



# Efficiency, profitability and welfare gains from the Canadian National Railway privatization<sup>☆</sup>

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## ARTICLE INFO

### Article history:

Received 19 June 2012

Received in revised form 21 November 2012

Accepted 22 November 2012

Available online 23 December 2012

### Keywords:

Privatization

Canadian National Railway

Operational performance

Social welfare

## ABSTRACT

This article describes and analyzes the privatization of Canadian National Railway (CN), a large railroad privatization. First, it reviews the theory and evidence concerning railroad privatizations. Second, it presents a brief history of CN and the regulatory environment prior to and after CN's privatization. Third, it uses data from 1990 to 2011 to compare CN's post-privatization operating performance with its pre-privatization performance. Fourth, it uses cost–benefit analysis to estimate the social welfare gains from the privatization and the distribution of those gains. The overall results demonstrate that CN performed substantially better following privatization, both from an operational perspective and from a broader social welfare perspective. We find statistically significant increases over the long term (16 years following privatization) in sales, capital investment, assets, profit, profitability, productivity, dividends and corporate taxes paid. There was little change in the capital structure of CN and a significant decrease in employment. Using Canadian Pacific Railway as a basis for the counterfactual, we estimate that CN's privatization generated social welfare gains of approximately \$25 billion in 2011 Canadian dollars. The Canadian government received almost half of these gains, while CN's shareholders (most of whom were non-Canadian) captured the rest.

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## 1. Introduction

The privatization of Canadian National Railway (CN) in 1995 was by far the largest transportation privatization in Canadian history. Alongside the privatizations of the Japanese National Railways and of the British Rail, the CN privatization represents one of the largest transportation privatizations globally. Both the Japanese and British railroad privatizations have been controversial, especially in the British Rail case (Mathieu, 2003; McCartney & Stittle, 2008; Smith, 2006; Yvrande-Billon & Ménard, 2005). As we discuss later, the evidence on the performance outcomes of the railroad privatizations is mixed, although freight privatization appears to have done better than other privatized railroad businesses, including passenger services.

The privatization of CN differs from the Japanese and British railroad privatizations in a number of important ways. First, the CN privatization primarily involved freight transport rather than passenger travel, which is the case in both Japan and Britain. Second, the CN privatization consisted of a one-time share issue sale of an integrated business (including track and rolling stock) and the maintenance of

an existing organization, while the British and Japanese privatizations involved either separation of infrastructure and rolling stock (vertical separation) or geographic disintegration (horizontal separation). Third, the topographical footprint and conditions of the CN system are quite different to the other two systems. Fourth, both before and after privatization, CN faced a direct competitor over much of its network, which was not the case in Japan or Britain.

Our main purpose is to determine whether the privatization of CN was beneficial. We take two approaches. First, we use data from 1990 to 2011 to compare CN's post-privatization operating performance with its pre-privatization operating performance. We examine changes in output, capital expenditures, assets, employment, profit, productivity, profitability, capital structure, dividends and corporate taxes. The findings are important from a business strategy perspective, a shareholder perspective and a government perspective. Second, we use data from the 1981–2008 period to estimate the change in social welfare from the CN privatization and the distribution of these benefits and costs between the Canadian government and (Canadian and non-Canadian) shareholders of CN. We use cost–benefit analysis (CBA) to conduct this assessment. A key feature of this CBA is that we use cost data from Canadian Pacific Railway (CP), a direct competitor of CN, to compute the counterfactual, that is, what would have happened in the absence of privatization. These findings are most directly relevant for the government of Canada and policy analysts interested in the welfare consequences of privatization in general and,

<sup>☆</sup> The authors would like to thank Leo Fankhänel and Robert Boardman for research assistance.

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more specifically, of railroad privatization. It also offers lessons to other governments considering railroad privatization or institutional reform.

In sum, we find that the privatization of CN was beneficial to shareholders, to the government of Canada and to the overall welfare of Canadians. The most important results can be summarized as follows. In the short run (which we consider to be the 5-year period following privatization), profit (net income), profitability (return on assets and return on sales), and productivity (measured by sales per employee and net income per employee) increased significantly relative to the (5-year) pre-privatization period, employment experienced a statistically significant drop and there was no statistically significant change in sales revenue, capital investment, assets, capital structure, dividends or corporate taxes. In the long run (which we consider to be the 16-year period following privatization), there were statistically significant increases in sales, capital investment, assets, profit, profitability (return on assets and return on sales), and productivity (sales per employee and net income per employee). There were also statistically significant increases in dividends and corporate taxes, demonstrating that the most significant stakeholders in the privatization – government and shareholders – benefited from the privatization. Capital structure (debt-to-assets) did not change substantially. There was, however, a significant reduction in employment, although we argue that employees were not adversely affected. Turning to the welfare results, CN's privatization generated social welfare gains of almost \$25 billion in 2011 Canadian dollars (which we use hereafter unless explicitly stated otherwise). The Canadian government received almost half of these gains, while CN shareholders (over half of whom were non-Canadian) captured the rest.

The article is organized as follows. Section 2 briefly reviews the theory about privatization and summarizes the academic evidence concerning the outcomes of previous railroad privatizations in Japan, Britain, Australia, New Zealand and Chile. Section 3 presents a brief history of CN and of the regulation of Canadian railroads prior to privatization. It also describes some key events following privatization. Section 4 analyzes both the short-run and the long-run operational performance impacts of privatization. Section 5 presents our estimate of the overall welfare change attributable to the privatization of CN by using cost-benefit analysis, and of the distribution of these changes among different stakeholders. Section 6 summarizes the main results and identifies some of the factors that led to CN's success. It also offers lessons for private sector and government management, and includes some suggestions for future research.

## 2. Theory and evidence about railroad privatizations

The weight of the empirical evidence is that privatization of businesses in reasonably competitive markets increases firm competitiveness, improves productivity and generates positive welfare gains (Boardman, Laurin, & Vining, 2002; Boardman & Vining, 1989; Boubakri & Cosset, 1998; Megginson & Netter, 2001; Shirley & Walsh, 2001). However, the long-haul Canadian railroad industry has been and is effectively duopolistic. While the direct overlap of CN's and CP's networks has been estimated at between 25% and 50%, the effective competitive overlap, given feed-in complementors that have options, is considerably larger (McNish, Jang, & Silcoff, 2012). Unfortunately, the theory and evidence concerning the impact of privatization in highly oligopolistic or duopolistic markets is not resolved (Chirwa, 2004; De Fraja, 1991; Willner & Parker, 2007).

Both Canada and the United States have been unusual in enjoying a fairly high degree of direct competition in rail freight. The Secretariat of the OECD has noted: "competition in-the-market between vertically-integrated rail companies ...requires the existence of at least two separate rail infrastructures capable of providing substitute rail services ...this is the predominant form of competition in rail freight services in North America" (OECD Secretariat, 2006, 71). Furthermore, the Secretariat argues: "experience shows, at least in

North America, that this approach has been able to deliver a degree of competition with relatively little regulatory intervention" (OECD Secretariat, 2006, 71). Evidence suggests that the presence of more than one railroad competitor reduces tariffs anywhere between 3% and 25% (Gomez-Ibanez, 2010; Grimm & Winston, 2000; Karikari, Brown, & Nadj, 2006; Winston, Maheshri, & Dennis, 2011). Furthermore, both CN and CP faced increasing inter-modal competition from trucking and shipping. In an important article, Caves and Christensen (1980) refer to Canadian railroads as operating in a competitive environment. Although the Canadian railroad industry was a duopoly on the long haul freight routes, this collective evidence suggests that it was "reasonably competitive" and, consequently, one might expect that the privatization of CN would lead to efficiency improvements and welfare gains.

The evidence on previous rail privatizations has been mixed. Only in Japan is the evidence clearly positive: privatization increased efficiency and profitability, especially for freight rail (Mizutani, 1999; Mizutani & Nakamura, 1996, 1997; Thompson, 2003). The privatization also improved safety (Evans, 2010; East Japan Railway Company Management Planning Department, 2008) and travel times (East Japan Railway Company Management Planning Department, 2008).

In Britain, the evidence is much less positive. The restructuring and privatization of British Rail (BR) took place during 1993–1996, when John Major's conservative government was in power. Thompson (2003, 347) argues that it "has been the most contentious of all railway system restructuring efforts". There was significant political and economic opposition to BR's privatization and significant disagreement as to how it should be privatized. Eventually, BR was fully privatized and resulted in over 100 different private firms. Many of these privatizations, including that of the Railtrack, which owned all of the track and the stations, were carried out rapidly (some would argue hastily) towards the end of Major's term.

Pollitt and Smith (2002) found evidence of significant operating cost savings in the first few years following privatization. Furthermore, Cowie (2009) found productivity gains in passenger rail on the order of 3–4% per annum over the first 4 years of privatization. In addition, there was substantial growth in passenger and freight traffic. However, there have been many criticisms of this privatization, including accusations of lower quality service (perceived reduced punctuality and overcrowding), a worse price-to-quality ratio and safety concerns (Mathieu, 2003), even though the evidence suggests that safety actually improved (Evans, 2007; Thompson, 2003). Following a huge cost escalation for the upgrade to the West Coast Main Line and the Hatfield derailment in 2000, the government decided to place Railtrack into administration and eventually replaced it with Network Rail, a not-for-profit company, owned by its members (Crompton & Jupe, 2007). Subsequently, annual industry cash costs rose by 47% and unit costs rose by 40%. Smith (2006) argues that this cost increase was largely due to an "excessive" concern with safety.

Under the provisions of the Railways Act 1993, BR freight was split into seven companies, each of which was separately offered for private sale. In the end, however, five were sold to a single purchaser, English, Welsh and Scottish Railway (EWS), controlled by Wisconsin Central. Following privatization, freight traffic grew 42% between 1994 and 2000 (Mathieu, 2003; Thompson, 2003). However, operators have only been marginally profitable (Fowkes & Nash, 2004). Furthermore, despite mandating open access to freight companies, which was an important feature of the British restructuring, there has been very little new entry into the rail freight business (Cowie, 2010).

In Australia there has also been extensive privatization of parts of the railroad system. Here, the record appears mixed. Williams, Greig, and Wallis (2005) note that the privatization of freight railroads has allowed consolidation across state boundaries and argue that, as a result, the industry is markedly stronger than in the past, although

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