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"Choice of Organizational Form Makes a Real Difference": The Impact of Corporatization on Government Agencies in Canada

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ABSTRACT

The new public management includes a portfolio of prescriptions that involve reconfiguring the boundaries of government agencies. One form of reconfiguration is corporatization. Corporatization creates separate agencies that have a contractlike relationship with a ministry or oversight agencies. Corporatization usually comprises a portfolio of changes that attempt to make agencies more "businesslike." Although corporatization is now popular with governments around the world, there is little empirical evidence on its performance impact. This article analyzes 11 corporatizations in Canada by the federal and Québec governments. We first present hypotheses based on principal-agent theory concerning the potential impact of corporatization. For each agency, we compare the behavior and performance for 3 years prior to corporatization to the 3 years subsequent to corporatization. The aggregate results suggest that the introduction of corporatization did alter behavior on a number of dimensions. The results show that output and revenues increased, the revenues-to-expenditures coverage gap narrowed, and cost-efficiency and employee productivity improved following corporatization. Most of these changes were statistically significant.

New public management (NPM) ideas concerning the scope of government have influenced governments around the world (Hood 1991; Ridley 1996; Scott 2001). NPM has been most dramatically summed up as "reinventing government" (Osborne and Gaebler 1993). The most fundamental aspect of this reform agenda involves reconfiguring the boundaries of

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government agencies by reducing the scope of traditional government bureaucracies and delivering services through alternative organizational mechanisms. NPM proponents have put forward a number of different organizational prescriptions for doing so, ranging from relatively radical reform, such as privatization, through various degrees of contracting-out by for-profits or nonprofits, to organizational forms that retain government provision of services but separate service delivery from traditional governmental departments (Greve, Flinders, and Van Thiel 1999; Vining and Weimer 2006). We use the term "corporatization" to refer to, and encompass, the process of converting line departments of government to entities that have been variously labeled as "executive agencies," "special operating agencies," "government corporations," "contract agencies," and "nondepartmental public bodies," among other titles.

Corporatization has now taken place in many countries, including the United Kingdom, New Zealand, the United States, Australia, Sweden, the Netherlands, Italy, and Norway. Despite the extensive NPM prescriptive literature and the widespread adoption of corporatization, there is relatively little empirical literature on the effectiveness of corporatization or other NPM prescriptions, in changing the behavior of agencies or improving their performance (Boyne 2003; Pollitt 2002). Furthermore, critics have argued that much of the NPM has shallow, even atheoretical, foundations (Gruening 2001; Lynn 1994; Pollitt 2002) and that many of its prescriptions, such as corporatization, are based on a simplistic business metaphor that ignores important differences between the public and private sectors (Box 1999; Peters 2001; Pollitt 1990). Indeed, whether in response to NPM or not, there have been recent calls for much greater rigor in the evaluation of public management practice in general and organizational innovation in particular (Boyne 2003; Heinrich and Lynn 2001).

The purpose of this study is to assess whether the behavior and the performance of 11 bureaus within two governments in Canada—the federal government of Canada and the province of Québec—changed following the introduction of separate agency status. These entities are known as special operating agencies (SOAs) at the federal level and in Québec as autonomous service agencies (ASAs). We investigate five Canadian federal SOAs and six Québec ASAs over the corporatization period (a total of 7 years). For each entity, we statistically compare the behavior and performance for 3 years prior to corporatization to the 3 years subsequent to corporatization. The results suggest that the introduction of separate agency status did alter behavior on a number of important dimensions. The aggregate results (the results combining all agencies) show that output and revenues increased, the revenues-to-expenditures coverage gap narrowed, and cost-efficiency and employee productivity improved following corporatization. Most of these changes were statistically significant. However, the changes for individual agencies were quite variable.

WHAT IS CORPORATIZATION?

For many NPM proponents the purpose of corporatization is to bring a more "businesslike" approach to public service delivery. For example, Nicholls (1989), the Deputy Secretary of the New South Wales Treasury (an early adopter of corporatization), describes it as "establishing an operating environment for a government organization which replicates the internal and external conditions of successful private enterprises" (p. 27). Most other advocates of corporatization, including those within government, use such business analogy language (e.g., Bradbury 1999; Brown, Ryan, and Parker 2000; Duncan and Bollard 1992).

Teo (2000) describes in more detail the purposes and consequences of corporatization as the term is used in Australia:

> Corporatization is considered to be a structural reform process, which changes the operational conditions of public sector organizations in order to place them on a commercial basis in a competitive environment. At the same time, it allows the government, as owner, to intervene by providing broad direction in key performance targets (including financial and nonfinancial) and community service obligations . . . Corporatized public sector organizations are required to adopt a strategic perspective to the management of scarce resources (p. 558).

Greve, Flinders, and Van Thiel (1999) provide a continuum of quasi-autonomous organizations in the public sector. In their language, corporatization creates a “contract agency” that is “quasi-autonomous” (Greve, Flinders, and Van Thiel 1999, 142). In practice, corporatization almost always involves a portfolio of changes in addition to the formal change in status (Trosa 1995).[1] This portfolio has been most extensively documented in the United Kingdom “Next Steps” program (Hogwood, Judge, and McVicar 1999; Talbot 2004). Since its initiation in 1988, numerous corporatizations or “agencifications” (Hyndman and Eden 2001) have been implemented. Apart from the status change itself (whether legal, quasi-judicial, or administrative), the major accompanying steps were narrower task domains (Boston et al. 1996; Ingraham, Joyce, and Donahue 2003, 124–9), explicit performance measures and targets (Hyndman and Eden 2002), a greater focus on the responsibility of the chief executive (CE) to deliver on these targets (Hood and Lodge 2004; Hyndman and Eden 2001; Talbot 2004), and greater discretion for CEs to manage budgets and employees (Pendlebury and Karbhari 1998; Talbot 2004). Other countries adopting corporatization have broadly followed the same set of prescriptions, including, as we discuss in detail later, Canada.

Despite the growth of corporatization, there is currently little rigorous empirical evidence on its impact, either globally or in Canada. Talbot (2004, 105) recently has emphasized that the United Kingdom government has failed to comprehensively examine performance change under the Next Steps program, despite initial commitments to do so. There is some limited case study evidence to support the idea of improved performance following corporatization processes (Bradbury 1999; Sanders 2004). Brewer (2004) presents quite highly aggregated evidence from 25 Organisation for Economic Co-operation and Development countries that support the idea that a portfolio of “corporatization-like” reforms did improve performance. However, Boyne (2003), after reviewing 65 studies that empirically examine public sector performance, concludes that “few tests of . . . internal or external structure have been undertaken” (p. 388). Furthermore, he also notes that “a central weakness of most existing statistical results is that they are derived from cross-sectional models . . . they do not address the issue of improvement because changes over time in service standards are not examined” (p. 388). Given the paucity of empirical evidence—especially evidence that goes beyond individual agency qualitative case studies—there is clearly room for country-specific quantitative analyses of corporatization. The next sections provide a theoretical framework for such empirical analysis.

1 Inevitably, this makes it empirically difficult to disentangle the effects of specific reforms (Light 1997). We discuss this further below.

CORPORATIZATION AND PRINCIPAL-AGENT THEORY

There is a vast literature in public administration, organization theory, political science, law, and economics that considers the patterns of state organization (Roness 2003). Gulick's (1937) categorization of public organizations based on purpose, process, persons, and place has been influential (Hogwood 1992; Peters 1994), although controversial (Self 1972, 55–7; Simon 1947). However, although this literature is useful for descriptive taxonomies, it says little that helps assess the costs and benefits of corporatization versus those of line bureaucracy. Similarly, historical institutionalists provide extensive theory for understanding the institutional and organizational drivers of change (Gains 1999; Hall and Taylor 1996; March and Olsen 1984) but little that is directly relevant to understanding its efficiency consequences. There is also a normative economic literature concerning the appropriate role of government (Vining and Weimer 1990; Williamson 1996). Again, this does not directly address the choice of organizational form if production continues to be supplied *within* government.

An answer to the question of what difference public sector organizational form makes requires a theory that specifically considers the relative advantages of different organizational arrangements (Dixit 2002). Principal-agent theory provides such an organizational theory; namely, a theory of "economic relationships where one party (the principal) wishes to affect the actions of another (the agent) by means of incentives" (Dixit 2002). Furthermore, it can be applied to public sector organizational arrangements across multiple levels: "In the public sector, [principal-agent relationships] can arise within a government agency, with upper tiers as of management as the principals and lower tiers as agents, or between an agency and its supervisors at one end and its suppliers or clients at the other end" (p. 697) (see also Lane 2001; Miller and Moe 1983). The key issue in the principal-agent formulation of the public organization problem is how asymmetric information between these various hierarchical levels can be reduced. Asymmetric information situations may flow from either "hidden information" (adverse selection) or "hidden action" (moral hazard) sources. Dixit (2002) argues that moral hazard "is the one most used in thinking about public sector incentives" (p. 698) but, in practice, hidden action and hidden information are inextricably intertwined in most hierarchical contexts.

What is the relevance of principal-agent theory to the specific issue of corporatization? This is not obvious; indeed, its relevance has not been well articulated. One reason for this is that the private sector metaphor of "more businesslike behavior" resulting from a competitive environment, at least on its own, is not applicable because corporatization does not alter the competitive environment. This can be initially illustrated by contrasting corporatization to privatization. The principal-agent rationale for privatization has been clearly articulated. In the absence of significant market failure, as Parker and Saal (2003) put it "principal-agent theory, especially when coupled with arguments from public choice theory, provides a very powerful theoretical rationale for privatization to increase economic efficiency . . . where private capital markets operate efficiently to constrain agent behavior" (p. 3) (see also Megginson and Netter 2001; Nellis 1994). Competitive markets constrain agents from acting opportunistically (which can include "the quiet life") because of the presence of the takeover market, the potential for bankruptcy and exit (which function as hard budget constraints), and the presence of a competitive market for managers. Eventually, these pressures drive firms to more efficient behavior or from the market (Boardman, Laurin, and Vining 2002, 138–9; Nellis 1994). Lacking these competitive pressures, monopoly government bureaus incur X-inefficiency or "agency loss" (Frantz 1988; Leibenstein 1976). Privatization has taken place in a wide range of differing institutional environments; the aggregate global evidence suggests major allocative and X-efficiency gains (Boubakri and Cosset 1998; Megginson, Nash, and Van Randenborgh 1994; Megginson and Netter 2001).[2] However, consistent with principal-agent theory, the evidence suggests that efficiency improvements are less certain in the absence of institutions that can control agency loss by privatized firms (Parker and Saal 2003). In sum, privatization has both theory and quite a bit of evidence on its side.[3]

In Canada, most government activity is now in sectors where there is prima facie evidence of market failure or market power (Boardman, Laurin, and Vining 2003). Although there could be disagreement on the net efficiency benefits from the privatization of some of these entities, corporatization is in most cases seen as a permanent organizational form, given the presence of market failures (Shirley 1999). The Treasury Board Secretariat (TBS 1998, sec. 2.2) has emphasized that it is a "myth" that "SOAs are a first step toward privatization." Therefore, neither competitive markets nor the threat of competitive markets is likely to be the impetus for behavioral change or improved performance, as is the case for privatization. Consequently, the theoretical basis for believing that corporatization will effectively constrain agent behavior is less clear, or at least different, than it is with privatization.

THE PRINCIPAL-AGENT MODEL APPLIED TO CORPORATIZATION

The Treasury Board Secretariat argues that "choice of organizational form makes a real difference" (TBS 1998, sec. 1.2). But, it does not articulate in any detail why corporatization, specifically, is expected to make a real difference. Given the extent of corporatization globally, many other governments have obviously shared this belief. However, if corporatization *decreases* political control, without significantly increasing market controls (in contrast to the case for privatized entities), it might lead to worse performance. It might *increase* some principal-agent problems by providing more degrees of freedom for CEs and other managers to behave opportunistically vis-à-vis *external* principals (O'Toole and Jordan 1995; Talbot 2004). Along these lines, Christensen and Lægreid (2003) find, based on interviews with managers of corporatized Norwegian entities, that "corporatization has made the role of central leaders more complex and ambiguous and undermined traditional political control" (p. 803).

Given such ambiguities, what are the control and information mechanisms through which corporatization might improve performance?[4] Possibly, a change from bureau status to something more separate and more corporate-like *alone* might alter employee behavior. In other words, the symbolism may matter, in and of itself (Hall 1989; Kelman 1990). This performance chance would essentially be a manifestation of the "Hawthorne effect." We can never discount this possibility completely. However, we suggest that substantive relationships and behaviors may be altered at two levels: between central government

2 Sometimes these efficiency gains occurred in anticipation of privatization rather than after (Dewenter and Malatesta 2001).

3 Similarly, where competitive, or at least contestable, markets exist contracting-out has generally been shown to lower production costs (Globerman and Vining 1996; Hodge 2000, 88–92).

4 We defer, for the moment, the meaning of improved performance. We discuss it below.

and agency managers (primarily the CE) and between the CE and agency employees. For ease of exposition, we will describe managerial behavior and actions as if they are embodied in the person of the CE, although this is obviously an oversimplification.

Central Government–CE Relationship

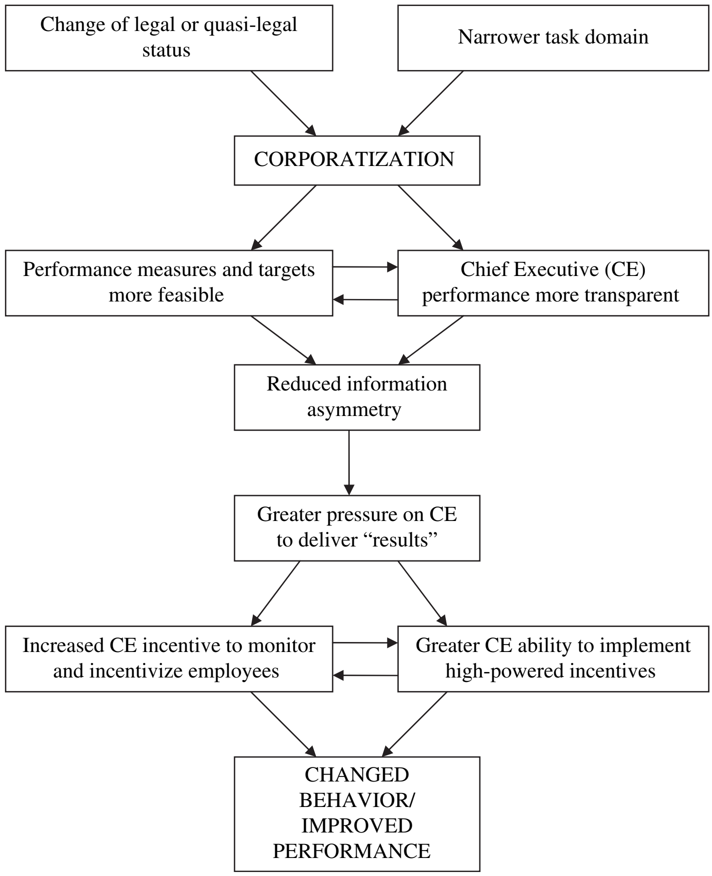
As described earlier, the process of corporatization typically introduces a number of mutually reinforcing organizational changes. For example, a narrower task domain makes meaningful performance measures more feasible. It also facilitates more stringent accounting procedures that facilitate their measurement. In aggregate, these elements are likely to reduce information asymmetry between central government monitors and agency CEs. CEs will therefore be under much greater pressure to "deliver" on targets. Additionally, some elements of corporatization process are likely to give CEs greater capacity to achieve improved performance. In larger line bureaucracies, detailed budget supervision typically restricts the discretion of managers on the choice of inputs and technologies. Additionally, they do not have direct access to capital markets that enable them to borrow against future savings to fund cost-saving capital investments (Vining and Weimer 2006). These restrictions are reduced under corporatization.

CE–Agency Employees Relationship

Another plausible source of improvement is in reduced agency loss *within* the organization (Jensen and Meckling 1976). This flows from two mutually reinforcing forces. First, the corporatization process reduces information asymmetry between CEs and employees. Specifically, CEs oversee organizations with narrower task domains, where it is more realistic to institute performance measures and targets. Hyndman and Eden (2001, 589) report that, in Northern Ireland corporatizations, "This use of targets was viewed by the CEs as extremely valuable in communicating to individuals, gaining commitment to the mission and improving the focus of individual teams within the organization." Second, corporatization allows CEs to institute somewhat more high-powered incentives (Greer and Carter 1995). The rules of traditional government bureaucracies restrict managers with respect to employee hiring, firing, discipline, and, most notably, performance-based incentives or rewards (Burgess and Ratto 2003). Traditional bureau managers have to design employee "contracts" within these constraints. Consequently, they must emphasize ex ante controls rather than ex post rewards (Thompson and Jones 1986). Incentives are inevitably low powered (Frant 1996; Miller 2000; Taylor and Wright 2004). With more corporate-like organizational forms, in contrast, CEs usually have greater freedom to reduce agency loss by placing greater emphasis on ex post rewards. More high-powered incentives are, of course, also more feasible with superior information.

In Québec, for example, the contracts of corporatized agencies are organized in three steps: the CE reaches agreement with the minister on the task domain, quantified goals concerning agency performance are agreed upon, and CEs are reviewed yearly on attainment of these goals. Throughout the process, performance improvements and transparency are strongly encouraged (Auditor General of Québec 1998).

Figure 1
Summary of Information and Incentive Changes with Corporatization



A Summary of the Theory and Some Caveats

Reduced asymmetric information at both the government-CE level and the CE-employee level, therefore, could be key factors in improving performance. In sum, and across levels, corporatization may represent a signal to both managers and employees that fundamentally different behaviors and outcomes will be valued. The portfolio of changes may credibly signal that it is not the "same old, same old." Figure 1 provides a summary of the principal-agent argument as we apply it to corporatization.

However, it is important to recognize that corporatization is not as likely to produce as high-powered incentives as are competitive environments. First, both CEs and employees may discount the permanence of corporatization. CEs and employees of the corporatized organization may not believe that politicians and central agency civil servants are committed to this new organizational form, and the accompanying performance criteria and operating procedures, over time. *Credible* commitment by governing politicians to an administrative course of action is difficult—politicians may renege for any number of political reasons (Norman 2003; Talbot 2004, 107). Additionally, it is virtually impossible for one government to commit subsequent governments (Miller 2000; Norman 2003). Second, even with reduced information asymmetry, employees may have the capacity to ignore, dampen, resist, or even sabotage change (McNulty and Ferlie 2004; Thomas and Davies 2005). Third, incentives are a complex topic. Although principal-agent theory generally argues that greater informational transparency will lead to more high-powered incentives, which should result in improved performance, some theory suggests otherwise (Prendergast 2002, 2003). One might expect these caveats on the impact of corporatization to be particularly germane in the Canadian case, where the reform spirit is present, but incrementalist and lacking in radicalism compared with many other jurisdictions. Osborne and Plastrik (1996) have taken this position, arguing in the mid-1990s that the federal Canadian organizational changes did not alter "accountability, incentives, or power in any fundamental way" and consequently that "[SOAs] performance did not change much" (p. 61). Given these factors, the potential impact of corporatization on organizational behavior, especially its long-term impact, is by no means clear-cut.

CORPORATIZATION IN CANADA

Although not early, or bold, adopters, Canadian politicians and civil servants have clearly been influenced by NPM ideas, including those on the organizational arrangement of agencies (Aucoin 1995; Borins 1995; Savoie 2004). Indeed, the Liberal party in Québec won the 2003 provincial election using a slogan—"Reinventing Québec"—that strongly echoes the central NPM mantra (Osborne and Gaebler 1993). In 1989, The federal Canadian government began to implement NPM ideas with the launch of its Public Service 2000 reform. An important aspect of the reform was the potential for "alternative service delivery" based on the belief (as we have already quoted) that "choice of organizational form makes a real difference" (TBS 1998, sec. 1.2). Similar to other countries, the Treasury Board of Canada Secretariat (TBS 1998, sec. 1.2) posited that SOA status would

- improve customer service, client consultation, and monitoring of service quality;
- promote cost-effective and more businesslike service delivery;
- delegate more responsibility for operational matters throughout the organization;
- make better use of information technology;
- demonstrate government action and concern for efficient management;
- promote innovation and initiative in the workplace; and
- emphasize effective management of people, including support for training and career development.

Bureaus are allowed to apply for SOA status. The Treasury Board (TBS 1998, sec. 1.2) suggests that "the best candidates share a common set of characteristics." These are that they

- are primarily concerned with the delivery of services (rather than internal policy advice);
- operate under a stable policy framework with a clear, ongoing mandate;

- are able to be held independently accountable to within the parent department;
- are amenable to the development of clear performance standards;
- represent discrete units of sufficient size to justify special consideration;
- are staffed by managers and employees who are committed to the SOA approach; and
- require no significant ongoing ministerial involvement.

These two lists suggest the same approximate portfolio of changes described earlier for the United Kingdom and elsewhere. It is important to note that the Treasury Board explicitly emphasizes that "Although a number of Agencies operate commercially, producing and marketing their goods and services on a full cost recovery basis, the collection of revenue has never been a requirement" (TBS 1998, sec. 2.2).

Similarly, the Québec government introduced management-by-results based on four principles: the delegation of responsibilities to make CEs more directly responsible for resource allocation within their departments, determining objectives, measuring results using both qualitative and quantitative means, and communicating these results in a regular and public way to ensure accountability (Auditor General of Québec 1999). The focus was now to be on clients, results, and measurable outcomes rather than on rules and procedures. The Québec government committed to greater transparency by publishing the objectives and results obtained from departments (Direction de la Réforme Administrative 2001).

Agencies Analyzed

Both the federal and Québec governments implemented a significant number of corporatizations. By 2002, there were 20 SOAs at the federal level. In Québec, there were 14 ASAs. But, in a number of the corporatizations, mission restructuring was so extensive that the new agency bore little relationship to the prior entity, eliminating the possibility of a meaningful before/after comparison. We were able to collect complete data for five federal SOAs and for six Québec ASAs. The five SOAs we study are (1) the Passport Office (PO), the PO is responsible for the issue, removal, withholding, recovery and the use of passports; (2) Training and Development Canada (TDC), TDC is the federal government's provider of professional training for the public sector; (3) the Canadian Pari-Mutual Agency (CPMA), CPMA monitors and regulates horse track betting throughout Canada; (4) the Canadian Grain Commission (CGC), CGC is responsible for establishing and maintaining Canada's grain quality, safety, and volume; and (5) the Canadian Intellectual Property Office (CIPO), CIPO grants and records ownership rights relating to intellectual property; it also disseminates information on new inventions recorded in Canada. The six Québec ASAs are (1) the Conservation Centre of Québec (CCQ, Centre de Conservation du Québec), the CCQ provides professional restoration services and expertise to museums and other institutions engaged in conservation; (2) the Legal and Forensic Medicine Laboratory (LFML, Le Laboratoire de Sciences Judiciaires et de Médecine Légale), the LFML support police or legal investigations by providing expertise in forensic medicine and law, and they guarantee the integrity of the entertainment systems used for casinos and video lottery terminals; (3) Tourism Québec (TQ, Tourisme Québec), TQ provides support services to the tourist industry in Québec; (4) Student Financial Aid (SFA, L'Aide Financière aux Etudes), SFA manages financial aid for students in professional, college, and university programs; (5) the Québec Pension Bureau (QPB, La Régie des Rentes du Québec), the QPB is responsible for administering the Québec Pension Plan and for the administration of the family benefits program; and (6) the Insurance and Pension Plans Commission (IPPC, La Commission Administrative des Régimes de Retraite et d'Assurances), the IPPC supervises insurance and pension plans in the province of Québec.

BEHAVIOR/PERFORMANCE MEASURES AND HYPOTHESES

Measures

In order to assess changes in organizational behavior and performance, it is useful to look at multiple performance measures (Boyne 2003, 368; Voyer 1997). The measures we use are outputs, revenues, the ratio of revenues-to-expenditures (expenditure coverage), and unit cost and employee productivity. In aggregate, these address a number of the "headline dimensions" of agency performance recently emphasized by Boyne (2003, 368).

Hypotheses

Based on the discussion of the principal-agent literature presented earlier, we hypothesize that CEs will be under greater pressure to run their agencies in a more businesslike manner according to NPM prescriptions. But given that these agencies are not operating in competitive market environments, the appropriate performance metric is not profitability. A corporatized entity might well be able to generate considerable revenue and be highly profitable given its monopoly power. Rather, in such cases, the conceptually correct test for overall economic efficiency is whether agencies are delivering services at (the lowest) social marginal cost and pricing them at that cost.[5] There are no simple metrics for such economic efficiency, especially for efficient pricing. Given the inapplicability of profitability measures, we hypothesize that CEs will focus on related measures that are visible to government principals. Two relatively visible and transparent measures are total output and total revenues (Newcomer 1997). CEs will seek to increase both. They will, in turn, induce employees to increase output and revenue through the use of more high-powered incentives. This would be consistent with behavior in other jurisdictions. In the United Kingdom, for example, there is considerable empirical evidence that oversight government agencies have emphasized increasing the total quantity of output (along with quality of output) more than any other measure (Boyne 2002).

Even given the narrowed scope of these agencies, they generally produce more than one output. We, however, examine only what we consider to be the primary output of each agency. The selected unit of output for each agency is PO, total number of passports issued per year; TDC, total number of day-courses per year; CPMA, total number of races supervised per year; CIPO, number of ownership rights registered per year; CGC, total volume of grain inspected per year; CCQ, total number of restoration service hours provided per year; IPPC, total number of pension plans under management per year; LFML, total number of expert reports published per year; TQ, estimate of total tourism revenues in Québec per year; SFA, total number of applications processed per year; and QPB, number of beneficiaries per year. Additionally, we have no direct empirical measures of quality and cannot therefore

5 It is beyond the scope of this article to discuss this topic in detail. For detailed discussions of the economic interpretation of allocative efficiency, or aggregate utility, see Friedman (2002, 36–75). On public sector pricing, specifically, see Weare and Friedman (1998).

hold any quality changes to the output constant. We do not have direct evidence on how consumers perceived quality after the status change.[6] However, our review of agency annual reports and strategic plans suggests that in fact all the agencies made a concerted effort to improve quality following corporatization. The agency-specific evidence related to these efforts is summarized in Appendices 1 (federal) and 2 (Québec). In spite of the limitations of these output measures, they do allow us to examine output changes at an aggregate level and also to get at productivity changes, if only in an approximate manner (see below).

Historically, the public administration literature has focused on expenditures rather than revenues (Boyne 2003), as this was the most relevant monetary metric for most line bureaucracies. However, in the corporatization context, we hypothesize that both oversight bureaucrats and CEs are most likely to perceive an increase in total revenues as the most transparent manifestation of a more "businesslike approach." As we describe in further detail below, we use "real" (deflated) dollars to observe any change in revenues, although it could be argued that government principals directly observe nominal revenues and are more likely to key on them than on deflated numbers. Given that three agencies continued to receive all their funding from government or direct-funding sources, this variable is relevant only for eight agencies that collect revenue.

Specifically, as regards output and revenue, we hypothesize that

H_1 Corporatization increases the total output supplied by agencies.

H_2 Corporatization increases the total revenues collected by agencies.

An emphasis on increasing output and revenues is clear from the annual reports published by the agencies in the post-corporatization era. For example, one of CCQ's strategic objectives is to "grant access to its service to a wider number of users" (Centre de Conservation du Québec 2001). Each of the annual reports we examined had similar references to aspirations for volume and revenues increases.

A more businesslike approach is also likely to make agency CEs more conscious about "profitability" in some broad sense, despite the fact that most agencies do not have the potential to make profits in the private sector sense (although a few do). Given this reality, we hypothesize that most CEs will interpret "increasing profitability" as being best approximated by reducing the gap between their revenues and their expenditures or, put another way, improving their expenditure coverage ratio. Their objective function essentially becomes "lose money more slowly."

We do not have information on either the actual social marginal cost of a unit of output or the potential social marginal cost at X-efficient production. Consequently, we are not able to conclude that an improvement in a given agency's revenues-to-expenditures coverage is efficiency enhancing from a social perspective (Friedman 2002, 440–9). But, government principals (and the agency CEs) would almost certainly perceive these changes as representing performance improvements, given their stated desire for more businesslike behavior. We more neutrally characterize improvements in this ratio as behavioral changes. Specifically, we hypothesize

H_3 For agencies that generate revenues, corporatization improves the revenues-to-expenditures ratio (or expenditure coverage).

6 However, Prendergast (2003) argues that consumer feedback on quality in the public sector can be highly skewed and is not the best metric for judging quality.

Many of the agency annual reports we perused aspired to "financial independence." CIPO, for example, prior to corporatization, committed both to "break-even" within 5 years of corporatization and to ploughing back any surpluses to cover its investment (Canadian Intellectual Property Office 1996). We interpret improvement in the revenues-to-expenditures ratio as the most appropriate measure of attempts to achieve financial independence.

Finally, we hypothesize that CEs will put a greater emphasis on the technical efficiency of the agencies (Boyne 2003). Sophisticated principals are likely to be interested in this more complex aspect of performance (Boyne 2002). We expect that, ceteris paribus, fewer inputs will be used to produce the same level of output, resulting in a cost-efficiency improvement.

H_4 Corporatization improves cost-efficiency of agencies.

In order to test hypothesis 4, we use the ratio of output to expenditures (Boyne 2003; Epstein 1992). It is plausible to infer that improvements in cost-efficiency contribute to overall efficiency (Frantz 1988; Leibenstein 1976). We, therefore, characterize this measure as a performance measure. Along the same lines, the primary input of most of these agencies is human capital or employees. Given the human capital intensity of these agencies, we expect that the major source of improved technical efficiency would come from an improvement in employee productivity:

H_5 Corporatization improves the employee productivity of agencies.

In order to test hypothesis 5, we measure labor productivity (i.e., treating labor as the only input). We define labor units as "full-time equivalents" (FTE) for the federal agencies and "person-years" (or "années-personnes") for Québec. This method follows the well-established procedure in the privatization literature (see, e.g., Boardman, Laurin, and Vining 2002; D'Souza and Megginson 1999).

Virtually all the annual reports or other official documents published by the agencies describe performance targets related to productivity. For example, in its 1998–99 action plan, LFML explicitly committed itself to three performance targets related to productivity (Le Laboratoire de Sciences Judiciaires et de Médecine Légale 1998). LFML proposed two measures related to cost-efficiency (unit cost of products and services) and one related to employees (unit cost of hours worked). Although these productivity measures are not always exactly the same as the ones used in this study, they are very similar in spirit.

METHODOLOGY AND DATA

Methodology

We adopt the statistical approach that has been widely used to study the impact of the privatization. Specifically, these studies examined the impact of the privatization "event" on the performance and behavior of a government-owned organization (e.g., Boubakri and Cosset 1998; Megginson, Nash, and Van Randenborgh 1994).[7] This approach essentially tests statistically for a structural break in a time series (Hansen 2001); in this case, the "structural break" of interest is the corporatization. Although widely used, the disadvantage of this approach is that it does not control for other changes that might occur during the "event" period. This problem is most severe when a single event is studied or when the

7 In the same spirit, the finance literature measures the impact of an exogenous "event" (whether precipitated by markets or governments) on the stock returns of firms; see, for example, Lamdin (1999).

sample of events occur contemporaneously. However, for the aggregate analysis, the nature of our sample introduces some inherent variability that reduces the omitted variable bias of the kind that can occur in an event study looking at a single-year structural break. This variability flows from three sources. First, agencies are from two independent levels of government subject to their own budgetary cycles and spending priorities, albeit both governments are subject to the same macroeconomic factors. Second, the corporatizations occurred over an extensive time period. The first corporatization in the sample occur in 1990 while the last takes place in 1998 (see table 1). Furthermore, the first year of observation occurs in 1987 and the last year in 2001; thus, the observations cover a 14-year period. Third, in several cases the event windows cross administration changes. In total, these three sources of variability reduce the risk of omitted variable bias.

Seven years of data were collected for each agency, covering the 3 years prior to corporatization (years −3, −2, and −1), the year of corporatization (year 0), and 3 years following corporatization (years +1, +2, and +3). The year of corporatization (year 0) is excluded because it includes data that mixes the pre- and postcorporatization periods. To test these hypotheses, we analyze before/after comparisons at two levels: (1) at the level of each individual agency (these comparisons are subsequently referred to as *individual agency* before/after comparisons) and (2) in aggregate, by pooling the data on all relevant agencies (these comparisons are subsequently referred to as *pooled* before/after comparisons).

For individual agency before/after comparisons, we compute the pre- and postcorporatization means for each performance measure for each agency. We use a standard *t*-test to test the statistical significance of variable changes in means for each agency, pre- and postcorporatization. For the pooled before/after comparisons, we use the Wilcoxon signed-rank test to test significant changes in the variables for the aggregate sample. The standardized test statistic Z follows an approximately standard normal distribution for samples of at least 10. This procedure tests whether the median difference in variable values between the pre- and postcorporatization sample is zero. In addition to the Wilcoxon test, we use a binomial proportion test to determine whether the proportion (P) of agencies experiencing changes in a given direction is greater than would be expected by chance ($P = 0.5$). Given the variety of services supplied by the agencies in the sample, a finding that a significant proportion of firms changed performance in the *same* direction is likely to be as informative as a finding of changes in performance based on differences in medians.

Data

We use data on agency output, revenues, and expenditures to test the maintained hypotheses. Because the behavior/performance measures that use output are in different units of analysis, they must be normalized for any pooled analysis to be meaningful. We do so following a standard methodology. For each agency in year t, the normalized measure is equal to the ratio of year t number divided by the year that corporatization occurs in. Using this procedure, each agency is given equal weight in the sample (similarly, see Boardman, Laurin, and Vining 2003), thereby controlling for size discrepancies as well as for measures in different units. This methodology allows for two types of analysis. Raw data probably provide a better test of the overall economic and social significance of the impact of corporatization. Normalized data, however, probably provide a better indication of

Table 1
Agency Descriptive Statistics

	PO	TDC	CPMA	CIPO	CGC	CCQ	IPPC	LFML	TQ	SFA	QPB
Year of corporatization	1990	1990	1992	1994	1993	1995	1995	1997	1997	1998	1998
No. of full-time equivalents	469.25	149.00	67.75	521.00	771.00	22.25	377.75	116.67	290.25	207.75	943.25
Total expenditures	36,035	17,594	13,539	37,759	51,465	2,304	28,054	7,720	55,449	9,876	78,342
No. of output units	1,264,581	5,055	50,180	27,635	60	24,232	160,529	32,024	1,824	170,006	1,159,432
Revenues	39,002	17,656	13,922	45,439	48,370	328	—	—	1,116	—	78,3422
Excess revenues over expenditures	2,967.24	61.59	382.95	7,679.45	−3,095.56	−1,976.56	—	—	−54,332.62	—	438.05

Note: This table presents descriptive statistics on each of the variables that are used for the purpose of testing the hypotheses. The data are averaged over 4 years starting from the year of corporatization (year 0).

the conceptual significance of corporatization as a reform mechanism, as normalization equally weights all the agencies. For this reason, Wilcoxon signed-rank tests are performed using normalized data.[8]

As we seek to determine whether agency performance changes over an extended 7-year time period, it is necessary to deflate financial data (unless making within-year computations). Therefore, we use the Canadian consumer price index (CPI) to convert all dollar amounts into 1992 dollars. The CPI is available at the Statistics Canada Web site (www.statscan.ca).

The data are from published annual reports. The Canadian government has the financial records for its agencies prior to corporatization, so we have data for the years before and after corporation. Financial information on revenue, expenditure, and net income are taken from public accounting records and annual reports. Data on output and employees for federal agencies were available from expense budgets prepared by the ministries to which the agencies report, as well as annual agency reports after corporatization. For Québec agencies, information was published in the public accounts and annual reports, from the relevant ministries' annual reports and directly from the agencies. Table 1 provides the basic descriptive statistics for each agency.

RESULTS

Hypothesis 1: Outputs

The results pertaining to output are shown in table 2. Ten of the 11 agencies increased their output following corporatization. Results of both the binomial and Wilcoxon signed-rank tests performed on the normalized data support the hypothesis that output increased significantly ($p = .03$; $Z = 3.85$). Eight of the agencies generated a statistically significant increase in output. Panel B shows an aggregate output increase of approximately 20% (statistically significant at the 99% confidence level). The IPPC increased output by the largest percentage—more than a 30% increase. Only the CGC reduced output, and then only slightly, following corporatization. These results are consistent with hypothesis 1.

Hypothesis 2: Total Revenues

We only test hypothesis 2 for the eight agencies that generate revenues. Again, table 3 presents these data both raw (panel A) and normalized (panel B). Seven out of the eight agencies increased their total revenues following corporatization ($p = .04$). The increase is statistically significant for three agencies. The aggregate increase in normalized revenue is statistically significant at approximately 20% ($Z = 2.51$). CCQ generated the greatest increase in revenue (more than 50%); only the CPMA decreased revenues following corporatization. These results are consistent with hypothesis 2.

A comparison of output and revenue behavior is useful for a (admittedly very tentative) consideration of some of the allocative efficiency implications of corporatization. If total revenue is increasing faster than output, then agencies might simply be using

8 We also performed Wilcoxon signed-rank tests on the raw data; the results are similar to those for the normalized data and, therefore, are not reported.

Table 2
Output of the Agencies

	PO	TDC	CPMA	CIPO	CGC	CCQ	IPPC	LFML	TQ	SFA	QPB	Average
Panel A: units of output												
Year −3	1,061,586	3,654	47,952	25,639	49.6	24,000	104,030	10,231	1,387.25	184,968	999,591	
Year −2	1,100,357	4,620	47,141	24,311	59.9	23,422	110,078	8,582	1,534.55	184,620	1,050,610	
Year −1	1,195,185	4,323	45,735	25,128	79.1	23,060	117,680	32,214	1,711.05	189,704	1,087,420	
Year 0	1,269,307	4,533	46,293	27,000	61.5	20,317	131,082	32,065	1,665.43	186,721	1,118,415	
Year 1	1,227,947	5,328	50,236	27,990	55.6	23,482	156,727	31,916	1,760.59	177,558	1,151,391	
Year 2	1,241,112	5,139	50,999	26,163	68.3	26,479	175,149	30,304	1,919.46	164,453	1,154,400	
Year 3	1,319,958	5,218	53,190	29,386	56.5	26,648	179,158	33,852	1,951.54	151,293	1,213,521	
Average												
Before	1,119,043	4,199	46,943	25,026	62.9	23,494	110,596	17,009	1,544.28	186,431	1,045,874	
After	1,263,006	5,228	51,475	27,846	60.1	25,536	170,345	32,024	1,877.20	164,435	1,173,104	
t value	11.89***	3.03**	2.96**	3.85**	−0.27	1.58	16.26***	2.24*	7.19***	−2.45	9.17***	
Panel B: normalized output												
Year −3	0.84	0.81	1.04	0.95	0.81	1.18	0.79	0.32	0.83	0.99	0.89	0.86
Year −2	0.87	1.02	1.02	0.90	0.97	1.15	0.84	0.27	0.92	0.99	0.94	0.90
Year −1	0.94	0.95	0.99	0.93	1.29	1.14	0.90	1.00	1.03	1.02	0.97	1.01
Year 0	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Year 1	0.97	1.18	1.09	1.04	0.90	1.16	1.20	1.00	1.06	0.95	1.03	1.05
Year 2	0.98	1.13	1.10	0.97	1.11	1.30	1.34	0.95	1.15	0.88	1.03	1.09
Year 3	1.04	1.15	1.15	1.09	0.92	1.31	1.37	1.06	1.17	0.81	1.09	1.10
Average												
Before	0.88	0.93	1.01	0.93	1.02	1.16	0.84	0.53	0.93	1.00	0.94	0.92
After	1.00	1.15	1.11	1.03	0.98	1.26	1.30	1.00	1.13	0.88	1.05	1.08
p 0.03**												
Z 3.85***												

Note: This table presents output values for each agency during the years considered in the study. For individual agency comparisons, we test for the pre- versus postcorporatization changes in means using a standard *t*-test. For pooled comparisons, we first employ a binomial test to determine whether the proportion of agencies' output that changed in the predicted direction is greater than the proportion P that would occur by chance. The p statistic reported pertains to the probability of accepting the null hypothesis in a one-sided test of $P = 0.5$. We employ Wilcoxon signed-rank test as our test of significance for the change in median value of the normalized data. The Z statistic reported pertains to the significance of the change in median value.
***, **, * Significant at the 1%, 5%, and 10% levels, respectively.

Table 3
Total Revenues

	PO	TDC	CPMA	CIPO	CGC	CCQ	IPPC	LFML	TQ	SFA	QPB	Average
Panel A: revenues (in thousands)												
Year −3	28,229.9	15,179.3	16,776.0	40,477.2	35,550.9	91.4	—	—	1,555.9	—	3,642.0	
Year −2	31,349.4	15,018.0	16,050.8	39,583.0	44,552.3	218.6	—	—	763.0	—	5,114.3	
Year −1	32,345.1	11,848.9	15,167.0	50,560.9	58,257.0	294.6	—	—	776.2	—	4,966.5	
Year 0	32,639.6	24,275.1	14,685.7	44,461.8	47,184.7	244.6	—	—	803.9	—	6,076.4	
Year 1	34,489.0	14,282.0	13,346.1	42,964.5	43,553.9	298.3	—	—	1,454.9	—	4,698.6	
Year 2	43,279.0	15,350.7	13,810.0	46,822.5	53,931.9	344.4	—	—	1,082.4	—	7,077.5	
Year 3	45,602.0	16,715.7	13,846.1	47,506.5	48,809.3	423.5	—	—	1,124.2	—	4,477.7	
Average												
Before	30,641.50	14,015.3	15,997.9	43,540.4	46,120.1	201.5	—	—	1,031.7	—	4,574.3	
After	41,123.31	15,449.5	13,667.4	45,764.5	48,765.0	355.4	—	—	1,220.5	—	5,418.0	
t value	4.88**	0.25	−3.82	0.75	0.44	5.79**	—	—	1.30		1.18	
Panel B: normalized revenues												
Year −3	0.86	0.63	1.14	0.91	0.75	0.37	—	—	1.94	—	0.60	0.90
Year −2	0.96	0.62	1.09	0.89	0.94	0.89	—	—	0.95	—	0.84	0.90
Year −1	0.99	0.49	1.03	1.14	1.23	1.20	—	—	0.97	—	0.82	0.98
Year 0	1.00	1.00	1.00	1.00	1.00	1.00	—	—	1.00	—	1.00	1.00
Year 1	1.06	0.59	0.91	0.97	0.92	1.22	—	—	1.81	—	0.77	1.03
Year 2	1.33	0.63	0.94	1.05	1.14	1.41	—	—	1.35	—	1.16	1.13
Year 3	1.40	0.69	0.94	1.07	1.03	1.73	—	—	1.40	—	0.74	1.12
Average												
Before	0.94	0.58	1.09	0.98	0.98	0.82	—	—	1.28	—	0.75	0.93
After	1.26	0.64	0.93	1.03	1.03	1.45	—	—	1.52	—	0.89	1.09
p 0.04**												
Z 2.51**												

Note: This table presents the revenues of the eight agencies that generated revenues. For individual agency comparisons, we compare the pre- versus postcorporatization changes in means using a standard *t*-test. For pooled comparisons, we first employ a binomial test to determine whether the proportion of agencies' output that changed in the predicted direction is greater than the proportion *P* that would occur by chance. The *p* statistic reported pertains to the probability of accepting the null hypothesis in a one-sided test of $P = 0.5$. We employ Wilcoxon signed-rank test to test the significance for the change in median value of the normalized data. The *Z* statistic reported pertains to the significance of the change in median value.
***, **, * Significant at the 1%, 5%, and 10% levels, respectively.

their monopoly power to extract rents from users. As we stressed above, however, without knowledge concerning the marginal cost of output, any inference will be speculative. The results show that, although both output and revenue changes are similar in aggregate, all agencies did not behave in the same way. The normalized results from panel B of table 3 reveal that the PO, CCQ, and TQ each increased revenues at a faster pace than they did output, perhaps extracting some monopoly rents. In contrast, the TDC, CPMA, and QPB increased output, whereas their revenues decreased in the postcorporatization era.

In sum, corporatization appears to have had a positive impact on the total level of output delivered. This probably represents performance improvement. It is almost certain that the principal (government) would regard it as such. But, the increase in revenues is more ambiguous in terms of the efficiency impact of corporatization.

Hypothesis 3: Revenues-to-Expenditures Coverage

This hypothesis is tested using those eight agencies that generate revenues. Seven of the eight increased their expenditure coverage ($p = .04$). The increase is statistically significant for two agencies. Table 4 (panel B) shows that the agencies increased the coverage of their operating costs by approximately 10%. The aggregate expenditure coverage improvement is statistically significant ($Z = 1.97$). The CCQ managed the largest percentage reduction in its revenue-expenditure gap at 40.2%. TDC and CPMA also improved their revenue-expenditure coverage ratio, but they did so by supplying more output at a lower "price." We regard this as probably representing a performance improvement. TQ was the only agency that slightly increased its revenue-expenditure gap (2.6%). The normalized result in panel B makes clearer the cost increase experienced by TQ. Overall, the results shown in panel A are similar to those in panel B. These results are consistent with hypothesis 3 and suggest that the impact of corporatization is wide (normalized evidence) and deep (raw evidence).

Hypothesis 4: Cost-efficiency

Our last two hypotheses concern the impact of corporatization on the technical efficiency of the agencies. Panel A of table 5 shows that six of the 11 agencies improved their cost-efficiency. Although the improvement in cost-efficiency is significant for three of the agencies, the binomial test shows that the proportion of agencies that increased productivity according to this measure is not statistically significant ($p = .27$). Panel B of table 5 reveals that the agencies improved their cost-efficiency by approximately 6% in the postcorporatization period. The aggregate cost-efficiency difference is not statistically significant ($Z = 1.31$). These aggregate results do not provide a significant support to hypothesis 4.

The evidence on cost-efficiency when we examine individual agencies suggests a mixed picture. Two agencies produced very large improvements: the LFML with 47.5% and the CPMA with 36.9%. However, four agencies experienced reductions in cost-efficiency: the SFA at 26%, the CCQ at 21%, the PO at 8.5%, and the TQ at 4.1%. Thus, cost-efficiency improvements were by no means universal.

Table 4
Ratio of Revenues to Expenditures

	PO	TDC	CPMA	CIPO	CGC	CCQ	IPPC	LFML	TQ	SFA	QPB	Average
Panel A: ratio of revenues to expenditures												
Year −3	1.07	0.94	1.03	0.78	0.70	0.07	—	—	0.04	—	0.055	
Year −2	1.02	0.94	0.95	1.47	0.86	0.16	—	—	0.02	—	0.06	
Year −1	0.99	0.89	0.96	1.33	1.06	0.12	—	—	0.02	—	0.06	
Year 0	0.98	0.98	0.98	0.98	0.89	0.09	—	—	0.02	—	0.08	
Year 1	1.04	0.98	1.01	1.43	0.82	0.14	—	—	0.04	—	0.06	
Year 2	1.16	1.04	1.07	1.30	1.01	0.15	—	—	0.02	—	0.09	
Year 3	1.13	1.02	1.07	1.20	1.05	0.19	—	—	0.01	—	0.06	
Average												
Before	1.03	0.92	0.98	1.20	0.87	0.12	—	—	0.02	—	0.06	
After	1.11	1.01	1.05	1.31	0.96	0.16	—	—	0.02	—	0.07	
t value	1.47	3.45**	1.41	0.43	1.78	1.93*	—	—	−0.22		1.12	
Panel B: normalized ratio of revenues to expenditures												
Year −3	1.09	0.96	1.05	0.80	0.79	0.78	—	—	2.00	—	0.69	0.92
Year −2	1.04	0.96	0.97	1.50	0.97	1.78	—	—	1.00	—	0.75	1.08
Year −1	1.01	0.91	0.98	1.36	1.19	1.33	—	—	1.00	—	0.75	1.08
Year 0	1.00	1.00	1.00	1.00	1.00	1.00	—	—	1.00	—	1.00	1.00
Year 1	1.06	1.00	1.03	1.46	0.92	1.56	—	—	2.00	—	0.75	1.10
Year 2	1.18	1.06	1.09	1.33	1.13	1.67	—	—	1.00	—	1.13	1.16
Year 3	1.15	1.04	1.09	1.22	1.18	2.11	—	—	0.50	—	0.75	1.14
Average												
Before	1.05	0.94	1.00	1.22	0.98	1.30	—	—	1.33	—	0.73	1.03
After	1.13	1.03	1.07	1.34	1.08	1.78	—	—	1.17	—	0.88	1.13
p 0.04**												
Z 1.97**												

Note: This table presents the revenues-to-expenditures ratio of the eight agencies that generated revenues. For individual agency comparisons, we compare the pre- versus postcorporatization changes in means using a standard *t*-test. For pooled comparisons, we first employ a binomial test to determine whether the proportion of agencies' output that changed in the predicted direction is greater than the proportion *P* that would occur by chance. The *p* statistic reported pertains to the probability of accepting the null hypothesis in a one-sided test of $P = 0.5$. We employ Wilcoxon signed-rank test as the test of significance for the change in median value of the normalized data. The *Z* statistic reported pertains to the significance of the change in median value.
***, **, * Significant at the 1%, 5%, and 10% levels, respectively.

Table 5
Cost-efficiency

	PO	TDC	CPMA	CIPO	CGC	CCQ	IPPC	LFML	TQ	SFA	QPB	Average
Panel A: output/expenditures												
Year −3	40.33	0.23	2.95	0.50	0.001	17.94	4.21	1.53	0.034	23.80	12.42	
Year −2	35.70	0.29	2.80	0.91	0.001	16.56	4.90	1.35	0.033	20.77	13.18	
Year −1	36.48	0.33	2.90	0.66	0.001	9.51	4.94	5.25	0.042	21.51	13.60	
Year 0	38.20	0.18	3.08	0.59	0.001	7.78	4.93	4.66	0.039	20.56	14.87	
Year 1	37.11	0.37	3.78	0.93	0.001	11.17	4.87	4.06	0.046	18.17	14.62	
Year 2	33.28	0.35	3.94	0.73	0.001	11.77	6.48	3.98	0.036	16.32	14.91	
Year 3	32.57	0.32	4.12	0.74	0.001	11.83	6.79	3.95	0.023	14.31	14.81	
Average												
Before	37.51	0.28	2.89	0.69	0.001	14.67	4.68	2.71	0.036	22.03	13.07	
After	34.32	0.34	3.95	0.80	0.001	11.59	6.05	4.00	0.035	16.27	14.78	
t value	−7.43	1.52	8.98***	0.64	−0.04	−1.12	3.81**	0.99	−0.14	−0.26	5.92**	
Panel B: normalized unit cost												
Year –3	1.06	1.23	0.96	0.84	0.84	2.31	0.85	0.33	0.87	1.16	0.84	1.03
Year –2	0.94	1.58	0.91	1.52	0.99	2.13	1.00	0.29	0.87	1.01	0.89	1.10
Year –1	0.96	1.77	0.94	1.11	1.25	1.22	1.00	1.13	1.10	1.05	0.92	1.13
Year 0	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Year 1	0.97	2.00	1.23	1.57	0.91	1.44	0.99	0.87	1.21	0.88	0.98	1.19
Year 2	0.87	1.90	1.28	1.22	1.11	1.51	1.32	0.86	0.93	0.79	1.00	1.16
Year 3	0.85	1.74	1.34	1.25	1.06	1.52	1.38	0.85	0.58	0.70	1.00	1.11
Average												
Before	0.98	1.53	0.94	1.16	1.03	1.89	0.95	0.58	0.94	1.07	0.88	1.085
After	0.90	1.88	1.28	1.35	1.02	1.45	1.23	0.86	0.91	0.79	0.99	1.154
p 0.27												
Z 2.45**												

Note: This table presents the ratio of output to expenditures for each agency. For individual agency comparisons, we test for the pre- versus postcorporatization changes in means using a standard *t*-test. For pooled comparisons, we first employ a binomial test to determine whether the proportion of agencies' output that changed in the predicted direction is greater than the proportion *P* that would occur by chance. The *p* statistic reported pertains to the probability of accepting the null hypothesis in a one-sided test of $P = 0.5$. We employ Wilcoxon signed-rank test as the test of significance for the change in median value of the normalized data. The *Z* statistic reported pertains to the significance of the change in median value.

***, **, * Significant at the 1%, 5%, and 10% levels, respectively.

Hypothesis 5: Employee Productivity

We also analyze employee productivity by measuring the ratio of output to FTEs. Table 6 (panel A) shows that nine of the 11 agencies improved employee productivity; this proportion is significantly different from 50% (p = .03). The increase in employee productivity is statistically significant for four agencies when considered individually. The normalized results presented in panel B of table 6 show that the agencies in aggregate generated an average of approximately 0.97 unit of service per employee prior to corporatization and 1.1 units per employee following corporatization. Although this is not a major change, it is statistically significant (Z = 2.56). Thus, these aggregate results are consistent with hypothesis 5.

An examination of individual agency changes again reveals a very mixed pattern. The IPPC improved productivity 65% after corporatization, whereas the LFML improved 47% and the TDC 40%. However, there was no productivity improvement in the CGC, the SFA, or the QPB. The PO and CIPO actually experienced reduced productivity of 10.2% and 18.1%, respectively. These results suggest that most CEs did pay greater attention to productivity following corporatization. Table 7 provides a summary of the results along with a summary of the statistical tests on the before/after comparisons. The results overall support the maintained hypotheses that corporatization changed the behavior of agencies and, to some extent, improved their performance, at least over a 3-year period.

CONCLUSION

This study adopts a before/after comparison methodology to test the impact of corporatization on the behavior and performance of 11 agencies in Canada. An advantage of this methodology is that it avoids the well-known problems associated with cross-sectional performance comparisons (Boyne 2003). Our aggregate results show that output and revenues increased, the revenues-to-expenditures coverage gap narrowed, and cost-efficiency and employee productivity improved following corporatization. In most cases, these changes were statistically significant. Most agencies increased their revenues and reduced expenditures, thus increasing their financial autonomy. Although from an allocative efficiency perspective these changes are ambiguous (as discussed earlier), both the agencies and their government principals have treated them as performance improvements. Most agencies improved employee productivity, although these changes were quite variable. However, some agencies did not improve and, indeed, worsened on some measures.

This analysis represents perhaps the first multiagency, quantitative analysis of government performance change in Canada (Boyne 2003, 373). It represents one of the few multiagency quantitative analyses of corporatization that has taken place globally. We attribute the before/after changes in performance at least partially to corporatization. This suggests that total scepticism toward corporatization, at least in the Canadian context, is unjustified. But the mixed nature of the evidence suggests that reformers should focus on impacts vis-à-vis broad set of agencies because there may be no improvement in specific agencies, at least not in the short run. Indeed, our conclusions echo those of Talbot (2004, 111), who concludes with respect to the Next Steps program in the United Kingdom:

Table 6
Employee Productivity

	PO	TDC	CPMA	CIPO	CGC	CCQ	IPPC	LFML	TQ	SFA	QPB	Average
Panel A: units of output/FTE												
Year −3	2,846.08	19.97	648.00	67.65	0.065	960.00	251.89	128.69	4.69	807.72	1,163.67	
Year −2	3,161.95	26.25	637.04	62.18	0.075	1,018.35	273.83	90.34	6.16	813.30	1,171.25	
Year −1	2,785.98	30.23	618.04	59.97	0.098	854.07	300.97	346.39	6.63	835.70	1,318.09	
Year 0	2,917.95	28.69	625.58	58.57	0.076	752.48	339.59	296.90	6.48	804.83	1,270.93	
Year 1	2,759.43	37.00	728.06	57.36	0.074	1,118.19	417.94	247.41	6.80	845.51	1,248.80	
Year 2	2,482.22	35.44	796.86	49.83	0.091	1,260.91	467.06	259.01	6.81	843.35	1,215.16	
Year 3	2,655.85	35.02	831.09	48.17	0.074	1,332.40	477.76	325.50	5.38	779.86	1,188.56	
Average												
Before	2,931.33	25.48	634.36	63.27	0.079	944.14	275.56	188.47	5.83	818.91	1,217.67	
After	2,632.50	35.82	785.34	51.79	0.079	1,237.17	454.25	277.31	6.33	822.91	1,217.51	
t value	−1.57	2.89*	3.91**	−18.72	0.01	3.06**	22.60***	1.57	0.51	0.13	0.003	
Panel B: units of output/normalized FTE												
Year −3	0.99	0.70	1.04	1.16	0.86	1.28	0.74	0.43	0.72	1.00	0.92	0.89
Year −2	1.08	0.92	1.02	1.06	0.99	1.35	0.81	0.30	0.95	1.01	0.92	0.95
Year −1	0.96	1.05	0.99	1.02	1.30	1.14	0.89	1.17	1.02	1.04	1.04	1.06
Year 0	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Year 1	0.95	1.29	1.16	0.98	0.98	1.49	1.23	0.83	1.05	1.05	0.98	1.09
Year 2	0.85	1.24	1.27	0.85	1.20	1.68	1.38	0.87	1.05	1.05	0.96	1.13
Year 3	0.91	1.22	1.33	0.82	0.97	1.77	1.41	1.10	0.83	0.97	0.94	1.12
Average												
Before	1.01	0.89	1.01	1.08	1.05	1.26	0.81	0.64	0.90	1.02	0.96	0.97
After	0.90	1.25	1.26	0.88	1.05	1.64	1.34	0.93	0.98	1.02	0.96	1.11
p 0.03**												
Z 2.56**												

Note: This table presents the ratio of output to full-time employees for each agency. For individual agency comparisons, we test for the pre- versus postcorporatization changes in means using a standard *t*-test. For pooled comparisons, we first employ a binomial test to determine whether the proportion of agencies' output that changed in the predicted direction is greater than the proportion *P* that would occur by chance. The *p* statistic reported pertains to the probability of accepting the null hypothesis in a one-sided test of $P = 0.5$. We employ Wilcoxon signed-rank test as the test of significance for the change in median value of the normalized data. The *Z* statistic reported pertains to the significance of the change in median value.

***, **, * Significant at the 1%, 5%, and 10% levels, respectively.

Table 7
Summary of Hypotheses Test Results

	Average 3 years before	Average 3 years after	Average change	*Z*
Hypothesis 1: Outputs				
Normalized output	0.92	1.08	0.16	3.85***
Hypothesis 2: Revenue				
Normalized revenue	0.93	1.09	0.16	2.51**
Hypothesis 3: Revenue-expenditure coverage				
Normalized revenues/expenditures	1.03	1.13	0.10	1.97**
Hypothesis 4: Cost-efficiency				
Normalized unit cost	1.09	1.15	0.15	1.31
Hypothesis 5: Employee productivity				
Normalized employee productivity	0.97	1.11	0.14	2.56**

***, **, * Significant at the 1%, 5%, and 10% levels, respectively.

> Has Next Steps improved management in government? The answer has to be, in best academic tradition, "yes" and "no." Agencies have improved the management of the functions that the agencies perform. This may be patchy, insufficiently documented and subject to many caveats, including not necessarily applying to all agencies all of the time, but in general it would be fair to conclude that there has been an overall improvement.[9]

There are six limitations to this study. First, we cannot disentangle the impact of specific elements of the corporatization portfolio, as they occurred simultaneously. The principal-agent formulation we present, however, does outline how behavioral change and performance improvement might be induced even in the absence of a shift to a competitive environment. Second, we cannot directly assess whether corporatization improved allocative efficiency. To do so, we would need evidence that output is being supplied at a price equal to marginal social cost and at optimal quantity and quality levels. Our methodology does not allow for such an assessment. But, the majority of the agencies supplied more units of service at lower cost, suggesting at least some improvement in X-efficiency. Most of the other changes would be regarded by the agencies and their principals as performance improvements. Third, agencies volunteered for corporatization status, therefore, there may be some self-selection bias: agencies with better expected performance might be more likely to apply for the status. Note, however, that this bias is only a direct concern for agencies that *expect* to perform better following corporatization, not agencies that *are* already performing well at the time of corporatization. Our analysis of the documentation surrounding the corporatization process did not allow us to find evidence of the expectations self-selection bias. Also, we find no documented evidence of the expectations self-selection bias. Fourth, more high-powered incentives inevitably raise the rewards from "gaming" those incentives (Courty and Marschke 2004; Prendergast

9 However, this conclusion is largely based on a brief (one page) analysis of cost reduction.

2002). It is likely that it would require more time for employees to learn how to successfully game these incentives and for it to effect performance. This is a question for further study given that we only examine the agencies for 3 years following corporatization. Fifth, because corporatization typically involves a portfolio of changes, the specific institutional details of corporatization can vary considerably from jurisdiction to jurisdiction. This suggests caution in generalizing our empirical findings. Sixth, although the temporal nature of this form of analysis has some unique advantages, it does not completely control for other changes that might have also stimulated agency change.

APPENDIX 1

Table A1
Service Quality Monitoring in Federal Corporatized Agencies

	PO	TDC[10]	CPMA	CIPO	CGC
Quality discussed in strategic plan	Yes	N/A	Yes	Yes	Yes
Quality performance reports	Yes	No	No	Yes	No
Annual quality targets	Yes	N/A	No	Yes	No
Main quality targets	Document delivery on time, client satisfaction	N/A	N/A	Application turnaround time	Wheat quality assurance
Evidence that targets are met	Yes	N/A	N/A	Yes	Yes
Major technology implementation for quality improvement[11]	IRIS: system that enhances security and speeds up service	N/A	No	TechSource: full end-to-end electronic patent processing system that assists in meeting client service commitments	No

Note: This table summarizes evidence on the steps by agencies to monitor service quality in the postcorporatization era. These data are primarily collected from agency annual reports in the years following corporatization. Agency strategic and annual plans were also consulted.

10 In 2004, TDC was merged into a new entity called the Canada School of Public Service. This agency's annual reports are no longer accessible.

11 In this row, we report only the innovations that had a significant impact on the agencies service delivery. We have been able to find evidence that most agencies have kept current with respect to the technology by regularly investing in minor technology improvements.

APPENDIX 2

Table A2
Service Quality Monitoring in Québec Corporatized Agencies

	CCQ	IPPC	LFML[12]	TQ	SFA	QPB
Quality discussed in strategic plan	Yes	Yes	Yes	Yes	Yes	Yes
Performance reports	Yes	Yes	No	Yes	Yes	Yes
Annual quality targets	Yes	Yes	No	Yes	Yes	Yes
Main quality targets	Restoration project duration	Delays in answering clients' request	Client satisfaction	% Phone calls answered at the phone center	Delays in treating loan applications	Confidence level of the population with respect to agency
	Client satisfaction	Accuracy of decisions related client's pension		Delivery delays of documentation	Access rate to interactive services	Number of products offered electronically
		Delays in processing buybacks and reimbursements		Client satisfaction at the information centers	Client satisfaction	
Evidence that target(s) is(are) met	Yes	Mixed (meet target approximately 50% of the time)	Yes	Yes	Yes	Yes
Major technology implementation for quality improvement	No	Invested in various computer systems to facilitate communication with its clients	No	No	CONTACT, a 30M project implemented over 5 years to allow SFA to be electronically related to schools	Web access to agency services has been enhanced

Note: This table summarizes evidence on the steps by agencies to monitor service quality in the postcorporatization era. These data are primarily collected from agency annual reports in the years following corporatization. Agency strategic and annual plans were also consulted.

12 During the postcorporatization period, LFML reports that most of its effort in terms of improving the quality of its service has been oriented toward obtaining an ISO Accreditation. We have evidence that the agency was preparing to get this accreditation, but to date, we have no evidence that the agency has obtained it.

REFERENCES

Aucoin, Peter. 1995. *The new public management: Canada in comparative perspective.* Montreal: Institute for Research on Public Policy.

Auditor General of Québec. 1998. *Gestion par Résultats: Vérification Menée Auprès de Deux Organismes Centraux et de Cinq Unités Autonomes de Services.* Rapport à l'Assemblée Nationale, Québec. http://www.vgq.gouv.qc.ca/publications/rapp98_2/ch_02.htm (accessed June 15, 2005).

———. 1999. *Mémoire Présenté à la Commission Spéciale de l'Assemblée Nationale Constituée pour Procéder à une Consultation Générale sur le Nouveau Cadre de Gestion de L'Appareil Gouvernemental Proposé par L'Enoncé de Politique sur La Gestion Gouvernementale.* Rapport à l'Assemblée Nationale, Québec. http://www.vgq.gouv.qc.ca/HTML/Memoire1.html (accessed June 15, 2005).

Boardman, Anthony E., Claude Laurin, and Aidan R. Vining. 2002. Privatization in Canada: Operating and stock price performance with international comparisons. *Canadian Journal of Administrative Sciences* 19 (2): 137–54.

———. 2003. Privatization in North America. In *International handbook on privatization*, ed. D. Parker and D. Saal, 129–60. Northampton, MA: Edward Elgar.

Borins, Sanford 1995. The new public management is here to stay. *Canadian Public Administration* 38 (1): 122–32.

Boston, Jonathan, John Martin, June Pallott, and Pat Walsh. 1996. *Public management: The New Zealand model.* Auckland, New Zealand: Oxford Univ. Press.

Boubakri, Narjess, and Jean-Claude Cosset. 1998. The financial and operating performance of newly privatized firms: Evidence from developing countries. *Journal of Finance* 53 (3): 1081–110.

Box, Richard. 1999. Running government like a business: implications for public administration theory and practice. *American Review of Public Administration* 29 (1): 19–34.

Boyne, George A. 2002. Concepts and indicators of local authority performance: An evaluation of the statutory frameworks in England and Wales. *Public Money and Management* 22 (2): 17–25.

———. 2003. Sources of public service improvement: A critical review and research agenda. *Journal of Public Administration Research and Theory* 13 (3): 367–94.

Bradbury, Michael E. 1999. Government ownership and financial performance in a competitive environment: Evidence from the corporatization of the New Zealand government computing services. *Asia Pacific Journal of Management* 16 (1): 157–72.

Brewer, Gene A. 2004. Does administrative reform improve bureaucratic performance? A cross-country empirical analysis. *Public Finance and Management* 4 (3): 399–428.

Brown, Kerry, Neal Ryan, and Rachel Parker. 2000. New modes of service delivery in the public sector: Commercialising government services. *International Journal of Public Sector Management* 13 (2/3): 206–21.

Burgess, Simon, and Marisa Ratto. 2003. The role of incentives in the public sector: Issues and evidence. *Oxford Review of Economic Policy* 19 (2): 285–300.

Canadian Intellectual Property Office. 1996. *Annual Report.* http://strategis.gc.ca/sc_mrksv/cipo/corp/allreport-e.html (accessed May 12, 2005).

Centre de Conservation du Québec. 2001. *Rapport Annuel.* http://www.ccq.mcc.gouv.qc.ca/publications/rapports/annuel_01.pdf (accessed May 12, 2005).

Christensen, Tom, and Per Lægreid. 2003. Coping with complex leadership roles: The problematic redefinition of government-owned enterprises. *Public Administration* 81 (4): 803–32.

Courty, Pascal, and Gerald Marschke. 2004. An empirical investigation of gaming responses to explicit performance incentives. *Journal of Labor Economics* 22 (1): 23–56.

Dewenter, Kathryn L., and Paul Malatesta. 2001. State-owned and privately-owned firms: An empirical analysis of profitability, leverage and labor intensity. *American Economic Review* 91 (1): 320–35.

Direction de la Réforme Administrative. 2001. *La Réforme Administrative.* Ministère du Conseil Exécutif, Government of Québec. http://www.cex.gouv.qc.ca/dra/uas/uas.html (accessed September 15, 2004).

Dixit, Avinash. 2002. Incentives and organizations in the public sector. *Journal of Human Resources* 37 (4): 696–727.

D'Souza, Juliet, and William L. Megginson. 1999. The financial and operating performance of privatized firms during the 1990s. *Journal of Finance* 54 (4): 1397–438.

Duncan, Ian, and Alan Bollard. 1992. *Corporatization and privatization lessons from New Zealand.* Auckland, New Zealand: Oxford Univ. Press.

Epstein, Paul D. 1992. Measuring the performance of public services. In *Public productivity handbook*, ed. M. Holzer, 161–93. New York: Marcel Dekker.

Frant, Howard. 1996. High-power and low-power incentives in the public sector. *Journal of Public Administration Research and Theory* 6 (3): 365–81.

Frantz, Roger S. 1988. *X-Efficiency: Theory, evidence and applications.* Boston, MA: Kluwer Academic Publishers.

Friedman, Lee S. 2002. *The microeconomics of public policy analysis.* Princeton, NJ: Princeton Univ. Press.

Gains, Francesca. 1999. Implementing privatization policies in the 'Next Steps' agencies. *Public Administration* 77 (4): 713–30.

Globerman, Steven, and Aidan R. Vining. 1996. A framework for evaluating the government contracting-out decision with an application to information technology. *Public Administration Review* 56 (6): 577–86.

Greer, Patricia, and Neil Carter. 1995. Next Steps and performance measurement. In *Next Steps: Improving management in government?*, ed. B. O'Toole and G. Jordan, 86–96. Aldershot: Dartmouth Publishing.

Greve, Carsten, Matthew Flinders, and Sandra Van Thiel. 1999. Quangos—What's in a name? Defining Quangos from a comparative perspective. *Governance: An International Journal of Policy and Administration* 12 (2): 124–46.

Gruening, Gernod. 2001. Origin and theoretical basis of new public management. *International Public Management Journal* 4 (1): 1–25.

Gulick, Luther. 1937. Notes on the theory of organization. Reprinted in *Classics of Organization theory*, ed. J. M. Schafritz, S. Ott, and Y. S. Yong, 79–87. Belmont, CA: Thomson Wadsworth, 2005.

Hall, Peter A. 1989. *The political power of economic ideas.* Princeton, NJ: Princeton Univ. Press.

Hall, Peter A., and Rosemary C. R. Taylor. 1996. Political science and the three new institutionalisms. *Political Studies* 44 (4): 936–57.

Hansen, Bruce E. 2001. The new econometrics of structural change: Dating breaks in U.S. labor productivity. *Journal of Economic Perspectives* 15 (4): 117–28.

Heinrich, Carolyn J., and Laurence Lynn Jr. 2001. Means and ends: A comparative study of empirical methods for investigating governance and performance. *Journal of Public Administration Research and Theory* 11 (1): 109–38.

Hodge, Graeme. 2000. *Privatization: An international review of performance.* Boulder, CO: Westview Press.

Hogwood, Brian W. 1992. *Trends in British public policy.* Buckingham: Open Univ. Press.

Hogwood, Brian W., David Judge, and Murray McVicar. 1999. Agencies, ministers and civil servants in Britain. Paper presented at the European Consortium for Political Research Joint Sessions, Mannheim, Germany, March 26–31.

Hood, Christopher. 1991. A public management for all seasons? *Public Administration* 69 (1): 3–19.

Hood, Christopher, and Martin Lodge. 2004. Competency, bureaucracy, and public management reform. *Governance: An International Journal of Policy, Administration and Institutions* 17 (3): 313–33.

Hyndman, Noel, and Ron Eden. 2001. Rational management, performance targets and executive agencies: Views from agency chief executives in Northern Ireland. *Public Administration* 79 (3): 579–98.

———. 2002. Executive agencies, performance targets and external reporting. *Public Money and Management* 22 (3): 17–25.

Ingraham, Patricia, Philip G. Joyce, and Amy K. Donahue. 2003. *Government performance: Why management matters.* Baltimore, MD: Johns Hopkins Univ. Press.

Jensen, Michael C., and William H. Meckling. 1976. Theory of the firm: Managerial behavior, agency costs, and ownership structure. *Journal of Financial Economics* 3 (4): 323–9.

Kelman, Steven. 1990. Why public ideas matter. In *The power of public ideas*, ed. R. Reich, 31–53. Cambridge, MA: Harvard Univ. Press.

Lamdin, Douglas J. 1999. Event studies of regulation and new results on the effects of the cigarette advertising ban. *Journal of Regulatory Economics* 16 (2): 187–201.

Lane, Jan-Erick. 2001. From long-term to short-term contracting. *Public Administration* 79 (1): 29–47.

Le Laboratoire de Sciences Judiciaires et de Médecine Légale. 1998. Plan d'Action 1998–1999. http://www.msp.gouv.qc.ca/labo/publicat/rappann/98-99/plan_action.pdf (accessed May 12, 2005).

Leibenstein, Harvey. 1976. *Beyond economic man: A new foundation for microeconomics.* Cambridge, MA: Harvard Univ. Press.

Light, Paul. 1997. *Tides of reform: Making government work, 1945–1995.* New Haven, CT: Yale Univ. Press.

Lynn, Laurence E. 1994. Public management research: The triumph of art over science. *Journal of Policy Analysis and Management* 13 (2): 231–59.

March, James G., and Johan P. Olsen. 1984. The new institutionalism: Organizational factors in political life. *American Political Science Review* 78 (3): 734–49.

McNulty, Terry, and Ewan Ferlie. 2004. Process transformation: Limitations to radical organizational change within public service organizations. *Organization Studies* 25 (8): 1389–412.

Megginson, William L., Robert C. Nash, and Matthias Van Randenborgh. 1994. The financial and operating performance of newly privatized firms: An international empirical analysis. *Journal of Finance* 49 (2): 403–52.

Megginson, William L., and Jeffry M. Netter. 2001. From state to market: A survey of empirical studies on privatization. *Journal of Economic Literature* 39 (2): 321–89.

Miller, Gary J. 2000. Credible commitment and the design of efficiency in public agencies. *Journal of Public Administration Research and Theory* 10 (2): 289–327.

Miller, Gary J., and Terry Moe. 1983. Bureaucrats, legislators and the size of government. *American Political Science Review* 77 (2): 297–322.

Nellis, John. 1994. Is privatization necessary? *Public Policy for the Private Sector,* FPD Note No. 7.

Newcomer, Kathryn E. 1997. *Using performance measurement to improve public and non-profit programs.* San Francisco, CA: Jossey-Bass Publishers.

Nicholls, Don. 1989. Corporatisation. *Economic Papers* 8 (3): 27–33.

Norman, Richard. 2003. *Obedient servants? Management freedoms and accountabilities in the New Zealand public sector.* Wellington, New Zealand: Victoria Univ. Press.

Osborne, David, and Ted Gaebler. 1993. *Reinventing government: How the entrepreneurial spirit is transforming government.* New York: Plume.

Osborne, David, and Peter Plastrik. 1996. *Banishing bureaucracy: The five strategies for reinventing government.* Reading, MA: Addison Wesley Pub. Co.

O'Toole, Barry J., and Grant Jordan. 1995. *Next Steps: Improving management in government?* Aldershot: Dartmouth Publishing.

Parker, David, and David Saal. 2003. Introduction. In *International handbook on privatization*, ed. D. Parker and D. Saal, 1–21. Northampton, MA: Edward Elgar.

Pendlebury, Maurice, and Yusuf Karbhari. 1998. Resource accounting and executive agencies. *Public Money and Management* 18 (2): 29–33.

Peters, B. Guy. 1994. *The politics of bureaucracy.* New York: Longmans.

———. 2001. *The future of governing*, 2nd ed. Lawrence, KS: Univ. Press of Kansas.

Pollitt, Christopher. 1990. *Managerialism and public services: The Anglo-American experience.* Cambridge, MA: Basil Blackwell.

———. 2002. The new public management in international perspective: An analysis of impacts and effects. In *New public management: Current trends and future prospects*, ed. K. McLaughlin, S. Osborne, and E. Ferlie, 274–92. New York: Routledge.

Prendergast, Canice. 2002. Uncertainty and incentives. *Journal of Labor Economics* 20 (2): S115–37.

———. 2003. The limits of bureaucratic efficiency. *Journal of Political Economy* 111 (5): 929–58.

Ridley, F. F. 1996. The new public management in Europe: Comparative perspectives. *Public Policy and Administration* 11 (1): 16–29.

Roness, Paul G. 2003. Categorizing state organizations in theory and practice, in general and in Norway. Paper prepared for the Seminar on Organizational Forms, Autonomy and Control in the Public Sector, Bergen, December 1–2.

Sanders, Robert M. 2004. GeorgiaGain or GeorgiaLoss? The great experiment in state civil service reform. *Public Personnel Management* 33 (2): 151–65.

Savoie, Donald. 2004. Searching for accountability in a government without boundaries. *Canadian Public Administration* 47 (1): 1–26.

Scott, Graham. 2001. *Public sector management in New Zealand: Lessons and challenges.* Wellington, New Zealand: Australian National Univ.

Self, Peter. 1972. *Administrative theories and politics.* London: Allen & Unwin.

Shirley, Mary M. 1999. Bureaucrats in business: The roles of privatization versus corporatization in state-owned enterprise reform. *World Development* 27 (1): 115–36.

Simon, Herbert A. 1947. *Administrative behavior.* New York: Macmillan.

Talbot, Colin. 2004. Executive agencies: Have they improved management in government? *Public Money and Management* 24 (2): 104–12.

Taylor, W. A., and G. H. Wright. 2004. Organizational readiness for successful knowledge sharing: Challenges for public managers. *Information Resources Management Journal* 17 (2): 22–37.

Teo, Stephen. 2000. Evidence of strategic HRM linkages in eleven Australian corporatized public sector organizations. *Public Personnel Management* 29 (4): 557–75.

Thomas, Robyn, and Annette Davies. 2005. Theorizing the micro-politics of resistance: New public management and managerial identities in the UK public services. *Organization Studies* 26 (5): 683–706.

Thompson, Fred, and Lawrence R. Jones. 1986. Controllership in the public sector. *Journal of Policy Analysis and Management* 5 (3): 547–71.

Treasury Board Secretariat (TBS). 1998. Becoming a special operating agency. http://www.tbs-sct.gc.ca/pubs_pol/opepubs/TB_B4/bsoa-doss1_e.asp#3 (accessed September 13, 2006).

Trosa, Sylvie. 1995. *Moderniser L'Administration: Comment Font les Autres.* Paris: Les Éditions d'Organisation.

Vining, Aidan R., and David Weimer. 1990. Government supply and government production failure: A framework based on contestability. *Journal of Public Policy* 10 (1): 1–22.

———. 2006. Economic perspective on public organizations. Chap. 9 in *Oxford handbook of public management*, ed. E. Ferlie, L. Lynn, and C. Pollitt. Oxford: Oxford Univ. Press.

Voyer, Pierre. 1997. Indicateurs de Performance et Tableaux de Bord. In *Performance et Secteur Public: Réalités, Enjeux et Paradoxes*, ed. M.-M. Guay, 237–53. Québec City, Canada: Univ. Québec Press.

Weare, Christopher, and Lee Friedman. 1998. Public sector pricing: An institutional approach. In *Handbook of public finance*, ed. F. Thompson and M. Green, 597–658. New York: Marcel Dekker.

Williamson, Oliver E. 1996. *The mechanisms of governance.* New York: Oxford Univ. Press.