such circumstances, price regulation is appropriate. In their laudable push to deregulate airlines, policy-makers have neglected to regulate the natural monopoly elements that remain.

Residual problems with airline regulation reflect the opposite concern: there remains too much regulation in airlines, though recent government proposals are encouraging. The federal government was reluctant following the merger of Canadian and Air Canada to let competition run its course, but rather adopted the approach of extremely interventionist predatory pricing policies pursuant to which the Competition Tribunal found a near bankrupt airline to be a dominant predator when it simply matched its competitors' prices. Just as they did in the telephony industry by restricting price-matching by incumbents, federal authorities opted for a dubious policy of keeping prices high in the short run through the threat of predatory pricing laws in order to keep prices competitive in the longer run. This is misguided. Matching prices is the essence of competition and authorities should generally resist the temptation to assume that they can accurately determine when a matched price is predatory. It is encouraging that the Minister of Industry recently proposed to repeal the airline-specific provisions in the *Competition Act*. It is discouraging that the federal government has neglected to deregulate in an obvious way to address concerns about Air Canada's possible dominance: open the borders to foreign competition. Both the remaining restrictions on foreign competition and the (current) regulation

of airline prices through predatory pricing law represent cases of the government doing too much, not too little.

What lessons can be drawn from the deregulatory experience in airlines? First, traditional views of natural monopoly justifications should not be accepted uncritically. It is not clear that there was ever a justification for airline regulation. Second, deregulation is not an either/or proposition. Policy-makers should examine an industry to determine what sectors present natural monopoly problems and what do not. Deregulating airports was not sensible, while deregulating airlines was. Third, political considerations can dominate the deregulatory agenda. It is clear that the political fallout from the Air Canada/Canadian merger combined with the failure of some small airlines created political pressure on the federal government to appear to be doing something. It chose a course of action, predatory pricing reform, that certainly appeased small rivals, while avoiding a course, truly open skies, that would have been costly to Air Canada and its rivals alike. That is, the government did not act in the public interest, but rather in the collective interest of the domestic airlines given the political pressure it was feeling to do something. Deregulatory regimes should be sought that commit the government to a sensible course of action even in the face of political fallout from future events. For example, when privatizing and deregulating initially, the government could have entered into an international agreement that skies would be inexorably opened over time to foreign competition. Entering into an international agreement to this effect would have created a commitment that would benefit Canada through increased competition, but also would have benefited Canadians by deterring the future adoption of politically motivated regulation, like the airlines' current predatory pricing rules.

## **E. CONCLUSIONS**

### **I. Performance Under De-Regulation**

We have outlined in this paper the policy challenges faced in the deregulation of Canadian industries. We then assessed the ways in which these challenges were met in telephony, electricity, and airlines. Deregulation of telephony services in Canada is by and large a success story. The evidence is not so much in the general decline in telephony prices, since this can be attributed to changing technology as it is in international comparisons of telephony rates. Canadian telephony rates are two-thirds average rates in the United States. This statistic suggests to some analysts that the regulatory compact has been violated in Canada: that regulated retail local exchange rates and wholesale access pricing are so low as to exploit unfairly the sunk capital invested by incumbent telcos. We considered the available capital market evidence and rejected this claim. Nothing in the historical market valuation of telcos supports the claim that these firms have been subject to regulatory hold-up. The highlights of improved efficiency in telephony regulation include the rebalancing of long distance and local rates and the near complete reliance of market forces in mobile telephony.

Critics of telephony regulation point to various types of evidence to support their claim of excessive and inefficient regulation, including especially the resources spent by government on regulation and the low rate of entry of competitors into local exchange markets. The former is taken as evidence that regulation is more intense than ever in telephony and the latter is used to support the claim that the retail and wholesale rates on the part of incumbents are constrained too tightly by regulation. If only the regulatory burden were lifted, greater entry and greater competition would result. On the first of these claims, we have noted that the regulation of a telecom industry during transition is far more complex than under rate of return regulation, and that notwithstanding the greater expenditure on regulatory resources telco rates are less constrained under price cap regulation than under the simpler rate of return regulation. This is as it should be. Price cap regulation is designed for the transition towards market competition. Regarding the second class of evidence, the “disappointing” rate of entry – especially facilities-based entry – into local exchange service relative to the prior expectations of many, we suggest that the reliance to date on sunk investment of incumbents is likely the efficient method of production in this industry. To date, duplication or bypass of the traditional monopolized



components of the telephony network has not been economic. Arguments that higher allowed rates would encourage entry and increase competition in the market confuse the competitiveness of market structure as a *means* (to lower prices) with competitiveness of structure as an end in itself. There is no basis for supporting higher-than-necessary prices in order to encourage entry.

We may be on the verge of a change in this regard, however, with the emergence of the Voice-Over-Internet-Protocol. The CRTC's role in enhancing or inhibiting the emergence of VOIP is critical and in this area of the regulatory debate we side with the critics of telecom regulation. The CRTC should not constrain incumbents with price floors on VOIP offerings. Preliminary notices from the CRTC suggest that such regulatory constraints may be imposed. The economic conditions under which floor constraints on current prices could benefit consumers in the long run (conditions, such as high barriers to entry, that underlie the theory of regulatory constraints against predatory pricing) are simply not plausible in telephony. The imposition of such constraints would reflect on the part of the regulator the same confusion that has confounded telecom regulation critics: a competitive market structure is desirable only as a means to lower prices, not as an end in itself. Regulatory constraints against lower prices with the aim of achieve greater entry will only harm consumers in the long run.

Deregulation in the electricity industry has been a far less positive experience and in some jurisdictions disastrous. Prior to electricity reform in Ontario, a vertically integrated, government-owned monopoly was the sole supplier. Like California and Alberta, Ontario experienced very volatile electricity prices under deregulation, in Ontario's case only months after the opening of the market in May 2002. The high price volatility, we argued, was due to conditions that were very apparent well before the opening of Ontario's market to competition – conditions that included a reduction in domestic generation capacity, increasing reliance on imports confounded by limited import transmission capacity and increasing demand. Electricity reform in any jurisdiction is vulnerable to the risk of price spikes because of two fundamental factors: the highly inelastic nature of short term demand and short term supply (when import transmission capacity is limited) and the lack of political commitment to restructuring.

The first of these factors renders electricity prices sensitive to any shortfall in generating capacity. The second, in turn, can induce the generation capacity shortfall. If producers do not expect the government to let market prices rise in the short run without intervening, then little generation will be attracted to the market, prices will indeed be volatile, and the government will

be forced politically to intervene in response to the price volatility. The pessimistic expectations of investors in generation will be self-realizing.<sup>164</sup> The problem of commitment against intervening was surely exacerbated by politicians' irresponsible promises that electricity reform would lower prices immediately, despite a decade-long price freeze that suppressed prices below efficient levels.

Airlines, like telephony, represent an industry where consumers have seen substantial benefits from deregulation. Prices have fallen and the growth of discount airlines has led also to a greater array of price-quality choices. Airport privatization and deregulation, however, has not obviously led to improved performance. The residual problems in the airline industry stem from too much remaining regulation of pricing of air travel and too *little* regulation of airports. The Competition Bureau found a near-bankrupt airline to be a dominant predator when it simply matched its competitors' prices. This is an excessively interventionist attempt to fine-tune prices in the competitive marketplace. While the government has proposed stepping back from its misguided approach to predatory pricing, it has neglected to pursue the opening of borders to allow foreign competition. With respect to airports, reliance on markets has not generated efficient pricing because of the natural monopoly feature of these facilities. Price regulation is a necessary part of regulatory reform in this industry.

## II. The Lessons for Deregulation

Two kinds of considerations should influence design of the deregulatory agenda. The first is economic. The desire for greater economic efficiency has undoubtedly inspired the path of deregulation. The second kind of consideration is political. In our view, insufficient attention has been paid to political considerations in the deregulation of markets, which has in turn jeopardized the economic benefits of deregulation. We suggest that future attempts at deregulation must do better in anticipating potential political obstacles to reform, even at the cost of departing from a "first-best" efficient regulatory reform, in order to keep the deregulation train on track. Put another way, policy-makers should view deregulation as an exercise in maximizing

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<sup>164</sup> Optimistic expectations can also be self-realizing: if investors trust the government not to intervene, then they will provide the generation capacity, which will in turn reduce the likelihood that the government will intervene. Thus there are two sets of self-realizing expectations, or in economic terminology, two rational expectations equilibria. Multiple rational expectations equilibria arise in other economic settings and are always associated with market volatility, with the market moving suddenly between equilibria. This is a fundamental potential source of volatility in electricity reform.

social wealth subject to political constraints. A second-best reform that can survive the political arena is better than an ideal reform that will not endure. In this conclusion we review the potential efficiency gains from deregulation then turn to political constraints on deregulation. While efficient reform implies an increase in social wealth, an uneven distribution of the benefits of deregulation gives rise to potential political obstacles.

## **1. Potential Efficiencies**

Substantial deregulation of telephony, electricity, and airlines is clearly essential for efficiency, though some kind of ongoing regulation will remain necessary in each of these industries. Production in each involves a physical network of some kind. The most fundamental deregulation issues are whether any of these industries retain natural monopoly features that would justify regulation, and what the boundaries of the regulation should be across segments of the network. In electricity, we find support for the view that generation is not a natural monopoly because the marginal suppliers in that sector are often small generators, although we acknowledge that market power problems can arise in this sector even if marginal plants have low over-all market shares. With this caveat, competition among generators can be sustained, encouraging incentives for productive efficiency (minimizing costs) and increasing allocative efficiency by raising prices closer to marginal cost. Transmission and distribution, on the other hand, are likely to be natural monopolies and should be regulated going forward.

In the airline industry, airports are natural monopolies and should be regulated as such. Airlines may also enjoy economies of density that introduce elements of natural monopoly at hubs, but we are skeptical that regulation would bring more benefits than costs in this case. Concern about dampening *ex ante* incentives for an airline to develop a successful hub, along with considerable doubt about the significance of the hub premium, behoove regulatory caution. In general, competition among airlines increases efficiency in three ways: through incentives for lower costs, through lower prices, and through market-determined quality and innovation. Productive and allocative efficiency increase as private actors compete to keep costs and prices low. The quality of air service moves closer to what the market demands, rather than what a regulator insists upon. Regulation in the past, such as rules that economy fares would be set at 80% of first class fares, almost certainly induced airlines to provide more luxuries than consumers would choose to pay for. The recent successes of low-cost, low-amenity airlines

suggest that many consumers would rather not pay for even small amenities like reserved seating. The post-regulation increase in the range of service qualities is an important source of social gain.

The scope of regulation, and thus where efficiency gains from a freer market are likely to arise, is most contentious in telephony and electricity. For some critics, in telephony regulation is excessive at both the extensive margin (which sectors or products should fall under regulation) and intensive margin (how rigid and comprehensive regulation should be within these sectors). These critics point to successful entry even in local exchange service and argue that wireless is a competitive substitute for wireline. A more “hands-off” approach that narrowed the range of products for which retail prices were regulated would accelerate the entry of genuine, facilities-based competition with competition’s attendant allocative and productive efficiency benefits.

We agree that a narrowing of the extensive margin of regulation of both retail and wholesale telephony rates would hasten the emergence of full competition. High margins attract entry. But until competition would prevent incumbents from raising price by a substantial amount, consumers should have the benefits of low regulated prices. When and to the extent that new entrants into local service such as cable and wireless companies can offer service at prices and value near regulated prices, competition will emerge. We suggest that the test employed by the CRTC to forbear from regulation in local service or any sector should involve a simple forecast of how much price would increase. Given the costs of regulation, the prediction of a significant increase should be required to continue regulation.

Once the appropriate boundary between the regulated and the competitive sectors has been delineated for an industry in transition, the issue of wholesale price regulation arises. Wholesale price regulation encompasses the mandated conditions of access by competitors to the still-monopolized segments of the network. Again this issue is most contentious in telecom. Critics argue that low wholesale prices encourage access-based entry and discourage facilities-based entry. We suggest in contrast that the costs of existing facilities are sunk and that if access prices based correctly on opportunity costs encourage their use, then the access-based pattern of entry may well be efficient. In electricity markets, the issue of access of generators and distributors to the monopolized transmission grid is achieved effectively through mandated non-discriminatory access to the grid and either separate ownership of the transmission grid or control of the grid assigned to an independent operator.

In electricity markets vertical separation of the operation of the transmission grid from the generation sector may well be needed to assure new entrants into generation that they will have fair access to the transmission grid. The case against vertical integration of transmission and distribution, and at least limited integration of generation and distribution is not so clear. In telephony, the vertical integration issue is whether incumbent providers of local service should be permitted to sell long distance service. In the U.S. this was until recently prohibited, and a lengthy list of conditions must now be met for entry into long distance to be permitted. Nothing in the Canadian experience suggests that vertical integration in local and long distance service has kept long distance rates higher than they otherwise would have been.

As a final comment on the potential efficiency gains from deregulation, a key requirement for efficient prices is not just the right overall level of prices but also the right relative prices of products within the market. In electricity, peak-load pricing has been implemented for some large industrial and commercial purchasers. In the residential sector, however, peak load consumption continues to be subsidized to a greater extent than off-peak consumption. Rebalancing of prices and costs in telephony, by comparison, has been a success story. The reductions in cross-subsidies of local residential service from long distance and business service are clearly evident. Remaining subsidies, especially to rural, high-cost areas are both inefficient and non-transparent. In airlines, regulation that required airlines to continue service to unprofitable routes no longer survives, while inefficient pricing structures that, for example, created far too narrow a gap between first class and economy travel have also disappeared. Improvements in relative prices also bring about efficiency gains.

In short, the introduction of competition in these industries with the natural monopoly sectors remaining regulated, carries the potential for substantial increases in social wealth. But an increase in wealth does not mean a Pareto improvement. We turn now to a review of the political elements of deregulation of the industries in question.

## 2. Distribution of Economic Effects and Political Consideration

Telephony and electricity provide sharp contrasts in the politics of deregulation. Liberalizing markets in both industries carries the potential for significant social gains, but these gains would be realized in different ways. Deregulating telephony was predicted to, and indeed did, give rise to dramatically lower prices for long distance calls. Competition in this sector has been successful in moving prices closer to marginal cost (though given the presence of large fixed costs, prices in this industry will never reach marginal cost). While local service is no longer subsidized by long distance rates, the requirement that local charges increase with rebalancing has been offset by technological change that has kept prices low. Thus, most consumers have unambiguously been better off in the period following deregulation than they were before deregulation. Almost certainly as a consequence, there has been relatively little political resistance to telecom deregulation.

In contrast, political economy considerations have caused major distortions in electricity prices in Ontario. Retail prices have been too low since the restructuring of the industry. Regulated prices are below marginal cost, where marginal cost is understood to include the opportunity cost of importing or exporting if this is the economic source (or use) of electricity – even if one ignores the marginal cost of externalities resulting from generation (especially from coal-fired plants). Traditionally, deviations from efficiency (the maximization of total benefits) in pricing decisions are explained by the ability of a particular concentrated interest group to exert political influence so as to distort prices in its favour. For example, agricultural subsidies are explained largely by the geographic concentration of farmers. However, traditional political economy theory fails to explain electricity pricing distortions. Electricity consumers (who benefit from lower prices) and taxpayers or future consumers (who must eventually pay for the extraordinary stranded costs) are largely the same people. The failure of public policy in electricity can be explained more simply by the inability of the public in Ontario to understand that the benefits of tax savings or larger government expenditure budgets that would accrue from more sensible electricity pricing would more than offset the costs of higher electricity prices. Increasing prices towards marginal cost always raises total surplus in a market, but in this case the future benefits of a lower government deficit from rational pricing are, for the typical citizen, too ephemeral and too distant to be balanced against the concrete impact of a higher monthly electricity bill (a form of “fiscal illusion”). The price distortions also mute demand-side

incentives to conserve electricity and exacerbate current supply-demand imbalances. The failure of the political system in this regard was sharply captured in the irresponsible promise of some Ontario politicians that future electricity prices would be lowered with the restructuring of the industry, just as the huge extent of Ontario Hydro's stranded debt was being revealed, and despite a decade long price freeze that had been in effect prior to restructuring.

It is interesting to contrast the developments in the electricity market that reveal the apparent weakness of pro-liberalizing interests in that sector with developments in the airline industry. Competition appears to have resulted in lower prices in airlines and has unquestionably changed the price-quality mix in a pro-consumer way. Yet the near failure of Canadian Airlines and its subsequent acquisition by Air Canada left the Canadian airline market with one clearly dominant firm and this created political controversy. The entry and failure of rival airlines only fueled the controversy. The federal government had at least two obvious options to deal with Air Canada's possible dominance. First, it could have liberalized the market either by permitting foreign ownership of Canadian airlines or cabotage or both. Second, it could have addressed dominance through domestic competition policy. From an economic perspective the first option would make the most sense – it would remedy market structure rather than attempting to regulate conduct. Rather than attempting to fine-tune competition through antitrust, opening the border would invite established U.S. airlines to participate in the market, just as they do in many other Canadian markets. However, there is a strong constituency that would oppose international liberalization: Air Canada's shareholders, creditors and employees. Moreover, rival airlines like CanJet and WestJet would provide strong political support for increasing vigilance against possible abuses of dominance by the incumbent - like predation – rather than for entry by foreign competitors. Interest group politics explain why the government chose to rely on anti-predation laws to address dominance, rather than taking the obvious step of opening the border.<sup>165</sup> Interest group politics explains the outcome in airlines better than in electricity.

The particular form of political opposition to a deregulatory agenda is difficult to predict *ex ante*. Indeed, even in retrospect we have offered only speculation as to why the resistance to liberalization in electricity was as powerful politically as it was in Ontario. Yet the lessons from electricity and to a lesser extent airlines suggest that unless regulation has close to Pareto-improving effects, political opposition can unravel the best of liberalization schemes. It is

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<sup>165</sup> See Iacobucci, *supra*.

important for the government to craft deregulatory schemes accounting for the potential political resistance such a course may encounter where a powerful constituency is affected adversely by a plan. Our study of the three markets, electricity in particular, suggests three ways governments should act to anticipate political resistance.

The most obvious way to minimize political resistance to deregulation is to ensure that there is thorough publicity of the benefits of the plan. We acknowledge, however, that the benefits of pushing prices closer to marginal cost, particularly where this means a potentially dramatic increase, are unlikely to be easily understood by consumers who each as individuals have little to gain from such an understanding. In addition, there may be losers from such a change who will resist regardless of the social good.

Another strategy that the government can pursue is to adopt policies that are irreversible, or at least very costly to reverse. There are several ways in which a government can make its commitment to deregulation stronger. An important step is privatizing whatever government corporations are involved in the industry. It is unlikely to be mere coincidence that deregulation has remained, for the most part, on track in the telephony and airlines industries, while it has failed in electricity in Ontario. The dominant players in the electricity markets in Ontario are all government owned, while telephony never involved significant state supply and privatization has virtually eliminated state participation in the airline industry. Even with restrictions on foreign investment, the durability of de-regulation initiatives in the Canadian telephony and airlines sectors suggests that private ownership of any kind, rather than public ownership, inhibits policy reversibility.

Another technique to manage political opposition to deregulation is to explicitly compensate losers. In telephony, for example, it is inefficient and obfuscatory to subsidize rural consumers with prices that do not reflect the cost of service. Moving away from such regulation, however, creates an obvious political constituency opposed to deregulation. A solution that avoids the distortions of intra-industry cross-subsidies is simply to move to a system of lump-sum cash transfers to compensate roughly for higher telephone prices. Such transfers avoid distortions but reduce the opposition of rural users to reform in the industry. Of course, rural users would prefer both cash transfers *and* low telephone prices, but ensuring that rural users are no worse off relative to the status quo is likely to reduce political opposition from this quarter. In the electricity sector, one technique for achieving efficient consumption while not relying on



higher prices to penalize greater consumption is to pay consumers for the amount they reduce their consumption relative to some benchmark. A similar alternative would be to continue to subsidize power, but only up to some amount that covers very basic residential electricity needs, which would at least preserve conservation incentives at the margin.

Managing the transition from regulation to the market in the three network industries we have considered is complex. While there are clear economic gains to be had from such liberalization, the optimal mix of regulation and free-markets is not obvious. We have reviewed some of the important economic questions that arise in the industries in question. This paper demonstrates the importance of anticipating political resistance to deregulation and designing the boundaries of market and regulation with such political realities in mind. Choosing a less-than-perfect approach that allows the government to commit to deregulation is preferable to establishing a technically optimal but politically infeasible regime.