

QUALITATIVE ASPECTS OF PRICE AND OUTPUT REGULATION OF FEDERAL FREIGHT RAILWAYS IN CANADA*

Federal freight railway companies operating in Canada¹ have enjoyed tremendous market power during their existence, sometimes fettered with obligations that hampered their effectiveness as businesses for profit and as vital links in the distribution system. For too long now, railway companies have had too much ability to retain, as producer surplus, the major share of the surplus that naturally arises in their markets, such as they are. As a result, their customers are left with an unsatisfactory level of consumer surplus, particularly in light of the premise that market power typically leads to lower levels of total surplus. There is, in the current regulatory state of affairs, a balance in favour of the fortunes of railway shareholders rather than shipper shareholders that is unjustified.

After a review of the Canadian rail freight market, the paper establishes market definitions and explains the nature of the market power enjoyed by railway companies operating in Canada, followed by a brief discussion of shipper remedies and their qualitative effects and effectiveness in regulating some of that market power, which leads to an analysis of the extent to which the market and shipper remedies drive price and output decisions of rail carriers. After a consideration of who should get the surplus that arises in the context of the income earned by the carriers upon exercise of that market power, the paper concludes with a discussion of the

*©François Tougas, 2005 (LL.B., Brit. Col.), Lang Michener LLP. For their invaluable contributions, the author thanks: Thomas Ross (B.A., Western Ontario; M.A., Ph.D. (Econ.), Pennsylvania) UPS Foundation Professor of Regulation and Competition Policy at the Sauder School of Business at the University of British Columbia; John Edsforth of Travacon Research Limited (B.Eng., McGill; M.Sc. (Eng. Phys.), CalTech); Sylvester Damus of DIA Agency Inc. (M.A., Ph.D. (Econ.), Chicago); Lawrence Gould (B.Sc. (Econ.), Pennsylvania; MBA, New York; Ph.D. (Finance), Toronto, Professor of Finance and Director, Centre for International Business Studies at the University of Manitoba; and, Forrest Hume (B.A.; LL.B., Dalhousie)

¹ See Appendix A for an explanation of certain defined terms and nomenclature used in this paper.

traditional railway company justification for keeping that surplus, namely, a railway carrier's need for revenue adequacy.

1. Overview of Canadian Rail Freight Markets

Neither markets (in the Adam Smith sense of the word) nor, for that matter, orderly government oversight, regulate price and output in the freight railway sector, except in limited circumstances. While markets discipline some aspects of some railway freight traffic, inter-carrier competition and market forces have not been the primary drivers of price and output decisions. Indeed, railway carriers sometimes argue in favour of the proposition that they operate natural monopolies, and indeed it is so, as statements such as "Class I railroads are natural monopolies over a fixed network size"² so clearly confess. Further, even though the hand of competition in the railway sector has been anything but free, with some exceptions, whatever need for regulation in the industry that has existed or does now exist has been hampered by political, social and practical considerations. These considerations have so often interfered with orderly regulation that it is unlikely that anyone would say regulation could or could not work, any more than competition has worked to overcome the market power associated with natural monopolies generally and railways in particular. What is certain is that the pressures to interfere are immense and seemingly unavoidable. This raises the question whether complete deregulation is possible or even desirable.

Under current legislation³, the only practical remedy of the price-setting and volume-regulating variety that exists to overcome the prevailing market power of freight railways has been the

² "Railway Cost Conditions – Implications for Policy", John Bitzan, Upper Great Plains Transportation Institute, North Dakota State University, May 10, 2000 ("Bitzan"); See also Wilson and Bitzan, "Industry Costs and Consolidation: Efficiency Gains and Mergers in the Railroad Industry" (June 2003)

³ S.C. 1996, c.10, as am.

ability of railway customers (shippers) to submit their rates to final offer arbitration, about which more follows later. The express exposure of railways to Canadian competition legislation for the first time in 1996 has not regulated railway conduct in any observable manner. Really, only final offer arbitration, a remedy introduced in the *National Transportation Act, 1987*⁴, has had the kind of effect one might expect a regulator, or even the market, to have. Even that remedy, however, is prone to attack by rail carriers in their various lobbying efforts and judicial motions to ward off would-be users, and its high cost has limited its effective use to the largest or most prone shippers. Similarly, a policy statement in the *Canada Transportation Act* (the “Act”) to the effect that competition and market forces should govern, even with the caveat “wherever possible”⁵, stands at the edge of marginalization. Given this state of affairs, complete deregulation is not desirable, particularly when new or amended remedies are being considered.⁶ There is no comparable countervailing market power in the hands of shippers. For all that, history shows that there have been efforts to move price and output decisions closer to market, even if the necessary safeguards are not in place to address the fundamental and common-sense premise that a natural monopoly should not operate in downstream markets unfettered.⁷

The train of regulation in this critical industrial sector has long since left the station of unbridled capitalism. Railways have been regulated since 1897, with the period between 1932 and 1987 being the most intrusive in the sense that railway companies had obligations to carry goods from and to origins and destinations at rates that perhaps could not be profitable, required significant

⁴ R.S., 1985, c.28 (3rd Supp.)

⁵ S.C. 1996, c.10, s.5.

⁶ See “Submission to the Canada Transportation Act Review Panel Re: competitive access issues”, Forrest Hume, October 13, 2000 for a discussion of the need to maintain existing shipper remedies while considering other changes to the *Canada Transportation Act*, during the government’s review thereof.

⁷ See the author’s submissions on this and other points in “Report to the Canada Transportation Act Review Panel”, November 2, 2000, at <http://www.reviewcta-examenlrc.gc.ca/Submissions>

subsidies, and allowed for collective rate-making. Today, the market for federal rail freight services is partially deregulated, mostly unfettered, and at a crucial point in its development, much as telecommunications and energy markets were a few years ago.

The difference between rail and industries like telecommunications and energy markets is that while those latter industrial sectors have moved a long way toward deregulation, there is still a lot of government oversight and a heavy emphasis on consumer welfare, concern over protecting the public interest and a direct interface between the ultimate consumer and those monopolies.⁸

In the rail freight sector, there has been some deregulation, but there is little government oversight; virtually no regard for, much less any emphasis on, consumer welfare; the public interest is no longer of concern⁹, and, there is only an indirect, almost invisible, nexus between the consumer and the natural monopolies of the federal railways.

While in telecommunications and energy markets the rights of competitors to conduct business over incumbents' networks are now established, the railway sector is not *de facto* open to such running rights¹⁰, even if the Act¹¹ allows it, because *de jure* the Canadian Transportation Agency (the "Agency") does not. That is because, in its words,

a running right is an 'exceptional remedy' that requires actual evidence of market abuse or failure before an application under the Act may be granted,¹²

a standard so high as to effectively prevent its application by all but the most egregiously harmed and, likely, well-heeled shippers, if not to render the remedy entirely useless.¹³

⁸ *cf.* Bitzan, Appendix B (Review of Electrical Utility and Telecommunications Studies) where he points out that two relatively recent studies (Evans and Heckman, 1983, and Shin and Ying, 1992) of the structure of those industries concluded they were not natural monopolies. See, too, Shin, R. T., and J.S. Ying. 1992. "Unnatural Monopolies in Local Telephone." *Rand Journal of Economics* 23(2): 171-183. Summer 1992.

⁹ With the exception of running rights applications under s.138 of the Act.

¹⁰ See Appendix B for description.

¹¹ S.C. 1996, c.10, s.138.

¹² News Release: "Canadian Transportation Agency Denies Ferroequus' Application to Use Facilities Owned by CN." See also Agency Decision Number 505-R-2002.

Notably, the Competition Bureau (Canada) addressed this very matter¹⁴, setting out principles for regulators and the Bureau to follow in the case of the transition of regulated industries to competition:

- (a) introduce effective competition and efficient market structures as soon as feasible;
- (b) give the regulator an explicit role to promote competition;
- (c) provide regulatory control over excessive pricing due to incumbent market power;
- (d) provide regulatory control over access to essential facilities;
- (e) rely on competition law to prevent anti-competitive business practices unless regulation is demonstrably better;
- (f) create mechanisms for removing regulation when its costs outweigh its benefits;
and
- (g) allow for inter-agency cooperation and coordination.

With a few limited exceptions, the foregoing principles generally have not been followed in the case of the deregulation of federal freight railways.

Still, today's shipper remedies have some effect on price and output, and are far more advanced than the efforts of the past, even if vestiges of those efforts remain.

2. The "Market" and Market Power

For the benefit of competition law practitioners, participants and observers alike, it is useful here to define markets.

¹³ For a discussion of the mandates of the Canadian Transportation Agency and the U.S. Surface Transportation Board, see Appendix E

¹⁴ "The Complementary Role of Regulations and Competition Law and Deregulating Industries" from Remarks to the Canadian Bar Association, Annual Fall Conference on Competition Law, October 3-4, 2002, following on an address also by André Lafond, former Deputy Commissioner of Competition, Civil Matters Branch, Competition Bureau, to the Conference Board Regulatory Reform Program Meeting, February 19, 1999.

(a) **The Product Market.** Assume that the relevant product market is the provision of freight services by rail, and not a broader market for transport services in general by all modes, namely, truck, rail, air and marine. Some within the rail carrier community have advanced untenable arguments that the scarcity of railway assets define the “market”¹⁵ – no need to elaborate on the hypothesis that harm to the economy is not a definition of a market. More commonly, however, railway advocates have argued that the product market includes not just rail freight services but all freight transportation services such as the truck and marine modes. In fact, trucking and marine compete only for segments of the rail freight business, and even for many of those segments, trucking is only used as a bridge carrier (or “feeder” carrier) to connect to rail at some railhead, whether or not that second railway is competing with the first carrier.

An example will clarify. Assume a lumber mill ships its product from a point (the “origin”) located on one railway (as is almost always the case) to several hundred points (“destinations”) throughout North America. Some of those destinations perhaps can be reached by one or more railways, but each of those railways depends on the willingness of the origin carrier to interchange loaded lumber cars with the connecting carrier. The origin carrier is economically unmotivated to interchange those cars if it can handle the entire movement itself (otherwise it will be motivated to choose an interline routing whereby it maximizes its length of haul) because revenue is a function of distance hauled; that is, a carrier increases its overall revenue by increasing the distance over which it transports goods; turning the carriage of that product over to another carrier diminishes

¹⁵ Although it is obvious that equipment availability and capacity affect price, the inference from the argument is that a monopoly can use its market power to reduce output and thereby underscore the reason why monopolies should be regulated to one degree or another, or at least restrained.

its ability to lower its variable costs of transportation per unit of distance shipped. The shipper, if so fortunate, has but one alternative: it can transport its lumber from its mill (at origin) by truck, unload those trucks at a trans-loading facility located near another railway's origin (a railhead), and when cars become available at the connecting railhead, the lumber can be reloaded onto the connecting carrier's railcars for shipment to destination, possibly repeating that process at some point near the destination. Obviously, this is a costly, time-consuming and inefficient process.¹⁶ In the world of transportation logistics, the rule is that multiple handling of product adds cost and time and often leads to product deterioration.

Consequently, trucking does not compete with rail transportation for most products (certainly not in the example above)¹⁷ – it merely allows shippers in some cases, usually for limited volumes, to use a railway whose railhead is located somewhere between origin and some destinations, to get product to those destinations.

Before moving onto the geographic market definition, note that goods transported by rail tend to be dense, bulk commodities, as well as heavy finished products and items loaded into containers, which themselves are relatively dense.¹⁸ The main reason for this is because costs incurred by rail carriers are sufficiently less than those incurred by highway carriers making the latter less competitive (in terms of effectiveness). Products that have

¹⁶ Wilson W.W. and Bitzan, J., 2003. "Industry Costs and Consolidation: Efficiency Gains and Mergers in the Railroad Industry", Upper Great Plains Transportation Institute, Fargo, North Dakota, p.1.

¹⁷ Trucking represents effective competition only where costs incurred by truckers are about the same as those incurred by rail carriers, or where service advantages of truck relative to rail are sufficient to offset any trucker cost disadvantage.

¹⁸ For the period ending December 31, 2004, CN reported in its Management Discussion & Analysis that its leading market segments (by revenue in millions of Canadian dollars) were forest products (\$1,452), petroleum and chemicals (\$1,123), intermodal (\$1,117), grain and fertilizers (\$1,053), metals and minerals (\$713), automotive (\$510) and coal (\$284). For the same period, CP reported in its Annual Information Form dated March 1, 2005 that

very low value and that are shipped long distances are more prone to captivity for reasons that become more apparent, *infra*.

(b) **The Geographic Market.** For the airline industry, we usually talk about individual markets as consisting of origins and destinations. That is true of railways as well, the difference being that some customers will have a perpetual need for one origin and one or sometimes two destinations (such as metallurgical coal mine shippers, which deliver the vast majority of their product to port for shipment overseas, with smaller volumes going to steel mills located in and around the Great Lakes region); some customers will have a relatively constant need for service from a few origins to hundreds of more or less static destinations (forest products companies, for example); and, some customers will have more or less static need at many, many origins with a perpetual need to serve only one or two destinations (grain companies, for example).

There are variations. Accordingly, we may think of railway origin and destination pairs in the same way as in the airline industry, but there are significant differences. Many rail movements have limited backhaul opportunity, particularly for captive shippers. Also, huge chunks of railway revenue can be attributable to one origin and destination pair where the shipper is captive to rail (coal on Canadian Pacific's lines), and similarly large chunks of revenue that are attributable to traffic that is moved from a few locations to hundreds of destinations (forest products on Canadian National's lines). Like airlines, one railway can transport product on its own lines to some destinations without sharing the revenue from that movement with another carrier. Unlike airlines, however, railway

its leading market segments were intermodal (\$1,030), grain (\$668), coal (\$530), sulphur and fertilizers (\$460), industrial products (\$430), forest products (\$322) and automotive (\$289).

carriers don't simply apply to take traffic to new destinations – the tracks are stuck to the ground and no landing rights agreements can change that fact. Similarly, rail carriers can and do restrict the movement of goods onto other carriers' lines, even if the law says otherwise,¹⁹ and effectively foreclose the ability to sell product in destination markets that would mean a loss of long haul traffic revenues.

So, assume that the geographic market, although akin to airline definitions in the sense that we talk about origin and destination pairs, really is best identified as the point where the shipper makes its products available for shipment, which is almost always at the point of origin of shipment. This is why the vast majority of shipments of commodity products are captive to one railway: a mine, mill, plant or other facility is located on the lines of one railway, and rarely is it ever otherwise. In an airline setting, the equivalent would be that each airport would be serviced by only one airline. Those facilities that are located in proximity to two or more railways benefit from the possible interaction of an oligopoly (almost always a duopoly), where rates tend to be substantially lower than in captive situations.

That is why it can be said that Canadian freight railways operate natural monopolies or, as some have said, the two main railways (CN and CP) operate in a market structure that consists of a dual monopoly (that is, each of them has a monopoly that does not interact with the other, except in some cases, protestations to the contrary notwithstanding). In fact, there are some movements that are open to duopolistic competition, where there is

¹⁹ See *Cargill Ltd. (Re)*, [1988] N.T.A.R. 149, where the Agency found that the refusal to route traffic in the manner requested by Cargill was a breach of CP's common carrier obligations.

sometimes, though not always, fierce competition, sometimes replicating what would happen in contested markets in other industries.

Market Power of Federal Freight Railways

In Canada, federal freight railways have a virtually unfettered legal ability to raise price and reduce output. Indeed, the Competition Bureau notes that a “rail monopoly has an incentive to reduce or limit output”.²⁰ There is very little to suggest otherwise and, most of the time, there is no disagreement on the point that they enjoy extensive market power. Accordingly, they can and do discriminate as to price. Not only is there no regulatory restraint on their economic ability to do so in Canada, they are mandated to do so in the United States. Rail carriers also can and do impose tariffs, without regulatory oversight, and without a legal requirement to justify their imposition. Twenty days’ notice of an increase in a rate in a tariff is all that is needed to invoke the increase.²¹ It is a surprising state of affairs in that Parliament has conferred this power without statutory limitation on a natural monopoly that faces very little competition in most markets, none in some, and further has felt it unnecessary to provide a remedy for a rail carrier’s past conduct.

In the coal, lumber and grain examples described, *infra*, the market power of the rail carrier is such that if the shipper chooses to increase production, it is beholden to the carrier to provide enough railcars in which to ship the production, and with respect to the rate at which that production will be shipped. The shippers cannot use an alternative supplier of rail freight services, because there are none, in most cases, or because to use

²⁰ Indeed the Competition Bureau notes that a “rail monopoly has an incentive to reduce or limit output.” See “Submission to the Canada Transportation Act Review Panel Regarding Rail Access and Related Issues”, Commissioner of Competition, October 6, 2000, p.28.

²¹ S.C. 1996, c.10, s. 119

such alternatives as there are involve the loading and reloading operations that increase cost to the shipper, but not necessarily the carriers, that much more. And, importantly, the shipper facilities are located where the resource products are found, whether or not there is a railhead.

With coal shipments, the problem is exacerbated because trucking products of high density and low-value in such huge volumes over long distances is economically, and sometimes logistically, infeasible, as observed by the National Transportation Act Review Commission²²:

Rail transportation is often the only way to move bulk commodities of low value, such as coal, over long distances over land. In such cases, a railway has no competition and commands considerable market power

Although potash, fertilizer, and grain may be collected in some situations at locations that are proximate, at least in part, to more than one railhead, that is not the case for most forest products, coal, sulphur, and other commodities, as well as many finished products. Containers tend to originate in port cities, where more than one railway is often, though not necessarily, located.

Despite the market power railways naturally enjoy because of their monopolies, legislators have found it difficult to bring a balance of bargaining power to the relationships between carriers and shippers. Whereas before the wholesale change to the Act in 1996 there was a public interest rate complaint mechanism, it is now gone.

²² “Competition in Transportation, Policy and Legislation In Review”, Volume I, p. 130.

3. Shipper Remedies

To date, common law remedies have not addressed supra-competitive rail rates or sub-competitive service, although there may be some such remedies to address adequacy of supply, among others, where there are “common carrier obligations”²³ and so-called “shipper rights”²⁴ that may affect output, although the Act attempts to codify these as well. There is one other remedy regarding service issues that arises as a result of a statutory right of action found in the Act that may affect output, and possibly price. The statutory remedies can be found in the Act and only in the Act, under the following names: regulated interswitching, competitive line rates, running rights, final offer arbitration, and level of service complaints.

Each of these remedies may affect price and output to a greater or lesser degree, with varying degrees of effectiveness. They are summarized at Appendix B for reference when discussing their impact as price and output drivers (in section 4, *infra*).

Together, apart from whatever market forces may be in play in any given circumstance (limited though it may be in captive situations), these remedies constitute what could be the main drivers of price and output decisions. With the exception of final offer arbitration, they are, in fact, relatively weak in that regard. Weaker still is the ability of competition law to remedy deficiencies in the market to regulate price and output. Whereas it might be possible for the abuse of dominance provisions of the *Competition Act*²⁵ to address the behaviour of a holder of a

²³ A common carrier, as laid down in *Gisbourne v. Hirst* (1 Salk. 249), as cited by the Court of Exchequer (1872 L.R. 7 Exch. 267) is “any one who undertakes to carry the goods of all persons indifferently for hire”. Many of these common carrier obligations have been codified in the Canada Transportation Act, but others remain and are found in the body of law relating to the carriage of goods, largely in tort and contract.

²⁴ For example, the right of a shipper to choose a routing for the delivery of its products to a particular destination, as in *Cargill, supra*, at note 19. See also *Canadian National Railway Co. v. Eagle Forest Products Ltd. Partnership*, [2000] 3 F.C. 46 (C.A.)

²⁵ R.S.C. 1985, c.19, ss.78-79.

dominant market share (in this case often the only holder of market share), it is the very fact of total dominance that forestalls the remedy. Even if anticompetitive acts were proven, it can rarely, if ever, be said that there is any preventing or lessening of competition occurring in the process. There are no competitors seeking to enter many of those markets, especially the captive ones, a necessary element required under the *Competition Act*.²⁶

4. Price and Output Drivers in the Market and in Shipper Remedies

As stated, freight rail carriers operate in many uncontested, captive (or largely captive) markets. There are some markets in which competition can be vigorous, usually where intramodal and intermodal networks exist side by side, which are usually, though not necessarily, found in more densely populated areas. Subject to the shipper remedies described above, a rail carrier can charge rates and impose ancillary charges it sets unilaterally by publication of a tariff (without regulatory oversight), enter into confidential contracts with customers (including captive customers), provide the numbers of cars to any one or more customers as it sees fit, abandon trackage and other infrastructure, maintain or not maintain its assets, and, naturally, sue and be sued. In competitive markets, the market power over shippers can be less overwhelming, but, like most duopolies, only where intramodal and intermodal rivalry attenuates to the level of a fight for survival can shippers ignore the possibility of collusion or conscious parallelism. Indeed, explicit collusion may be largely unnecessary to attain objectives, given the ability of carriers to signal price and volume as a matter of law (through the publication of tariffs and annual reports, among others). In those circumstances, tacit collusion may develop instead.

²⁶ Tougas, "Report to the Canada Transportation Act Review Panel", 2000, p.6.

For much of their markets, however, freight rail carriers are frequently immune to competition from other freight rail carriers, and even from most other modes of transportation. In these captive markets, a rail carrier's ability to engage its powers can be overwhelming. So, remedies assist shippers in those situations where no competitive market exists to countervail that ability. Restraints on price are limited to factors other than competitive concerns of carriers.

Frequently, carriers, and even the Ministry of Transport, adopt the misguided and somewhat patronizing view that restraints on railway pricing take other forms. These include

- (a) "market competition" or "source competition" (for example, coal shipped from Australia competes for the same steel mill customers as coal shipped from British Columbia; therefore, the distribution network, including rail, can only take that portion of the margin available to the shipper that will allow the shipper to stay in business),
- (b) "geographic competition" (for example, a shipper changes destinations because it can access that destination on a second carrier's routing at rates lower than offered by the first carrier),
- (c) "product competition" (for example, shipping or receiving a substitute product or higher value end product, instead of the input product),²⁷ and
- (d) "even-handedness among customers" (for example, a carrier seeking to maintain pricing equilibrium among similarly-placed shippers, in terms of the type of product shipped and the origin of shipments),

all of which may be recognizable as the language of those with market power.

Each of these forms merely describes the competition faced by the downstream customers of the carriers (the shippers) and not the competition faced by the carriers, proving the fact of the

²⁷ Even the US Surface Transportation Board determined to ignore evidence of product and geographic competition as early as December 1998, preferring instead evidence of direct intermodal or intramodal competition, on the basis that doing so significantly impedes the efficient processing of market dominance determinations as part of the overall rate complaint process. See *Market Dominance Determinations – Product and Geographic Competition*, STB Ex Parte No. 627, at 10 (served Dec. 21, 1998) and STB denial of reconsideration in *Market Dominance Determinations – Product and Geographic Competition*, STB Ex Parte No. 627, at 17 (served July 2, 1999), remanded on appeal at *AAR v. STB*, 237 F.3d 676, 680 (D.C. Cir.2001) and, eventually, upholding the STB's decision at 3 *AAR v. STB*, 306 F.3d 1108 (D.C. Cir. 2002).

monopoly, but also the extent to which those exercising the monopoly will seek justifications for supra-competitive pricing and inadequate or sub-competitive levels of service.

The relative ineffectiveness of these “restraints” also allow rail carriers to practice differential pricing, whereby the relationship of freight rates to rail costs differs greatly between different shipments, depending primarily upon the degree of shipper captivity. Some economists will recognize this as the language of utilities trying to overcome the effects of low-margin contributions in competitive markets by maximizing contributions from customers in captive markets, although Bitzan notes that

The presence of economies of scale in providing railroad services over a fixed network and the second best properties of Ramsey Pricing are the basic justifications for differential pricing in the railroad industry.²⁸

However, it should be clear that the ability to price differentially frequently derives from lack of regulation and competition, although others may take an even stronger view.²⁹

Ramsey pricing³⁰ is a particular form of differential pricing³¹ advocated by rail carriers, which, based upon a number of assumptions, determines a set of prices for a multi-product seller that has significant constant (frequently, though not always, the same as fixed) costs³² and is subject to maximum profit regulation. The set of prices is determined so as to maximize the aggregate consumer surplus, subject to the aggregate producer surplus (*i.e.*, contribution), being sufficient

²⁸ Bitzan, “Railway Cost Conditions – Implications for Policy”2000, p.89.

²⁹ See Damus, S. “Ramsey Pricing by US Railroads, Can it exist?”, *Journal of Transport Economics and Policy*, XVIII(1), January 1984, 51-62.

³⁰ Named for the British economist Francis Ramsey (circa 1927), who proposed it as an optimal method of differential taxation. Ramsey pricing is sometimes referred to as “second best pricing”. First best pricing occurs where prices are set equal to marginal costs.

³¹ Baumol, W.J. and Bradford, D., 1970 “Optimal Departures from Marginal Cost Pricing,” *American Economic Review*, 60 (3)

³² Constant costs are those that do not vary with level of output and hence cannot be causally associated with individual traffic movement. Their coverage (or contribution thereto) is provided by aggregate differences between freight rates and variable costs.

to cover constant costs. For each product, the Ramsey price is determined as a function of its marginal cost (which, in the Canadian railway regulatory context, is somewhat lower than a railway's variable cost) and its demand elasticity.³³ Assuming that all other things are equal, the Ramsey price for a product exceeds its marginal cost to the greatest extent if demand for the product is inelastic, and to the smallest extent if demand for the product is elastic. If the seller faces no competition for the product, the Ramsey price is supra-competitive to the extent that the product's demand elasticity permits, and subject to the overall earnings constraint that is an essential feature of Ramsey pricing. If the seller faces competition for the product, the Ramsey price is the price established by that competitive force. The more effective the competition, the Ramsey price, as in all competitive markets, is more closely coupled to marginal cost. In the absence of an overall earnings constraint, as in the Canadian railway situation, Ramsey pricing as practiced by rail carriers is no more than the use of seller market power where it exists to set prices at the level that maximizes producer surplus (*i.e.*, to charge what the market will bear). Notably, it is equal in that circumstance to the monopoly price: $(p_i - MC_i)/p_i = 1/E_i$ ³⁴. Although Ramsey pricing is strongly advocated by a number of economists and railway carriers proclaim its necessity despite any evidence that they actually practice it,³⁵ others (and, notably, shippers in numerous representations) have opposed it on various grounds.³⁶

As the Competition Bureau has stated:

³³ Assume that demand elasticity is a measure of the degree to which volume changes in response to a change in price. For each product, elasticity is assumed to be a constant independent of price.

³⁴ See Appendix C for further commentary on the topic of Ramsey pricing and railway rate-setting.

³⁵ In theory, if rail carriers truly practiced Ramsey pricing, they would limit their prices in captive situations to levels that would result in limiting their earnings to their cost of capital as determined by the Agency. Any evidence that they do so is unknown to the author.

³⁶ See, for example, Sylvester Damus, in "Ramsey Pricing by U.S. Railroads: Can it exist?", *Journal of Transport Economics and Policy*, Jan. 1984, 51-61; "An Evaluation of Ramsey Pricing: Argentine Railways ca. 1905," Transportation Research Forum, Proceedings of the 24th Annual Meeting, 1983, XXIV(1), 418-29; and, "Ramsey

Ramsey pricing was developed to provide regulators with the ability to allow natural monopolies to price so as to remain profitable while attempting to minimize the inefficiencies or deadweight loss resulting from pricing above marginal cost. This is accomplished by allowing the monopoly to increase prices above marginal cost by an amount inversely related to a product's elasticity. In other words, in the case of a natural rail monopoly, Ramsey pricing would extract higher rates from those shippers who were more dependent (i.e. price inelastic) on rail transportation.³⁷

The logical counter to Ramsey pricing is that it requires regulatory oversight, as is logical³⁸, and as the Bureau points out:

Although railways may have some justification for advocating the need for differential pricing, it must be accompanied by some form of regulatory oversight which will prevent railroads from extracting high monopoly transportation rates from captive shippers.³⁹

The legislative solution, instead of full-blown regulatory oversight, has been to counteract railway market power with *ad hoc* shipper remedies, as described below, to reduce rates or increase service. However, their major shortcoming is that they do so in limited circumstances and for limited periods of time, evidenced by a predilection among many industry participants for negotiated outcomes.

Regulated Interswitching: In the case of regulated interswitching, the exchanges of rail traffic are subject to a charge established by the Agency to yield a system-wide margin no more than 7.5% above the long run variable cost⁴⁰ of the carrier providing the service, with no statutory restraint on volumes subject to that rate. Regulated interswitching governs some train movements in Canada, but is ineffective as a driver of price and output in any market but those

Pricing and its Applications,” Proceedings of the Transportation Research Forum Seminar on Transport Pricing, Costing, and User Charges, Washington, D.C., April 5-7, 1982.

³⁷ “Submission to the Canada Transportation Act Review Panel Regarding Rail Access and Related Issues”, Commissioner of Competition, October 6, 2000, p.9

³⁸ Church, D. and Ware R., 1999. Industrial Organization, A Strategic Approach. New York: McGraw Hill

³⁹ *Ibid.*, note 37, p.10

⁴⁰ Although the definition of variable cost in railway costing methodology is complex, consider it to be roughly equal to the economic definition of cost, whereby an element of profit is included within cost in that the variable portion of the railway's cost of capital is included.

involving exchanges of traffic within a 30-kilometre radius of interchanges, as defined in the Act⁴¹.

Competitive Line Rates: As only one shipper has applied for a competitive line rate, there is very little by which to judge the impact on price and output. However, we can say that there is a power within the Agency to establish the output, whereas the formula for the price is set out in the statute, starting from the premise that the interswitching rate is the base rate, to which is added a portion of the revenue the railway carrier generates by moving the same or substantially similar commodities over similar distances. It is fair, however, to assert that competitive line rates are not presently, nor are they ever likely to be, drivers of price and output. It is unfortunate, to say the least, that it has been 13 years since the National Transportation Act Review Commission first declared what was obvious to everyone (that CN and CP do not participate in this remedy), yet the remedy remains in the Act as if it is useful.

Running Rights: As asserted in the discussion on running rights at Appendix B, there is little or no precedent by which to judge the impact on price and output of an order by the Agency to provide running rights. However, the Agency can establish the compensation to be paid by the so-called “guest” railway company for running trains over the lines of the “host” railway company, if the two are unable to agree among themselves as to the compensation to be paid. This remedy has not been a driver of price or output yet could have significant influence over time. Whether that is a positive or a negative outcome to economic society is to be determined, and according to Bitzan, unlikely.⁴²

⁴¹ S.C. 1996, c.10, s.111, see note 73, *infra*.

⁴² “Railway Cost Conditions – Implications for Policy”2000, p. *viii*, where the author argues that “*social welfare would not be improved by multiple-firm competition over single rail networks unless large price decreases occurred. Costs would increase in cases of total open access, or in cases of introducing competition to bottleneck*”

Final Offer Arbitration: Where a shipper (who has no confidential contract with a carrier that governs the matter) is dissatisfied with its rates or conditions of service, the shipper may submit the matter to final offer arbitration. The process was designed to be rapid, effective, final and binding (except, possibly, as provided in the *Federal Court Act*⁴³), private and confidential and requires the selection of either the final offer of the railway carrier or the shipper, without room for compromise by the appointed arbitrator. The arbitrator's award lasts for no more than one year, and typically motivates the parties to negotiate. All in all, it is a means of resolving disputes between a carrier with tremendous market power operating in a natural monopoly on the one hand, and a shipper (with, possibly, though not necessarily, limited or no alternatives) on the other. The shipper selects the volume in issue, rather than the regulator. The criteria by which an arbitrator decides which offer is meritorious is set out in the only direct instruction in the Act, namely, that the arbitrator

shall have regard to whether there is available to the shipper an alternative, effective, adequate and competitive means of transporting the goods to which the matter relates and to all considerations that appear to the arbitrator to be relevant to the matter.⁴⁴

There is no further instruction on what the arbitrator should then conclude, much less which final offer should be selected, but in circumstances where there is no or little competition for rail freight services, one would expect an arbitrator to consider for selection an offer that most resembles the rates and conditions that would prevail if there were such an alternative, effective, adequate and competitive means of transporting the relevant goods. Similarly, in a competitive environment, one would expect an arbitrator to select the final offer that most reflects those competitive circumstances, as well as to “all considerations that appear to the arbitrator to be

segments.” He concludes with a recommendation to address rate and service problems through policies that “strengthen regulatory oversight rather than through policies of introducing or maintaining competition”.

⁴³ R.S., 1985, c. F-7, s. 18.1(4)

relevant”. To select an offer that is the same or near the dubious Ramsey price, which is another way of describing a rate that is unconstrained by competitive market forces or an “unconstrained price”, renders the process useless: if the rate selected is the same as the rate the carrier would have imposed by invoking the Ramsey price, why should the shipper have bothered to submit its rates to final offer arbitration at all? Logic dictates that an arbitrator would select the rate most closely resembling that which would prevail under the conditions described in section 164(2) of the Act.

Level of Service Complaints: There is a considerable amount of jurisprudence relating to these provisions of the Act, one pertinent theme of which is that the level of service obligations of a railway carrier are subject to a reasonableness test, as articulated by the Supreme Court of Canada in the following manner:

The qualification of reasonableness is exhibited in one aspect of the matter of the present complaint, the furnishing of facilities: a railway, for example, is not bound to furnish cars at all times sufficient to meet all demands; its financial necessities are of the first order of concern and play an essential part in its operation bound up, as they are, with its obligation to give transportation for reasonable charges.⁴⁵

The main observation from this passage is that the level of service that arises out of a railway carrier’s historical common carrier obligations is not absolute and that its financial necessity is part of the equation. As the court observed, if a carrier must provide services at reasonable price levels, it stands to reason that it would be required to do so in circumstances where its financial necessity would not be impaired. It follows, then, that if there is no impairment of its financial necessity, there should be no floor on the reasonableness of the price, but leaves open the question whether price reasonableness is higher or lower than the competitive price, given a

⁴⁴ S.C. 1996, c.10, s.164(2).

known quantity. Still, a particular level of service might be ordered without a full cost analysis. In those circumstances, it is difficult to measure the quantum of the effect of the remedy on price and output. Certainly, there must be some effect if the rail carrier has resisted it, which one would expect of all contested level of service complaints. Just as certainly, there is every incentive for a rail carrier to demonstrate a financial necessity. Interestingly, carriers perpetually claim revenue inadequacy⁴⁶, despite the existence of those carriers for 100 years or more.

For some of the foregoing remedies, the applicant seeking a rate or service remedy must demonstrate that it would suffer substantial commercial harm, a reverse onus that has been reviled by shippers, and which has effectively chilled legitimate applications from going forward.

In terms of the effects of the remedies on price and output, there is also the immeasurable but possible variable of simply having the remedy in place, whether or not it is used. That applies less for the competitive line rate and running rights remedies (which are not credible threats, in the game theory sense of the expression), applies more for regulated interswitching and final offer arbitration (for shippers within a small radius of interchanges in the case of interswitching and in the right circumstances in the case of final offer arbitration, even if the possibility exists that an arbitrator will ignore the considerations set out in section 164(2) of the Act) and applies more or less for the level of service complaint. To that extent, it is better to assume that all of the remedies have an impact on price and output, to a greater or lesser (possibly *nil*) degree.

⁴⁵ A.L. Patchett and Sons Ltd. v. Pacific Great Eastern Railway Co. (1956), 73 C.R.T.C. 317 (B.C.S.C.); (1959), 78 C.R.T.C. 282, [1959] S.C.R. 271, at pages 274, 275 (per Rand J.)

⁴⁶ As determined by reference to a carrier attaining its cost of capital.

5. The Conversion of Consumer Surplus to Producer Surplus

There is a considerable amount of attention paid to the railway market structure, for a variety of reasons, not the least of which is the merger activity that has gone on unabated since World War II, either because of financial failures or expansion of networks, resulting in only seven major railways operating in North America, from a time when there were 500 or more. Further, as rail carriers have sought to maximize the revenues earned from their respective network monopolies, as well as to absorb costs of consolidation, there has been a notable increase in economic literature relating to the benefits to society of all this revenue adequacy (described further, *infra*) and concentration. At the same time, shippers have organized into groups designed to offset the very persuasive and effective lobbying efforts of railway carriers to preserve those revenues and control those costs and the costs of operation (all of which is necessarily paid for by shippers; more yet by captive shippers).

There is a marked difference between the approaches of Parliament and that of the US Congress.

Whereas Chairman Nober of the U.S. Surface Transportation Board (“STB”) was content to say

The Board’s rate standards allow railroads to price their services in a way that will permit them to earn a reasonable return on the facilities needed to serve captive traffic,⁴⁷

our own courts have pronounced that

Parliament has already made a choice between the perceived danger of railway monopoly and that of unbridled competition, in favour the latter (...)⁴⁸

and

⁴⁷ Testimony of Honorable Roger Nober, Chairman (retired January 3, 2006) of the Surface Transportation Board Before the House Committee on Transportation and Infrastructure Subcommittee on Railroads Hearing on National Rail Infrastructure Financing Proposals June 26, 2003

⁴⁸ Canadian Pacific Ltd. v. National Transportation Agency, 105 N.R. 35 (F.C.A.) at 43

(...) competition must now determine the method fixing the rates for railways moving goods, not the techniques used in bygone days.⁴⁹

Note, too, that there have been efforts (and there are more afoot) in the United States to eliminate differential pricing, all within the context of railway pricing, as evidenced by the words of a Louisiana Congressman (Baker LA-06) upon introduction of a bill entitled “The Railroad Competition Act Of 2003” in the U.S. House of Representatives:

However, one lingering element of the Staggers Act provides for “differential pricing,” which in effect allows railroads to “price gouge” customers served by a single railroad in order to help make up for revenue that is lost to customers served by more than one railroad. In other words railroads can overcharge a customer where the railroad is a monopoly to help recover the revenue it loses in a competitive, multiple-railroad environment.

Prior to the Staggers Act, the federal government administered the finances of railroads by imposing price controls. But by allowing railroads to institutionalize price gouging, are we not continuing the practice of price controls? Indeed, is differential pricing the thriving legacy of regulatory control? I believe it is. I assert that differential pricing is no more “deregulation” than the artificially imposed government price controls that existed before 1980.⁵⁰

Setting aside the differences between Canadian and US policy objectives, it is clear that in Canada competition should determine price and output, even if carriers and their supporters prefer and advocate a focus on railway financial viability (in spite of record earnings). In fact, competition between carriers has not governed price and output. Railway carriers in Canada continue to dominate, continue to exercise market power to increase rates and reduce output, and the regulator’s ability to oversee the introduction of a competitive mandate into national transportation policy has been emasculated, giving rise to a greater ability among those rail

⁴⁹ Canadian Pacific Ltd. v. Canada (National Transportation Agency) [1992] 3 F.C. 145 at 153. See also the further comments of Linden J.A., who stated that CP, in that case, sought “to preserve the historic methods of doing business in the railway industry which prevailed prior to the enactment of the National Transportation Act, 1987. This new legislation is aimed at changing the old ways by fostering more competition within the railway industry and within the transportation system generally.”

⁵⁰ Congressman Richard Baker, (LA-06), July 25, 2003 as reported at <http://www.nitl.org/rail10801.htm>

carriers to keep the larger part of the surplus available in captive situations⁵¹, as one would expect, and for much of the monopolized rail network. As John Edsforth, a noted rail costing expert, points out,

except as constrained by final offer arbitration, and subject to their ability to calculate, railways obtain the maximum producer surplus available in every situation.⁵²

There are, of course, counterarguments.

(a) Value Judgement – Why Should the Monopolist Get the Surplus?

As railway advocates convey it, the overall cost of rail service to captive shippers (that is, the rates captive shippers pay) is lower when there are more captive shippers to share the pain. This is an interesting way of saying that, since a shipper is captive and market power allows a carrier to extract higher rates from that shipper (and therefore make a greater contribution to the carrier's constant costs), the more captive shippers there are to contribute to the carrier's constant costs, the less any single one of those captives will have to contribute. Perhaps captive shippers could delight in the truth of the theory, but only if rail carriers truly practiced Ramsey pricing and limited their earnings to recovery of their cost of capital. However, when there is no rate constraint, each movement is priced to maximize its contribution irrespective of the number of other captive shippers, so there is no sharing of pain. And, as that same captive shipper will attest, it is extraordinarily difficult to accept that it should be making a contribution to a rail carrier's constant costs beyond what the competitive price would yield if there were effective competition for that shipper's business.

⁵¹ For a recent empirical examination of the point, see "Welfare Tradeoffs in U.S. Rail Mergers, Ivaldi and McCullough, March 2005, at <http://idei.fr/doc/wp/2005/ivaldi.pdf>

⁵² In conversation with author, September, 2005.

Similarly, monopoly misallocates resources. Additionally, there is at least a *prima facie* concern that the recurring undersupply of railcars is resulting in less than optimal output, thus increasing costs to shippers to simply obtain service, to the point where far more expensive alternatives are being chosen to reduce shipper inventories. As a matter of public policy generally, this reduction in output is the reason why economists frown on monopolies. In the case of Canadian transportation policy, competition is supposed to be the driver of rates and output, at least *de jure*, as Parliament and the courts have rejected monopolistic pricing as the means of achieving articulated policy objectives.⁵³

In the case of an individual captive shipper, the result of supra-competitive rates is that the market power of the monopolist allows a redistribution of income. When carriers price to maximize contribution, the normal result is that the majority of the available surplus ends up in the hands of the carrier. When that happens, total surplus is normally less than the surplus derived under competitive conditions. Some economists decline to opine on the merits of the redistribution of income (to the carriers' shareholders from the shippers' shareholders).⁵⁴ But for the captivity, however, less of the surplus would end up in the carrier's hands, while total surplus would be increased. Further, the ability of the carrier to simply turn off the quantity tap, which carriers invoke as they see fit, never sits well with a shipper. Upon the inevitable exercise of market power, we see limited deployment of resources in the economy as a whole and in the dealings between the carrier and the shipper, in the form of threats over rates, failure to provide adequate supplies of railcars or threats to reduce supply, downloading of functions, and extracting contracts on terms favourable to the monopolist. That this conduct would occur in

⁵³ As set out in S.C. 1996, c.10, s.5.

⁵⁴ See Bitzan, in "Railway Cost Conditions – Implications for Policy" 2000, p.8., where the author calls it a "value judgement".

monopolized markets is not terribly surprising; what is surprising is the extent to which it happens given a legislative and jurisprudential preference for competitive market conditions, even in the absence of multiple firms.

(b) Deadweight Loss – Allocative Efficiencies

Bitzan argues that

(...) in cases where the monopoly cost of production is lower than the multiple firm cost of production, the total impact of each market structure on social welfare can only be made by comparing the total difference in resource costs (...) and the traditional welfare loss triangle.⁵⁵

He further points to the Williamson (1968) merger analysis in support of the proposition that “very small decreases in costs can offset very large price effects resulting from increases in market power.”⁵⁶ Of course, this conclusion addresses allocative efficiency, as opposed to the issue whether a particular shipper or group of shippers (those prone to the exercise of carrier market power) should pay for the efficiency in the form of higher price and lower output.

In captive rail freight markets, it is the carrier that has the market power, so there is no opportunity to determine in practice whether the possibly allocative efficiency of lower costs of production results in overall lower rates and higher service, because there are no comparable competitive circumstances against which to make that comparison for those same shippers.

Accordingly, shippers are left to wonder what life would be like in competitive circumstances, knowing full well from their experiences in their own downstream markets (which, for the most part, involve the sale of commodities into near-perfect competition market structures) that rates would be lower and service would be higher, or new entrants would soon fill the void.

⁵⁵ *Ibid.*, p. 10.

(c) Captives paying more to keep up the railway network

Shippers' observations that relatively lower rates exist in competitive environments are most often met with arguments from carriers relating to the impossibility of maintaining a network that has some competitive traffic making little contribution to constant costs without a concurrent extraction from captive traffic of supra-competitive contribution to those costs to make up for it. Or, that extracting supra-competitive contribution is not monopoly pricing as long as the overall contribution to a railways' "system-wide" (*i.e.*, the entire rail carrier's network) constant costs is not supra-competitive.

Some writers have referred to the former as cross-subsidization⁵⁷. There are several justifications expressed for cross-subsidization, including as Bonsor expresses,

(...) rail carriers are unable because of regulatory constraints to abandon services on which they lose money. They are thus forced to cross-subsidize the losses on the uneconomic services from revenue collected from other traffic.⁵⁸

Of course, there is no longer a constraint on abandonment, the natural conclusion being that there should no longer be a justification for cross-subsidization, if it was ever valid. The Competition Bureau (Canada) expresses the logical view that the ability of rail carriers to exit unprofitable markets weakens the railway argument that they need to engage in differential pricing in order to maintain rail system viability.⁵⁹

⁵⁶ Oliver Williamson, "Economies as an Antitrust Defense: The Welfare Tradeoffs," *American Economic Review*, Vol. 58, March 1968, pp. 18-36

⁵⁷ Depoorter, "Regulation of Natural Monopoly", Center for Advanced Studies in Law and Economics, University of Ghent, 1999, p.504; see also Damus, "Ramsey Pricing and Its Applications", Economic Council of Canada, to the Transportation Research Forum, 1982, and Baumol, "On the Proper Cost Tests for Natural Monopoly in a Multiproduct Industry", 1977

⁵⁸ Bonsor, N. (undated) [online]. "Competition, Regulation, and Efficiency in the Canadian Railway and Highway Industries". The Fraser Institute. Available from <http://oldfraser.lexi.net/publications/books/essays/chapter2.html>

⁵⁹ "Submission to the Canada Transportation Act Review Panel Regarding Rail Access and Related Issues", Commissioner of Competition, October 6, 2000, p.11.

The big challenge is that shippers are left with a sense that it is their level of captivity that is the most significant indicator of their rates and service, rather than the “market forces” spoken of in national transportation policy. The level of contribution (all traffic, competitive or captive, makes some contribution to constant costs) earned by railways from captive traffic, which is nothing more than the exercise of market power by railways, now commutes under various other labels. Primarily, the carrier view is that Ramsey pricing (as discussed in section 4, *supra*) is the justification for the exercise of that market power. Further, railway “system-wide” arguments are not particularly comforting to those paying a high contribution to constant costs.

(d) Constraints on Differential Pricing

Even if Ramsey pricing were desirable, it must be accompanied by an overall cap on revenue in order to achieve its welfare-maximizing attributes.⁶⁰ In the absence of an overall revenue cap accompanying regulatory oversight, there is no mechanism by which the deregulated freight railway sector would be disciplined as to price and output, other than by reference to shipper remedies, and by the extent to which competition from intermodal sources, and some intramodal competition, is effective. Before 1988, when, among other things, final offer arbitration was introduced, there were no regulatory restraints (other than the public interest rate complaint mechanism). The market structures have not changed: the environment in which railways operate in Canada for almost all categories of traffic has a greater or lesser degree of captivity and there is no rate cap (except for grain). We can see the recognition, since the 1988 reforms, of a need for constraints on differential pricing among the following:

⁶⁰ Regarding the need for a rate cap, see “Testimony of Linda J. Morgan, Chairman of the Surface Transportation Board”, Senate Committee on Commerce, Science, and Transportation, Subcommittee on Surface Transportation and Merchant Marine, Hearing on the Surface Transportation Board, March 21, 2001, who argues in favour thereof, and Damus. S., in “Ramsey Pricing by US Railroads, Can it exist?”, *Journal of Transport Economics and Policy*, 18(1), 51-61.

- (i) Parliament introduced changes designed to strengthen competition (confidential contracts, elimination of collusive pricing, extension of interswitching, competitive line rates and final offer arbitration, each of which had the impact of either reducing railway market power through strengthening of competition or, where that was not feasible, constraining the price impact of that market power); if Parliament had been prepared to accept unimpaired differential pricing, it would not have introduced these changes – they amount to a rejection of unimpaired differential pricing;
- (ii) upon deregulation, the courts also recognized (as demonstrated earlier⁶¹) that competition should alter the manner in which price and output was to be determined in individual transactions;
- (iii) the Canada Transportation Act Review Panel recognized the need for constraints when it said: “The Panel rejects assertions that differential pricing should be unfettered”, as the rail carriers had sought⁶²; and
- (iv) the Competition Bureau has taken exception to the need for Ramsey pricing, too, when it stated:

It is important to keep in mind, when discussing Ramsey pricing, that this model was designed to assist regulators in determining rates for natural monopolies. It does not justify allowing monopoly railways to use their discretion in establishing differential prices for their customers.⁶³

⁶¹ See text accompanying notes **Error! Bookmark not defined.** to 49.

⁶² Vision and Balance, Report of the Canada Transportation Act Review Panel, June 2001, at p.59

⁶³ “Submission to the Canada Transportation Act Review Panel Regarding Rail Access and Related Issues”, Commissioner of Competition, October 6, 2000, p.10.

The relevant point is that a railway carrier operating in a natural monopoly or otherwise, does so with market power, largely unfettered by regulatory oversight, with only a few viable remedies available to shippers or others to counteract that power. In those circumstances, we can observe that output is reduced and prices are higher than they would be in competitive environments.

6. Revenue Adequacy

The need for revenue adequacy is frequently cited by rail carriers as the justification for high contribution levels from captive rail traffic, but that is an historical and, on any sensible analysis, no longer applicable reason.

(a) Regulatory Definitions of Revenue Adequacy

We say that a rail carrier is “revenue adequate” when its revenues equal or surpass the sum of its operating expenses and its cost of capital.⁶⁴ Put another way, a carrier is revenue adequate when the aggregate of the contributions it earns above variable cost is sufficient to cover its constant costs. Notably, a carrier is revenue adequate when it has access to funds, whether internally generated or in capital markets, to make the capital expenditures necessary to ensure viability. Despite formal definitions of viability, it is this latter feature that determines revenue adequacy; that is, if a carrier has adequate access to funds, it is revenue adequate, notwithstanding other considerations. See Appendix D for a discussion of variable costing and revenue adequacy.

Revenue adequacy is a defined part of US rail transportation law, but noticeably absent from Canadian law. Although the methodology employed by the US Surface Transportation Board to

⁶⁴ As Edsforth explains, “Cost of capital is an amount which provides for coverage of debt interest and corporate income taxes and for a reasonable after-tax return on common equity. It is determined annually by regulatory bodies in Canada and in the United States, expressed as a percentage, and applies to the net book value of a carrier’s assets.”

examine the revenue adequacy of a particular railway has been assailed as “flawed”⁶⁵, the basics are set out in public law⁶⁶. When, in its annual determinations by the STB, the test is expressed as a statement, it is reduced to a simple proposition, as stated below for 2003:

no Class I railroad earned the railroad industry's cost of capital for the year 2003 (which was 9.4%) and that, thus, no railroad was "revenue adequate" for 2003.⁶⁷

(b) Market Views of Revenue Adequacy

Notwithstanding these revenue adequacy determinations, U.S. rail carriers appear to be earning sufficiently to have adequate access to necessary funds to ensure their viability and to invest in needed capacity expansions. In spite of the STB’s findings, the financial markets appear to have declared the carriers revenue adequate.

In Canada, of course, the Act requires no determination of the revenue adequacy of a carrier, but the Agency does make annual determinations of carriers’ cost of capital rates, which are the levels of earnings required by CN and CP to permit them adequate access to sources of funds for investment. Thus, a revenue adequacy calculation can be made by comparing actual carrier earnings with these required levels. For CN, the 14.2 % after-tax return on equity in 2004 was more than double the 7.02 % level determined by the Agency as being adequate. For the past five years, the average CN return was some 65 % above the Agency-determined values. For CP, the average return over this period was 35 % above the Agency-determined values.

A review of CN and CP officers’ statements respecting company financial performance leave no doubt that both carriers have adequate access to needed funds. CN’s common share price almost

⁶⁵ DiMichael, N.J., July 16, 2004. *Ex Parte No. 646*, Joint Written Testimony of several shipper organizations before the US Surface Transportation Board. [online]. Available from www.nitl.org/ExParte646.pdf, pp. 13-16. The part of the methodology employed by the STB that rankles US shippers relates to the failure by the STB to take into account the revenue earned by carriers from captive traffic.

⁶⁶ 49 USC 10704(2) and (3)

tripled over the past five years, compared with an overall stock market that was flat (see Appendix G), highlighting that it had no problem accessing funds and that shareholders are delighted with the outstanding response of the market with carrier performance. While not expressing a view on the revenue adequacy of the U.S. rail industry, there can be no doubt that the Canadian carriers are not only revenue adequate, but are realizing returns far beyond levels required for their long-term viability .

(c) Comparative Market Power and Revenue Adequacy

The difference in the revenue adequacy between rail carriers operating in Canada versus the United States may be because of a fundamental difference between rail operations in the two countries – Canadian carriers appear to have more market power than do their U.S. counterparts, which may also explain the difference in regulatory regime responses in the two countries. For example, the competitive environment in the United States, perhaps as a consequence of extensive water competition, shorter lengths of haul and differences in commodity mix, may explain this disequilibrium. CN and CP have enjoyed better financial performance than their U.S. counterparts.

(d) Relationship between Revenue Adequacy and Ramsey Pricing

The STB explained the limitations on Ramsey pricing, once revenue adequacy has been achieved, as follows:

Our revenue adequacy standard represents a reasonable level of profitability for a healthy carrier. It fairly rewards the rail company's investors and assures shippers that the carrier will be able to meet their service needs for the long term. Carriers do not need greater revenues than this standard permits, and we believe that, in a regulated setting, they are not entitled to any higher revenues. Therefore, the logical first constraint on a carrier's pricing is that its rates not be designed to earn greater revenues than needed to achieve and maintain the "revenue adequacy" level. In other words, captive shippers should not

⁶⁷ Railroad Revenue Adequacy--2003 Determination, STB Ex Parte No. 552 (Sub-No. 8). See Appendix F.

be required to continue to pay differentially higher rates than other shippers when some or all of that differential is no longer necessary to ensure a financially sound carrier capable of meeting its current and future service needs.⁶⁸

Of course, when carriers earn returns such as those of CN and CP in Canada, they are not practicing Ramsey pricing. The earnings constraint in Ramsey pricing does not permit such performance. As discussed earlier, federal freight railways operating in Canada price at the level the “market” will bear, subject to a few regulatory constraints, without concern for any earnings constraint. The policy question is whether such a level of earnings for a carrier with a large number of captive customers, with the consequent allocation of excessive levels of surplus to carriers, is in the public interest. In an economic sense, such excessive carrier surplus causes a reduction in total surplus relative to that which would result under Ramsey pricing, with a consequent reduction in economic efficiency. At the very least, it suggests that a strengthening of shipper-friendly legislative provisions is in order to restore some of the lost equilibrium.

(e) Relevance of Revenue Adequacy as a Railway Defence in Canada

Whatever the merits of the arguments, in Canada, rail transportation policy is decidedly uninterested in the determination of revenue adequacy, except as it relates to the administration of the revenue cap applicable to statutory grain⁶⁹ designed to provide a margin of about 27% above variable cost.⁷⁰ For all other shipments, rates may be below variable cost⁷¹, or anywhere above them. By contrast, US shippers do not even have standing to complain until their rates exceed variable costs by 80%. The revenue earned in Canada by captive traffic is no less

⁶⁸ Coal Rate Guidelines, Nationwide, *Ex Parte* No. 347 (Sub-No. 1), Interstate Commerce Commission 1 I.C.C. 2d 520; 1985 Lexis 254 pg 15 of 41

⁶⁹ S.C. 1996, c.10, s. 147 *et seq.*

⁷⁰ In discussion with John Edsforth, September, 2005.

⁷¹ Before the wholesale amendments of 1996 found in the Act, the law required carriers to charge rates above variable costs to avoid the possibility of predatory pricing. That possibility has now been left to the Competition Bureau to determine under Part VI of the *Competition Act*.

significant than it is in the United States and, indeed, makes for profitable railways (again, see Appendix G for a view of the state of Canadian railway finances). All of this points to a disconnect between claims by CN and CP of revenue inadequacy, on the one hand, and their fortunes on the other.

7. Conclusion

While there are some very large challenges ahead, it is clear that neither government nor industry accepts a return to overall economic regulation of federally-regulated freight railways. The unleashing of railways' natural monopolies into environments where their customers (shippers) generally operate in very competitive environments was a mistake, but there is likely no going back, for any number of reasons, not the least of which is that there is no strong evidence that regulation ever worked to address the issues raised in this paper.

Nor does the current state of affairs call for the abolition of differential pricing, not because it is justified, but because it amounts to a level of intervention that may require the same kind of regulation for which there is no evidence that it worked in the first place. There is a strong case that differential pricing is evidence of the existence of market power. There is no rebuttal of the point by Canadian freight railways. It may be that its use might be actionable under the *Competition Act* in certain circumstances. Or, it may be that Canada requires a limited regulatory framework to govern its use, but not approaching the level of intervention we see in other deregulated industries such as telecommunications and energy. That discussion is for another day.

The point to consider is that existing remedies must be strengthened and expanded, not weakened and limited. When a shipper gambles to invoke final offer arbitration, or any other of

the few remedies that exist, there should be a recognition by legislators, adjudicators and regulators, that the shipper does so in an environment of such significant risk to that shipper that some deference is owed. Further, those remedies that do not work must be replaced with those that do. Legislators, rail carriers and regulators should not be advocating the abolition of remedies any more than shippers should be advocating the abolition of markets to govern whatever level of market discipline now governs railways in favour of intervention.

In the meantime, the hope is that final offer arbitration will be around for the long haul, even while other remedies, and even legislative redress, are implemented, though that may be a long way off as well. It takes a long time to figure out whether or not a particular remedy works well or at all, and even when it is obvious that they don't, as in the case of CLR's, efforts to improve them fall short. Accordingly, allowing enough time for shippers and carriers to react to remedies is essential.

APPENDIX A

Definitions and Nomenclature

Federal freight railways include companies like Canadian Pacific Railway Company (“CP”), Canadian National Railway Company (“CN”) and The Burlington Northern Santa Fe Railway Company (“BNSF”), each of which is federally-regulated, operating at least in part in Canada. The term does not include railways like Southern Railway of British Columbia Ltd. (provincially-regulated, operating in one province) or OmniTRAX (provincially-regulated, operating in more than one province), Via Rail Canada Inc. (federally-regulated, but not a freight railway) West Coast Express and GO Transit (provincially or federally-regulated, but not freight railways) or other variants, each of which operate in similar market structures as the federally-regulated freight railways operating in Canada. To complicate matters, Class I railroads, an American term, describes railways and railroads of a certain size, including CN and CP, since both of them operate in the United States, where a different regulatory regime governs their operations. “Railways” are Canadian (and British), and “railroads” are American, notwithstanding BNSF’s full name. “Railway companies” is the term used in the *Canada Transportation Act* to define a federally-regulated railway. “Carriers” includes railway companies (which is sometimes shortened to “railways” in reference to the company, rather than their tracks and roadbed), airlines, freighters, marine barges, trucks, *etc.* “Shippers” are their customers. “Traffic” is the movement of goods by carriers, so that when we speak of “coal traffic”, for example, we mean the shipments or movements of coal on trains from an origin to a destination, and when we speak of “traffic” generally, we mean, sometimes, the total movements of one or more carriers over all or part of a railway’s system. Other terms have been defined throughout the paper.

APPENDIX B

Statutory Remedies

Regulated Interswitching: Regulated interswitching⁷² is available to persons seeking to connect shipments between two railways where a traffic origin or destination is served by a single carrier that has a connection with another carrier located within a prescribed distance from the origin or destination (currently, 30 kilometres as the crow flies), with or without the consent of the carriers involved. While very useful in those circumstances limited by distance, railways rarely come within that distance of each other except in major centres and in areas far away from the facilities of large shippers. As an example, if a shipper's facilities are located on the lines of CP, say, but are within 30 kilometres of an "interchange"⁷³ with, say, CN, that shipper is entitled to have CP transport its product at a regulated rate to connect to CN, who would then charge the shipper for the balance of the shipment at published or negotiated rates. The theory is that CP would offer better rates and conditions to destination than it would in the absence of the remedy. In this manner, some competition is created between CP and CN for the same traffic, depending of course, on the willingness of the two to compete, on the charges each offers, and a variety of other factors.

Competitive Line Rates: Competitive line rates⁷⁴ ("CLR" or "CLRs") can theoretically be used in those circumstances where a shipper obtains the agreement of a connecting carrier to transport

⁷² S.C. 1996, c. 10, ss.127 *et seq.*

⁷³ S.C. 1996, c.10, s.111, which states that an interchange is "a place where the line of one railway company connects with the line of another railway company and where loaded or empty cars may be stored until delivered or received by the other railway company" where "railway company" refers to carriers under the jurisdiction of Parliament.

⁷⁴ S.C. 1996, c.10, ss.113 *et seq.*

traffic beyond an interchange as long as that shipper obtains an order from the Agency as to the rate at which the originating carrier must carry the traffic from origin to the interchange. The Agency also establishes the routing, the conditions of service and designates the nearest interchange between the relevant carriers. For example, assume a shipper is captive to CN at the origin (point A) and seeks to transport goods to point C, which is serviced by both CN and CP, and that CN and CP have an interchange at point B (which in this case is, say, halfway between point A and point C). Using the CLR, the shipper can apply to the Agency compelling CN to transport its goods to point B at a rate determined by the Agency, as long as that same shipper has the agreement of CP to carry the goods from point B to point C. The theory is that CN would offer lower rates and better service to counter the possibility that the shipper might apply for a CLR with CP at better rates and service conditions.

The significant shortcoming of the CLR is that the connecting carrier never seems to agree to carry the traffic from the interchange in those circumstances. Since 1987 when the remedy was first introduced, there has been only one shipper that has made an application for a CLR, prompting the National Transportation Act Review Commission (1993, p. 131) to remark

CN and CP have effectively declined to compete with each other through CLR's (competitive line rates), and as a result the provision is largely inoperative in Canada.

In addition, there is an economic reason why CLR's are inoperative in Canada and a US Supreme Court decision against their operation in the United States, as Damus⁷⁵ points out.

If we denote distances by x and rates per ton-mile by r , let x_1 be the distance from A to B, and x_2 the distance from B to C. The corresponding freight rates per ton-mile are r_1 and r_2 . The maximum that the competing line can charge for transport from B to C can be expressed as follows:

⁷⁵ "A Two-Part Ramsey-Optimum Railroad Tariff," University of Chicago dissertation, pp. 79-80.

The freight per ton from A to C, single line, is $r_1 x_1 + r_2 x_2$
less the rate from A to B by the connecting line $r_1 x_1$
equals the rate obtainable by the competing line, which is $r_2 x_2$

Remember that rates per ton-mile are usually higher for short hauls than for long hauls and therefore r_1 is greater than r_2 . Accordingly, the competing line's rate for transport from B to C would be higher than $r_2 x_2$ and so would be its share of a hypothetical through rate (a rate from A to C) based on mileage. If the Agency ordered a connecting line rate from A to B that was equal to or less than $r_1 x_1$ it would be either forcing carrier A to accept a through rate that it is not willing to make, or it would be forcing the competing rail line from B to C to accept a rate division worse than the hypothetical. Of course, the Act sets out the formula by which that AB rate is determined, but the point stands that a two-carrier combination of AB and BC movements will necessarily incur more costs than a one carrier AC movement.

However, if the local traffic over the competing line will pay for that line, then that line can treat the diversion of the connecting line's traffic from A as a marginal source of revenue and carry it at the lower rate ($r_2 x_2$). That would be a sort of predatory behaviour that should not be encouraged. Indeed, in the *Subiaco* case, the United States Supreme Court denied the Interstate Commerce Commission's right to prescribe through rates, even in the case where the competing route from B to C is shorter than that of the railway starting at A.⁷⁶

Running Rights: Running rights⁷⁷ as a shipper remedy also has had a very limited life. The provision requires certain railway companies to make application to the Agency to run over the lines of another railway company. Although rail carriers frequently voluntarily enter into running rights agreements where there is mutual benefit, they adamantly oppose being required to enter into such arrangements, calling it "forced access", where others contend the result would be to increase competition. Any host railway would oppose, and to date has opposed, each such application.⁷⁸ As a simple example of the vehemence with which host railways would defend against the use of the remedy, one need only turn to the statement of Mr. Robert Ritchie, President of Canadian Pacific Railway, when he said

⁷⁶ U.S. v. Missouri Pacific Railroad (278 US 269) 1929.

⁷⁷ S.C. 1996, c. 10, ss.138 *et seq.*

⁷⁸ See text accompanying notes 11-13, *infra*.

But a warning — we are not prepared to have our assets confiscated, such as through mandated access. **THAT** we will fight for another 70 years.⁷⁹

Indeed, no less than the former Chief Justice of the Supreme Court of Canada, Willard Z. Estey, CC, QC, recognized that the existing running rights provisions were restrictive and ineffective as a means of creating competition for traffic that is captive to the lines of a single railway, remarking among other things that:

Since 1988, the Canadian Transportation Agency has received only four applications for imposed running rights. For a variety of reasons, it has not ordered in favour of any of those applications.⁸⁰

Final Offer Arbitration: A shipper may submit to final offer arbitration⁸¹ the matter of its rates or conditions or both for the movement of goods on a federal railway, when no confidential contract⁸² exists for the transportation of the goods to which that matter relates. Sports enthusiasts (and certain municipal labour bargaining units) will recognize this as “baseball-style arbitration”. The shipper and the carrier each make a final offer and, over a 60-day period, an arbitrator will choose one of the offers, the terms of which will govern the traffic in question for one year. The theory is that the risk that one offer will be selected over another, rather than the usual Solomon-like wisdom that leads to compromises between two offers (and, as labour specialists observe, may lead to exaggerated offers by both sides), brings the parties closer together, as both wish to be seen to be reasonable in their efforts to have their offer selected by the arbitrator.

⁷⁹ Ritchie, R.J., December 5, 2000. “Challenge to Policymakers: Help Railways Fulfill Their Potential”, speech to Canadian Railway Club, Montréal, P.Q.

⁸⁰ Estey, W.J., December 21, 1998. “Grain Handling and Transportation Review”, Final Report to the Minister of Transportation, p. 36.

⁸¹ S.C. 1996, c.10, ss.161 *et seq.*

⁸² S.C. 1996, c.10, s. 126

To date, there have been a two dozen such arbitrations referred by the Agency to certain persons listed on a roster of eligible arbitrators. They are private and confidential, offer virtually no precedent value, and have been a means of resolving disputes over rates and conditions of service, and, according to some, have served as a surrogate for competition. It is not an exaggeration to say that the remedy has resolved or helped to resolve some of the largest (monetary) and most significant disputes in the country in the rail sector or any other.

Level of Service Complaints: Level of service complaints⁸³ allow persons to make application before the Agency to conduct an investigation into whether or not a railway company is providing adequate and suitable accommodation for receiving, carrying and delivering traffic on and from its railway, including a statutory right of action for damages, among other obligations set out in the Act. These provisions invoke the formal investigatory and remedial powers of the Agency to impose service obligations on rail carriers that are generally fully opposed by those carriers.

⁸³ S.C. 1996, ss.113 *et seq.*

APPENDIX C

Comments On Ramsey Pricing

Ramsey pricing has its supporters (notably, for these purposes, among rail carriers and their supporters) and detractors. Indeed, it is safe to say that no shipper has advocated its use or justification for railway rate-setting. Quite apart from whatever else might be said about it, opposition to the use of Ramsey pricing arises in the following contexts:

- (a) the assumptions upon which Ramsey pricing rests are sufficiently unrealistic to fatally flaw the methodology⁸⁴;
- (b) the inputs required to implement Ramsey pricing are massive and not reliably available⁸⁵;
- (c) Ramsey pricing determines prices, which are not equitable relative to each other⁸⁶; and
- (d) the requirement that all constant costs must be covered is questionable.⁸⁷

⁸⁴ Bonbright, J.C., Danielson A.L. and Kamerschen D.R., 1988. "Principles of Public Utility Rates" Arlington, Va., 2d ed., Arlington, Virginia, Public Utilities Reports, pp. 533-542.

⁸⁵ For example, to implement Ramsey pricing for CN or CP requires a reliable measure of demand elasticity for each of its thousands of freight movements. See Schmalensee R., 1979, "The Control of Natural Monopolies", DC Heath: Lexington, Massachusetts, 30 – 40 and Huettner, D.A., 1982. "Optimal Second Best Pricing of CATV Pole Attachments". *Southern Economic Journal* 48(4), 996-1015.

⁸⁶ For example, in the railway context, consider two shippers moving similar commodities under similar conditions over similar distances, except that one has access to effective competition for his movement, while the other does not. The Ramsey price for the second shipper could be much higher than that for the first. See Roberts, M.J., 1983. "Railroad Maximum Rate and Discrimination Control", *Transportation Journal*, 22(3), 22-33 at pp. 30-32, and Zajac, E.E., 1978. *Fairness or Efficiency: An Introduction to Public Utility Pricing*, Ballinger Publishing: Cambridge, Mass. at pp. 44-45.

⁸⁷ Kamerschen, D.R. and Keenan, D.C., 1983. "Caveats on Applying Ramsey Pricing", in *Current Issues in Public Utility Economics: in Essays in Honor of James C. Bonbright*, edited by Danielson A.L. and Kamerschen, D.R. DC Heath and Company, Lexington, Massachusetts 197-208. The authors argue that sellers need not obtain a return on sunk capital that does not need to be replaced. Examples of such costs in the context of railways include obsolete rail lines being operated on a going-out-of business basis, and asset classes such as grading of rail lines.

Canadian railways, for most of their traffic categories, do not operate under a regulatory profit constraint, which is a central feature of Ramsey pricing. Absent that constraint, Ramsey pricing becomes simple “what the market will bear” pricing, where each movement is priced independently to yield maximum contribution to the rail carrier. In a monopoly market structure, or where the carrier exercises market power, the Ramsey price is the monopoly price. Elsewhere it is the competitive price. The term “Ramsey pricing” then becomes a mere euphemism for unconstrained exercise of market power wherever it exists.

To economise on the inputs required to implement Ramsey pricing, it is customary to apply a modified version of the elasticity formula set out in the text before footnote 34 above, applicable to any *i*-th commodity: $(p_i - MC_i)/p_i = m/E_i$, where *m* is a decimal fraction between 0 and 1 that indexes the degree of monopoly power exercised in a given market. The factor *m* is zero under conditions of perfect competition and unity under conditions of an unfettered monopoly, and varies in between those two extremes upon the application of a regulatory or voluntary constraint on revenue and profit.⁸⁸

Note that the elasticity formula only provides a rough approximation to a Ramsey price. Strictly speaking, it is valid only in the special case of independent demands, that is, where a change in the freight rate for one commodity does not affect the traffic in any other commodity. The assumption of independent demands is often untenable, especially in a wide network, such as rail, that carries a large number of commodities. When the assumption is false, a mechanical application of the formula can have adverse feed-back effects on railway traffic and revenue,

⁸⁸ Damus, in discussion with the author, indicates that factor *m* is not indexed because – there being only one revenue constraint – it is meant to apply equally to all traffic.

because in that case a rate change calculated by the formula will affect the volumes of traffic in other commodities.

The elasticity formula breaks down when the right-hand side, m/E_i , equals or exceeds unity, either because the elasticity is low or the exercised monopoly power is high. In that case, solving for MC_i with a necessarily positive price, one finds the absurd result of a zero or negative marginal cost. If the railway was already “revenue-adequate,” then one might revise m downwards, which results in across-the-board rate reductions. Otherwise, the rail rate for the i -th commodity would have to be increased to a level at which demand for that service is sufficiently responsive to further price changes.

APPENDIX D

Variable Costs And Revenue Adequacy

Revenue adequacy is achieved when carriers obtain sufficient revenues to cover operating expenses and obtain sufficient net income to provide access to funds necessary for needed capital investment. That requirement is satisfied when revenue equals total cost, where total cost includes operating expenses and cost of capital. Total cost consists of two components, namely:

- Variable costs, which vary in response to change in traffic volume and which can, therefore, be meaningfully assigned to specific traffic movements
- Constant costs, which do not vary in response to traffic volume changes and which cannot, therefore, be meaningfully assigned to specific traffic movements

For any specific traffic movement, contribution is the excess of revenue over variable cost.

Revenue adequacy is achieved when the aggregate contribution of all traffic movements for a carrier equals its total constant cost. At this point, the carrier earns a satisfactory return on investment, since cost of capital includes a satisfactory return on investment.

Long run variable costs may be determined with precision. The Canadian Transport Commission, as it existed up until 1987, stated⁸⁹:

Variable costs may be defined as the long-run marginal cost of output, being the cost of producing a permanent and quantitatively small change in the traffic flow of output, when all resource cost inputs are optimally adjusted to change.⁹⁰

⁸⁹ Canadian Transport Commission. 1969. "Reasons for Order No. R-6313 Concerning Costs Regulations", Pamphlet No. 15, p. 337

⁹⁰ Edsforth affirms that this definition has been continuously employed by the successors to the Canadian Transport Commission, namely, the National Transportation Agency and the Canadian Transportation Agency.

Since, as the National Transportation Agency determined in 1992,

an 83/17 ratio of variable to fixed [usually referred to as “constant” costs in railway costing parlance] costs was appropriate for the movement of western grain traffic,⁹¹

we can conclude that an average 20% contribution by all traffic to those constant costs would pay for all costs, fixed (or constant) and variable. (Indeed, many railway customers should be so fortunate throughout the cycle.) The concluded by declaring that

although a full contribution towards rail fixed costs is required for all rail traffic, in aggregate, contribution levels are less when competition dictates.

Without too much elaboration, the calculus is roughly as follows: the amount a railway earns above its long run variable costs is contribution to constant costs, and that contribution needs to attain to average about 20% above long run variable cost to cover constant costs. As Edsforth more fully explains:

In pricing of railway services, the railway benefits economically from an activity if the revenues it receives from that activity exceed the variable costs which that activity imposes upon in. The extent to which a railway price (*e.g.* a freight rate) exceeds the related variable cost is referred to as the contribution that the railway receives from that activity. In theory, the railway will, in the long run, be able to attract new investment funds only if the sum of the contributions from all of its activities equals or exceeds its constant costs. In practice, the Canadian railways have demonstrated their ability and willingness to invest even in periods when the aggregate of their contributions has failed to cover their constant costs. They do so as long as the net benefit obtainable from the investment exceeds their cost of the investment funds required to obtain the benefit. It is important that the economic concept of contribution not be confused with the accounting concept of profit. Since regulatory costs include a cost of capital, which in turn incorporates an adequate level of profit to provide a reasonable return on shareholder equity (where reasonable is as determined by the Canadian Transportation Agency), contribution represents profitability beyond that reasonable level of return. As long as railway revenues associated with an activity exceed variable cost, the activity will contribute an adequate level of profit on the variable assets associated with performance of that activity. Indeed, the railways conduct a number of freight transportation activities

⁹¹ Canada Gazette, Part II, Vol. 131, No. 25, October 12, 1997, p. 3407, as cited by the Canadian Transportation Agency.

in a competitive mode at rates which are only marginally above variable cost; in some situations they even perform services for freight rates which fail to cover variable cost.⁹²

The contribution earned by railways, then, varies between adequate and inadequate. As explained previously, railways rarely accept that they are revenue adequate, which defies logic after a century of existence. Not surprisingly, railways do not like to hear prescriptions for contribution of 7.5% (the current regulated interswitching rate) by various groups, including “shippers, shipper associations, provincial governments as well as a federal government agency”, as the Agency heard when it reviewed the regulated interswitching regulations in 2002.

A question that naturally arises is “what is the average contribution earned by railways”? It turns out to be relatively high. CP argued, in the same interswitching review, that the 7.5% interswitching level was inadequate, stating that it

requires an average contribution level of approximately 25 per cent of variable costs across all of its services to earn sufficient revenues to recover its total costs, including its constant costs.⁹³

Not surprisingly, rail carriers argue for higher regulated contribution, and therefore returns. The false logic is that achieving a higher contribution level from interswitching will somehow assist them to earn adequate revenue. (In reality, of course, higher interswitching rates would reduce the incidence of situations where interswitching would provide effective intramodal competition, thereby increasing railway market power) In practice, carriers hunt for traffic that not only is below any kind of competitive threshold, but makes no contribution whatsoever. The cases confirm it, and carriers do not deny it. There are reasons for doing so, not the least of which is that the long run variable costing methodology is generous, allowing for full cost of capital

⁹² “An Evaluation of Appropriate Compensation for Regulated Railway Running Rights” Prepared For Canadian Pulp and Paper Association, Western Canadian Shippers’ Coalition, November, 2000.

recovery, including cash operating expenses, depreciation, and cost of capital, which itself includes interest on debt, dividends on preferred shares, income taxes, and an after-tax return to equity shareholders: in other words, economic profit.⁹⁴

So, are Canadian railways revenue adequate? In the Canadian policy context, there is not much doubt. In recent years, Canadian railway returns have substantially exceeded their cost of capital as determined by the Agency. Railways appear to have had no difficulty in obtaining the substantial funds that they have recently invested in their facilities and equipment. Indeed, CN has had enough left over to buy back a portion of its outstanding common stock – a clear indicator that it considers itself revenue adequate. Further, the claim that the carriers needed higher interswitching rates to recover their total costs was defeated. The Canadian Transportation Agency decided to keep the regulated interswitching rates at the same level they had been at for years, a victory for shippers with access to that remedy, but wholly useless to captive shippers, who still have but one remedy, final offer arbitration, the outcome of which is always uncertain, for both carriers and shippers.

⁹³ Canadian Pacific Railway Company “Response of 30 September 2002 to the Agency request for comments as part of the review of the Railway Interswitching Regulations set out in Agency Decision No. LET-R-251-2002 dated 30 August 2002” [online]. Available from http://www.cta-otc.gc.ca/rail-ferro/disputes/submissions/cpr_e.html

⁹⁴ Edsforth, J. “An Evaluation of Appropriate Compensation for Regulated Railway Running Rights” 2000, p.4

APPENDIX E

Roles Of Canadian Transportation Agency And US Surface Transportation Board In Addressing Railway Needs

The Agency's objects are clearly not meant to address railway financial needs first, whereas in the United States, they are. The home page of the Agency states:

The Agency deals with rate and service complaints arising in the rail industry, as well as disputes between railway companies and other parties over railway infrastructure matters. It also processes applications for certificates of fitness for the proposed construction and operation of railways, and approvals for railway line construction. The Agency determines regulated railway interswitching rates and the railway revenue caps for the movement of western grain. The Agency also develops costing standards and regulations; and audits railway companies' accounting and statistics-generating systems, as required.⁹⁵

Its US counterpart, the Surface Transportation Board, however, has a clear bias in favour of railway revenue adequacy:

One of our core statutory missions from Congress is to assist railroads in attaining adequate revenues. We must also resolve railroad rate and service disputes.⁹⁶

The U.S. emphasis on carrier viability undoubtedly arises from the circumstances that existed in 1980, when the current legislative regime was adopted. At that time the U.S. rail industry was on the verge of financial collapse. Conversely, that situation has never applied in Canada; thus the difference in emphasis. The underlying reason is that competitive forces are more effective in the U.S., because of shorter rail hauls and the influence of water and highway transport. Absent

⁹⁵ Canadian Transportation Agency. Internet Home page [online]. Available from www.cta-otc.gc.ca.

⁹⁶ Nober, R. (Chairman of the Surface Transportation Board), June 26, 2003 [online]. United States. Congress. House Committee on Transportation and Infrastructure Subcommittee on Railroads, Hearing on National Rail

these competitive forces, the Canadian railways have greater market power than their U.S. counterparts and do not need regulatory assistance to achieve viability.

APPENDIX F

US Surface Transportation Board

Revenue Adequacy Definition

(2) The Board shall maintain and revise as necessary standards and procedures for establishing revenue levels for rail carriers providing transportation subject to its jurisdiction under this part that are adequate, under honest, economical, and efficient management, to cover total operating expenses, including depreciation and obsolescence, plus a reasonable and economic profit or return (or both) on capital employed in the business. The Board shall make an adequate and continuing effort to assist those carriers in attaining revenue levels prescribed under this paragraph. Revenue levels established under this paragraph should –

(A) provide a flow of net income plus depreciation adequate to support prudent capital outlays, assure the repayment of a reasonable level of debt, permit the raising of needed equity capital, and cover the effects of inflation; and

(B) attract and retain capital in amounts adequate to provide a sound transportation system in the United States.

(3) On the basis of the standards and procedures described in paragraph (2), the Board shall annually determine which rail carriers are earning adequate revenues.

SOURCE: 49 USC 10704(2) and (3)

APPENDIX G

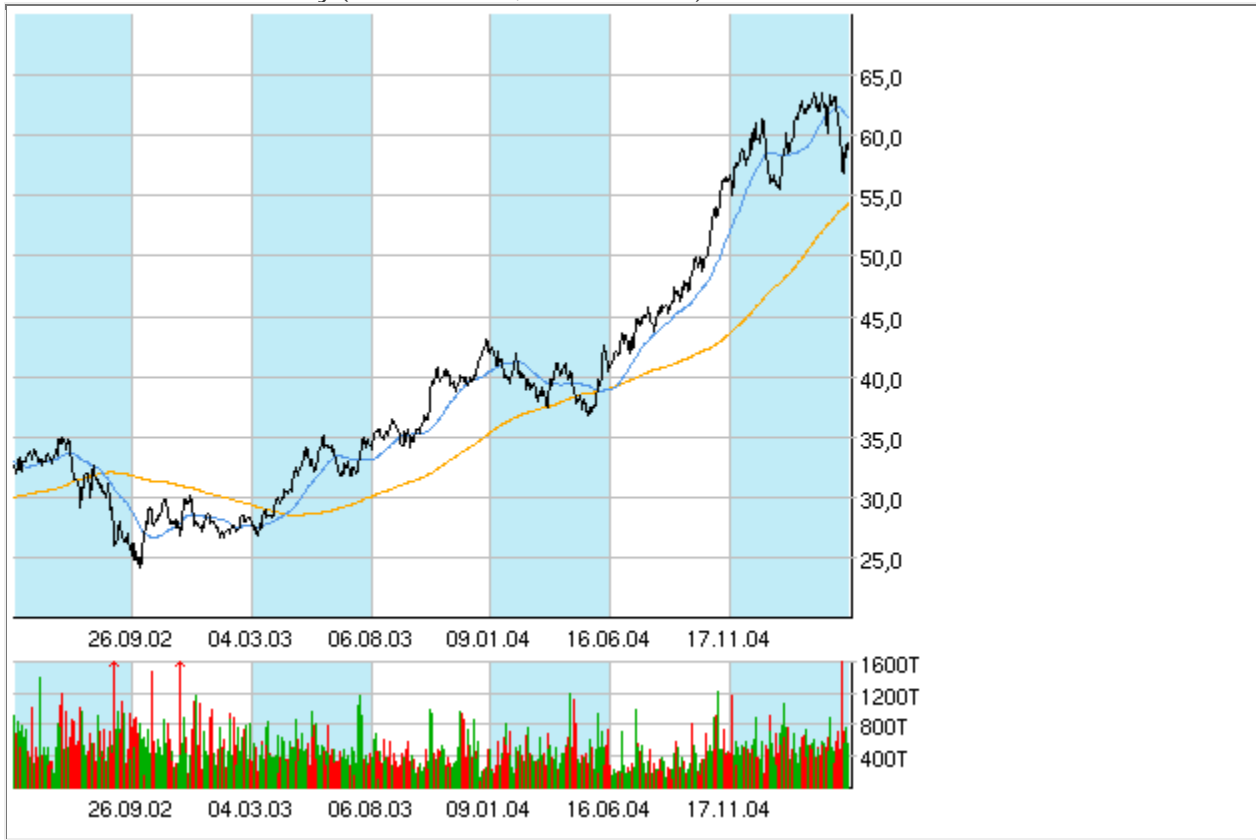
Canadian National Railway And Canadian Pacific Railway Financial Performance

Year	Canadian National Railway		Canadian Pacific Railway	
	Cost of Equity Capital (%) ¹	Return on Equity (%) ²	Cost of Equity Capital (%) ³	Return on Equity (%) ²
2004	6.93	14.2	7.17	9.5
2003	7.30	11.5	7.33	9.4
2002	7.54	13.0	8.01	12.6
2001	8.72	15.0	8.72	11.5
2000	10.22	13.1	9.95	12.5

SOURCES:

1. Estimates are after-tax cost of common equity rates from the annual "Cost of Capital Rate for the Canadian National Railway," Canadian Transportation Agency, 2000, 2001, 2002, 2003, and 2004, page 2.
2. After-tax rates of return on equity calculated from Canadian National Railway and Canadian Pacific Railway Annual Reports.
3. Estimates are after-tax cost of common equity rates from the annual "Cost of Capital Rate for the Canadian Pacific Railway," Canadian Transportation Agency, 2000, 2001, 2002, 2003, and 2004, page 2.

Data extracted: April 25, 2005
 Canadian National Railway (NYSE: CNI.NYS, CA1363751027)⁹⁷



Last Trade	\$59.43	Prev Close	58.93
Trade Time	04/25, 4.02PM ET	Open	58.92
Change	▲ +0.50 (+0.85%)	Trend	+++--
Bid	- x -	Day's Range	58.29 - 59.76
Ask	- x -	52wk Range	36.75 - 63.55
Volume	33.59 Mil.	YTD Range	55.60 - 63.55

Quote data by IS.eFinance Solutions using Standard&Poor's ComStock Inc. and others.

⁹⁷ <http://www.newratings.com/companies/chart.asp?isin=CA1363751027&ts=36&ct=1>

Data extracted: April 25, 2005
 Canadian Pacific Railway (NYSE: CP.NYS, CA13645T1003)⁹⁸



Last Trade	\$35.80	Prev Close	35.91
Trade Time	04/25, 4.00PM ET	Open	35.94
Change	▼ -0.11 (-0.31%)	Trend	+ - + - +
Bid	- x -	Day's Range	35.66 - 36.05
Ask	- x -	52wk Range	21.60 - 37.74
Volume	9.91 Mil.	YTD Range	31.80 - 37.74

Quote data by IS.eFinance Solutions using Standard&Poor's ComStock Inc. and others.

⁹⁸ <http://www.newratings.com/headlines/chart.asp?isin=CA13645T1003>

References

- Baker, R., July 25, 2003. US Congress [online]. Available from <http://www.nitl.org/rail10801.htm> [Accessed October 26, 2005]
- Baumol, W.J., 1977. "On the Proper Cost Tests for Natural Monopoly in a Multiproduct Industry," *American Economic Review*, 67(5)
- Baumol, W.J. and Bradford, D., 1970 "Optimal Departures from Marginal Cost Pricing," *American Economic Review*, 60 (3)
- Bitzan, J., 2000. "Railway Cost Conditions – Implications for Policy", Upper Great Plains Transportation Institute, Fargo, North Dakota
- Bonbright, J.C., Danielson A.L. and Kamerschen D.R., 1988. "Principles of Public Utility Rates" Arlington, Va., 2d ed., Arlington, Virginia, Public Utilities Reports
- Bonsor, N. (undated) [online]. "Competition, Regulation, and Efficiency in the Canadian Railway and Highway Industries". The Fraser Institute. Available from <http://oldfraser.lexi.net/publications/books/essays/chapter2.html> [Accessed October 26, 2005]
- Canada. *National Transportation Act Review Commission*. 1993. "Competition in Transportation, Policy and Legislation In Review". Ottawa. Volume I
- Canada. Canada Transportation Act Review Panel. 2001. "Vision and Balance". Ottawa
- Canada. Parliament. 1985. Competition Act. R.S. 1985, c.19, as amended
- Canada. Parliament. Federal Court Act. R.S., 1985, c. F-7
- Canada. Parliament. 1988. National Transportation Act, 1987. R.S., 1985, c.28 (3rd Supp.)
- Canada. Parliament. 1996. Canada Transportation Act. S.C. 1996, c.10, as amended
- Canadian Transport Commission. 1969. "Reasons for Order No. R-6313 Concerning Costs Regulations", Pamphlet No. 15
- Canadian Transportation Agency, 1997. Citing Canada Gazette, Part II, 131(25)
- Canadian Transportation Agency, 2004. Citing Canada Gazette, Part II, 138(20)
- Canadian Transportation Agency, 2002. Canadian Pacific Railway Company "Response of 30 September 2002 to the Agency request for comments as part of the review of the Railway Interswitching Regulations set out in Agency Decision No. LET-R-251-2002 dated 30 August 2002" [online]. Available from http://www.cta-otc.gc.ca/rail-ferro/disputes/submissions/cpr_e.html [Accessed June 20, 2005]

Canadian Transportation Agency. Decision Number 505-R-2002 [online]. Available from http://www.cta-otc.gc.ca/rulings-decisions/decisions/2002/R/505-R-2002_e.html [Accessed October 20, 2005]

Canadian Transportation Agency. Internet Home page [online]. Available from www.cta-otc.gc.ca [Accessed October 26, 2000]

Canadian Transportation Agency. News Release. "Canadian Transportation Agency Denies Ferroequus' Application to Use Facilities Owned by CN" [online]. Available from http://www.cta-otc.gc.ca/media/communique/2002/020910_e.html [Accessed October 20, 2005]

Church, D. and Ware R., 1999. Industrial Organization, A Strategic Approach. New York: McGraw Hill

Competition Bureau. "Submission to the Canada Transportation Act Review Panel Regarding Rail Access and Related Issues". October 6, 2000

Damus, S., 1979. "A Two-Part Ramsey-Optimum Railroad Tariff," University of Chicago dissertation

Damus, S., 1982. "Ramsey Pricing and its Applications," Proceedings of the Transportation Research Forum Seminar on Transport Pricing, Costing, and User Charges, Washington, D.C.

Damus, S., 1982 "Ramsey Pricing and Its Applications", Economic Council of Canada, to the Transportation Research Forum

Damus, S., 1983. "An Evaluation of Ramsey Pricing: Argentine Railways ca. 1905". Transportation Research Forum, Proceedings of the 24th Annual Meeting, 24(1), 418-29

Damus, S., 1984. "Ramsey Pricing by US Railroads, Can it exist?", *Journal of Transport Economics and Policy*, 18(1), 51-61

Depoorter, B.W.F., 1999. "Regulation of Natural Monopoly", Ghent [online]. Available from <http://encyclo.findlaw.com/5400book.pdf> [Accessed October 26, 2005]

DiMichael, N.J., July 16, 2004. *Ex Parte No. 646*, Joint Written Testimony of several shipper organizations before the US Surface Transportation Board. [online]. Available from www.nitl.org/ExParte646.pdf [Accessed October 28, 2005]

Edsforth, J., 2000. "An Evaluation of Appropriate Compensation for Regulated Railway Running Rights." Canadian Pulp and Paper Association, Western Canadian Shippers' Coalition

Edsforth, J., 2005. Personal communications

Estey, W.J., December 21, 1998. "Grain Handling and Transportation Review", Final Report to the Minister of Transportation

Huettner, D.A., 1982. "Optimal Second Best Pricing of CATV Pole Attachments". *Southern Economic Journal* 48(4), 996-1015

Hume, F.C. "Submission to the Canada Transportation Act Review Panel Re: competitive access issues" October 13, 2000 [online]. Toronto, Ontario. Available from <http://www.reviewcta-examenlrc.gc.ca/Submissions-Soumissions/Nov15/Forrest%20C.%20Hume.pdf> [Accessed October 20, 2005]

Ivaldi M. and McCullough G., 2005 [online]. "Welfare Tradeoffs in U.S. Rail Mergers". Available from <http://idei.fr/doc/wp/2005/ivaldi.pdf> [Accessed October 26, 2005]

Kamerschen, D.R. and Keenan, D.C., 1983. "Caveats on Applying Ramsey Pricing", in Current Issues in Public Utility Economics: in Essays in Honor of James C. Bonbright, edited by Danielson A.L. and Kamerschen, D.R. DC Heath and Company, Lexington, Massachusetts 197-208

Lafond, A. "The Complementary Role of Regulations and Competition Law and Deregulating Industries" from Remarks to the Canadian Bar Association, Annual Fall Conference on Competition Law, Ottawa, October 3-4, 2002, following on an address also by A. Lafond, to the Conference Board Regulatory Reform Program Meeting, February 19, 1999

Morgan, L.J. (Chairwoman of the Surface Transportation Board), March 21, 2001. United States. Congress. Senate Committee on Commerce, Science, and Transportation, Subcommittee on Surface Transportation and Merchant Marine, Hearing on the Surface Transportation Board, March 21, 2001. Testimony of Honorable Linda J. Morgan. Available from <http://commerce.senate.gov/hearings/0321mor.pdf> [Accessed October 28, 2005]

Nober, R. (Chairman of the Surface Transportation Board), June 26, 2003 [online]. United States. Congress. House Committee on Transportation and Infrastructure Subcommittee on Railroads, Hearing on National Rail Infrastructure Financing Proposals. Testimony of Honorable Roger Nober. Available from <http://www.house.gov/transportation/rail/06-26-03/nober.html> [Accessed October 26, 2005]

Ritchie, R.J., December 5, 2000. "Challenge to Policymakers: Help Railways Fulfill Their Potential", speech to Canadian Railway Club, Montréal

Roberts, M.J., 1983. "Railroad Maximum Rate and Discrimination Control", *Transportation Journal*, 22(3), 22-33

Schmalensee R., 1979, "The Control of Natural Monopolies", DC Heath: Lexington, Massachusetts, 30 - 40

Shin, R. T., and Ying, J.S., 1992. "Unnatural Monopolies in Local Telephone." *Rand Journal of Economics* 23(2), 171-183

Tougas, F.E.J. "Report to the Canada Transportation Act Review Panel", October 13, 2000 [online]. Toronto, Ontario. Available from <http://www.reviewcta-examenlrc.gc.ca/Submissions-Soumissions/Jan17/Francois%20Tougas.pdf> [Accessed October 20, 2005]

United States. Surface Transportation Board. Coal Rate Guidelines, Nationwide, *Ex Parte* No. 347 (Sub-No. 1), Interstate Commerce Commission 1 I.C.C. 2d 520; 1985 Lexis 254

United States. Surface Transportation Board. *Market Dominance Determinations – Product and Geographic Competition*, STB Ex Parte No. 627, at 10 (served Dec. 21, 1998); denial of reconsideration in *Market Dominance Determinations – Product and Geographic Competition*, STB Ex Parte No. 627, at 17 (served July 2, 1999), remanded on appeal at *AAR v. STB*, 237 F.3d 676, 680 (D.C. Cir.2001) and, eventually, upholding the STB's decision at 3 *AAR v. STB*, 306 F.3d 1108 (D.C. Cir. 2002)

Williamson, O., 1968. "Economies as an Antitrust Defense: The Welfare Tradeoffs," *American Economic Review*, 58, 18-36

Zajac, E.E., 1978. Fairness or Efficiency: An Introduction to Public Utility Pricing, Ballinger Publishing: Cambridge, Mass.

Wilson W.W. and Bitzan, J., 2003. "Industry Costs and Consolidation: Efficiency Gains and Mergers in the Railroad Industry", Upper Great Plains Transportation Institute, Fargo, North Dakota