

# Statement of Dr. Michael W. Tretheway:

Prepared for  
Canadian Pacific Railway Company

*20 August 2021*

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# 1. Terms of Engagement

## 1.1 Key Abbreviations

1.1.1 Appendix E provides a full list of abbreviations I use in this report.

1.1.2 In particular, I note that in my discussion I will use three abbreviations for corporate entities of Canadian Pacific Railway:

- CPRL – Canadian Pacific Railway Ltd  
The publicly traded parent of CPRC. CPRL is not a railway operating company.
- CPRC – Canadian Pacific Railway Company  
A wholly owned subsidiary of CPRL, and certificated railway operating company.
- CPR-Canada<sup>1</sup>  
The regulated Canadian railway operations of CPRC in Canada.

1.1.3 I will also refer to the following abbreviations regarding CN:

- CNRC: Canadian National Railway Company
- CNR-Canada: The regulated Canadian railway operations of CNRC in Canada.  
It is the regulated Canadian railway operations of CNRL.

## 1.2 Engagement

1.2.1 I have been asked by CPRC to provide comments on issues regarding the Canada Transportation Agency's decision as to the cost of capital (CoC) to be used in the 2020-2021 Volume-Related Composite Price Index (VRCPI). The latter is used in the computation of the Maximum Revenue Entitlement (MRE) for CPR-Canada.

1.2.2 I had provided a statement on 15 June 2020 at the request of CPRC on similar issues.

## 1.3 Questions to be Addressed

1.3.1 CPRC has asked me to address two issues.

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<sup>1</sup> I note that the Annual Report annually submitted to Transport Canada, under Section 50 of the Canada Transportation Act, describes the regulated entity as *Canadian Pacific Railway – Canada*.

## 1.3.2 Issue 1:

The Canadian Transportation Agency (“Agency”) is holding a consultation on whether general purpose activities issued by a railway company should be included in the calculation of that company’s cost of capital rate. If the Agency determines that general purpose activities should be included in the calculation of CP’s cost of capital rate, should the Agency treat general purpose activities differently for CP than it does for CN based upon economic theory, general accounting practice or the guidelines of the Agency’s Uniform Classification of Accounts (UCA)?

## 1.3.3 Issue 2:

Does academic or other reputable research support the notion that a higher level of employee ownership leads to improved corporate performance, creating a benefit for the company?

1.3.4 In addressing this issue, I am instructed that:<sup>2</sup>

- CPRL is the parent of CPRC and the CPRL is the only shareholder of CPRC.
- CPRL is not a railway operating company and is not regulated by the Agency.
- CPRL engages in activities other than its ownership of CPRC.
- It is CPRC that is the railway operating company which has a certificate issued by the Agency.
- CPR-Canada is the Canadian regulated railway operations of CPRC in Canada.
- In the recent past, CPRL used debt financing whose proceeds were to be used for a treasury function of buying back some publicly issued shares of CPRL. The proceeds of the CPRL debt issue were not intended for and were not used for investment in or relending to CPRC.
- In practice, the treasurer of CPRL and CPRC issues debt from CPRC, in part for historical reasons. Specifically, prior to the formation of CPRL as a public company in 2001, debt had been issued by CPRC and is still outstanding. If CPRL were itself to issue debt, there would be a complication as to whether the CPRL debt would be subordinate to the CPRC debt, in which case the cost of debt for CPRL for purposes of the activities of CPRL would be higher.

The proceeds of the debt issued by CPRC for use by CPRL for non-railway purposes is paid by CPRC to CPRL. In some cases this is done as a loan by CPRC to CPRL, which is recorded as an asset by CPRC. In other cases, CPRC pays dividends

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<sup>2</sup> These instructions differ somewhat from those provided to me in my 15 June 2020 statement regarding how debt is issued. This change does not change my opinion.

to CPRL. The payment of dividends by CPRC to CPRL is a normal financial event between the two companies.

## 1.4 My Statement of Identity and Interest

- 1.4.1 I am Dr. Michael W. Tretheway. I reside at 12471 Alliance Drive, Richmond, British Columbia, Canada.
- 1.4.2 I am Executive Vice President and Chief Economist of the Inter *VISTAS* Consulting Group.
- 1.4.3 Inter *VISTAS* Consulting Inc., a Canadian company, is 100% owned by Royal Haskoning DHV based in Amersfoort in the Netherlands. Inter *VISTAS* forms part of the Aviation and Maritime Business Line within Royal Haskoning DHV, a global provider of consultancy and engineering services in the areas of aviation, transportation (rail, ports, ferries), water, environment, building and manufacturing, mining and hydropower.
- 1.4.4 From 1983-1996, I was a full-time tenured faculty member (Associate Professor) in the Sauder School of Business of the University of British Columbia. Since 1997 I have been an Adjunct Professor for most years until age 65, except for short periods between appointment renewals.<sup>3</sup>
- 1.4.5 I do not have any financial interest in the outcome of this proceeding. I do not own any shares of CP or any other railway. My compensation for my services is based on hours worked and my expenses, and has no incentive or penalty based on the outcome of this proceeding.
- 1.4.6 My area of expertise in this matter is in railway transportation economics, including costing, rate setting and valuation.
- 1.4.7 **Appendix A** contains a statement of my qualifications. **Appendix B** provides my Curriculum Vitae.
- 1.4.8 I note that I have had considerable experience with the Uniform Classification of Accounts (UCA) and the U.S. equivalent, the Uniform System of Accounts (USA).<sup>4</sup> My understanding is that the USA of the U.S. was *generally* used by Canada's Board of Railway Commissioners (BRC) and subsequently by its replacement the Board of Transportation Commissioners, prior to 1955. At that time the Canadian UCA was created to reflect unique Canadian aspects and practices of railway accounting and reporting.<sup>5</sup> I began my

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<sup>3</sup> I do not currently hold an appointment as an Adjunct Professor.

<sup>4</sup> To avoid confusion, I note that I use the abbreviation USA to denote the Uniform System of Accounts of the U.S. Surface Transportation Board (STB). I do not use it to denote the United States of America. For that I use U.S.

<sup>5</sup> As an example, the USA and UCA differed in terms of whether investments in track materials would be expensed or capitalized-depreciated.

career as a researcher on U.S. and Canadian railway economics in 1976,<sup>6</sup> and have 45 years experience with the UCA and USA. I was heavily involved in the regulatory process which created the Uniform Rail Costing System (URCS) in the U.S., which had as its first step the revamping of the USA by a temporarily convened Railway Accounting Principles Board. Beginning in 1976 I was immersed in a series of studies of the productivity of the U.S. and Canadian rail sectors,<sup>7</sup> funded by the U.S. National Sciences Foundation and by Transport Canada. I was asked to join the editorial board of the then Journal of Finance and Accounting as an advisory editor specifically because of my knowledge of the economics base of accounting issues in the regulatory context.

## 1.5 Documents Reviewed and Assumed Facts

- 1.5.1 **Appendix C** provides a list of documents that were provided to me by CPRC. I have reviewed these documents.
- 1.5.2 **Appendix D** provides a list of documents I obtained on my own initiative and which were used, in part, in the formation of my opinion.
- 1.5.3 Assumed Facts include those stated at 1.3.4, above, and that the Agency's decision regarding the CPR-Canada deemed debt were based on a 2009 decision of the Agency pertaining only to Canadian National Railway Company – Canada.

## 1.6 Summary of My Opinion

- 1.6.1 **Issue 1:**  
The Canadian Transportation Agency ("Agency") is holding a consultation on whether general purpose activities issued by a railway company should be included in the calculation of that company's cost of capital rate. If the Agency determines that general purpose activities should be included in the calculation of CP's cost of capital rate, should the Agency treat general purpose activities differently for CP than it does for CN based upon economic theory, general accounting practice or the guidelines of the Agency's Uniform Classification of Accounts (UCA)?

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<sup>6</sup> A key aspect of this research was to compare the superior productivity and financial performance of the Canadian railways after the reforms of Canada's McPherson Commission to the performance of U.S. railroads, many of which were bankrupt. This comparison was influential in the subsequent reforms in the U.S. that were embodied in the Staggers Act of 1980.

<sup>7</sup> In order to achieve comparability of cost and productivity measures of the U.S. and Canadian rail carriers, it was necessary for me to undertake detailed comparisons of the USA and UCA so that we could make adjustments to ensure comparability. As an example, the U.S. USA had allowed/instructed carriers to expense annual expenditures on ties, rails and ballast while in Canada these were capitalized. To reconcile the differences, we removed these expenses from each of the roughly 50 U.S. Class I railways' accounts, capitalized the expenditures and introduced depreciation of these capitalized amounts into the annual U.S. railway operating expenses. After the revised USA was implemented in the early 1980s, this was no longer needed.

1.6.2 *Opinion*

First, I am advised by CPRC that the Agency action to adjust the debt and equity of CPR-Canada, the regulated entity, is based on the Agency's 2009 decision regarding Canadian National Railway Company's (CNRC) share buy-back.<sup>8</sup> However, the corporate structures of these two railways are fundamentally different.

1.6.3 In the case of CNRC, the company issuing shares and debt to the market is the same company that is the railroad operator. The regulated entity is the Canadian operations of that company. My understanding is that the 2009 Agency decision regarding CNRC considered the actual debt and actual equity of the CNRC as that company undertook a treasury transaction for share buy-back purposes.

1.6.4 The Agency emphasised that the activity (the share buy back transaction) was for the same company that operates the railway when it said

*The Agency does not consider debt incurred for the purpose of buying back shares **in a company whose primary, if not exclusive, business line is the railway business** to be appropriately classified as identifiable non-rail debt within the meaning of Agency Decision No. 125-R-1997.<sup>9</sup> [emphasis added]*

1.6.5 This is different from the case of CPR-Canada. The latter is the regulated Canadian railway operation of CPRC in Canada. CPRC has no shares other than those owned by CPRL, and no shares of CPRC have been repurchased by either of CPRC or CPRL. CPRL's share purchases were only of CPRL shares, and these are not shares of the railway operating company, CPRC.

1.6.6 It is my opinion that the circumstances of the two operating railways are not equivalent. Notwithstanding whether the Agency's 2009 adjustment of the capital structure debt and equity shares of CNR-Canada was a justifiable action of the Agency, a matter on which I have not been asked to provide an opinion, it is my opinion that using the CNR-Canada decision as justification for adjusting the CPR-Canada capital structure shares would be inappropriate.

1.6.7 Notwithstanding whether it was appropriate for the Agency's 2020 decision to adjust the capital structure of CPR-Canada for a treasury transaction of CPRL, the result of the Agency's deemed changes to debt and equity of CPR-Canada was that there was a dramatic increase in its debt to equity ratio. This had the consequence of significantly lowering the CoC of CPR-Canada both because of a dramatically increased deemed debt equity ratio of CPR-Canada, and because the Agency did not adjust the cost of debt (and equity) to recognize the increased risk to investors from the tripling of the debt to equity

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<sup>8</sup> Canada Transportation Agency Letter Decision No. LET-R-49-2009.

<sup>9</sup> CP Submission 20 August 2021., p. 1.

- ratio.
- 1.6.8 Notwithstanding the increased deemed debt to equity ratio of CPR-Canada, the actual debt to equity ratio of CPRL (the entity where the debt acquisition for treasury purposes actually took place) has changed only slightly since 2014.
- 1.6.9 There are alternatives that the Agency could have considered to its decision to apply its 2009 adjustments for CNR-Canada's cost of capital to CPR-Canada.
- 1.6.10 The Agency could have ignored the treasury transaction of CPRL for two reasons. The first is that the CNR-Canada 'precedent' should not apply to CPR-Canada since the former's treasury action was in the same company that operates the railway while that is not the case for CPR-Canada.
- 1.6.11 Second, the Agency could have utilized the capital structure of CPRL when determining the CoC of CPR-Canada. Adjustments would need to be made but the capital structure of CPRL is more reflective of the debt to equity ratio of CPRC's Canadian railway operations than the arbitrarily deemed financial structure of CPR-Canada action of the Agency.
- The market has judged that CPRL has a higher CoC than CNRC. These are the two entities whose shares are actually traded in the marketplace. The market's judgment is that the ratio of the CoC of CPRL to the CoC of CNRC is 107%.<sup>10</sup> The Agency finding is a ratio of 92%.<sup>11</sup>
  - The Agency decision regarding deemed debt of CPRC resulted in a reversal of the rankings of the two companies.
  - To underscore the point, the debt to equity ratio for CPRL is 2.2 whereas the Agency's methodology deems a ratio for CPR-Canada of 6.7. The ratio of these two is more than a factor of three. This determination of the Agency is difficult to reconcile on a common sense basis to how the operations of CPR-Canada are financed.
  - Further, as pointed out by CPRC, should CPRL continue to buy back shares of CPRL, then applying the Agency's methodology would eventually result in CPR-Canada having zero equity,<sup>12</sup> an implausible result as no shares of CPRC have been bought back.
- 1.6.12 It is my opinion that this type of complication when introducing non-railway capital structure

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<sup>10</sup> Bloomberg Terminal, 20 August 2021.

<sup>11</sup> This percentage is calculated from the cost of capital rates the Agency published in Decisions LET-R-29-2020 and LET-R-30-2020. CP's cost of capital rate was determined to be 4.79% and CN's cost of capital rate was determined to be 5.19% ( $4.79 / 5.19 \times 100 = 92\%$ ).

<sup>12</sup> *Ibid.*, p. 12.



accounting activity into the accounting for the regulated railway entity, especially when the treasury action is that of a parent corporation, is one reason why the UCA guidance is to confine regulatory accounting to railway transactions and to exclude non-rail costs, revenues, *debt and equity*.

- 1.6.13 In sum, it is my opinion that the Agency action of deeming debt to CPR-Canada from the parent company's treasury transaction, was not consistent with the UCA, the Agency's decision regarding CNR-Canada is not a precedent for CPR-Canada due to different corporate structures, and was arbitrary. My opinion is that the best choice regarding CPR-Canada is to follow the guidance of the UCA and ignore the CPRL non-rail treasury transaction.
- 1.6.14 Should the Agency nevertheless decide to deem non-rail debt to the balance sheet of CPR-Canada, the alternative it could consider is to use the CPRL capital structure when computing the CPR-Canada CoC. This would result in a financial structure and cost of capital more reflective of the market's judgement of cost of capital of the two railways. Another option would be to recognize a loan (account receivable) to CPRL as an asset rather than the unexplained reduction in CPR-Canada's equity.
- 1.6.15 **Issue 2**  
Does academic or other reputable research support the notion that a higher level of employee ownership leads to improved corporate performance, creating a benefit for the company?
- 1.6.16 *Opinion*  
The Agency made a claim to this effect in paragraph 17 of LET-R-29-2020, dated 28 April 2020. It seems to be offered as justification as to why a treasury transaction of the parent of CPR-Canada should be considered railway related, hence included in the computation of the CoC of CPR-Canada.
- 1.6.17 It is my opinion that this justification is hypothetical.
- 1.6.18 The productivity/employee performance claim is not based on any evidence. The evidence in the literature that is available on the effect of employee ownership on company performance is mixed.
- 1.6.19 Further, there is no evidence that the CPRL treasury transaction to buy-back shares would actually increase the percent of current employee share ownership. Some of the bought back shares could be those of past employees and current employees may have previously sold their shares or sold their shares after the buyback.

## 2. Issues Regarding the CoC Adjustments Made by the Agency

### 2.1 Introduction

2.1.1 This section begins with a brief discussion of the UCA. I address why the Agency decision regarding CNR-Canada is not an appropriate precedent for the corporate organizational structure of CPR-Canada. I provide my observations on the Agency adjustments to CPR-Canada's capital structure, suggesting three alternative actions the Agency could take.

### 2.2 The UCA

2.2.1 Federal railway regulation in North American began with the passage of the U.S. Interstate Commerce Act (1887),<sup>13</sup> which enabled federal regulation of railroads. As the Interstate Commerce Commission developed its capabilities for rail rate (and other) regulation, it developed standards for how railroad companies were to report financial and operational data.<sup>14</sup> By roughly 1931, this became formalized in the Uniform System of Accounts (USA).

2.2.2 In Canada, the Board of Railway Commissioners (BRC), created by the *Railway Act* (1903), was the original federal regulator of railway rates (and other aspects of railway conduct). My understanding is that prior to 1956, the BRC utilized much of the U.S.'s USA, although with some differences. Canada's UCA was first published in 1955, with 1957 being the first year that carriers reported data using the accounting guidelines. It is generally similar to, and indeed partially based on, the US' USA.<sup>15</sup>

2.2.3 The Agency describes the history of its UCA as follows:<sup>16,17</sup>

"The UCA was first issued in September 1955 by the Board of Transport Commissioners for Canada, the predecessor of the Canadian Transport Commission. This first UCA was prescribed effective January 1, 1956, for the existing Class I railway companies (Canadian National Railway and the Canadian

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<sup>13</sup> Prior to the 1887 federal act, there were cases of state level rail rate regulation in the U.S.

<sup>14</sup> An interesting discussion is found in a 1913 paper: Frank Nay, 1913, Uniform Methods of Railway Accounting, *Journal of Political Economy*, Vol. 21 No. 10., pp 881-912.

<sup>15</sup> Many of the sections have identical numbering in the UCA and USA.

<sup>16</sup> Canada Transportation Agency, "Uniform Classification of Accounts and related railway records," undated.

<sup>17</sup> The BRC was replaced by the Board of Transport Commissioners in 1938 when airline rate regulation began, which in turn was replaced by the Canadian Transportation Commission in 1967. This was replaced by the National Transportation Agency and finally by the CTA.

Pacific Railway Company at that time). Subsequently, a condensed classification of accounts was prescribed for all other railway companies within the legislative authority of the Parliament of Canada effective January 1, 1957.

There then followed a series of amendments which were incorporated into a revised version of the UCA which became effective January 1, 1959. This version, in turn, received a number of comparatively minor amendments which were documented in Accounting Circulars Nos. 8, 9, 10 and 11.

Apart from the above modifications, the 1959 version of the UCA was in effect for over twenty years. This document and its predecessors were \ upon the Uniform System of Accounts for Railroad Companies, a classification of accounts dating back to the early 1900's and issued by the United States Interstate Commerce Commission.

In late 1977, the Canadian Transport Commission's Railway Transport Committee commissioned a comprehensive review with the objective of bringing the UCA into line with generally accepted accounting principles, facilitating rail cost analysis, as well as updating and streamlining the document. Significant changes were made to the structure, content and form of the UCA.

The UCA was reissued in January 1989 as a result of the coming into force of the National Transportation Act, 1987 (NTA, 1987). Amendments to the UCA were issued during 1991. On July 1, 1996, the Canada Transportation Act (CTA) came into effect. Amendments to the UCA were issued in 2009."

- 2.2.4 One important difference between Canada's UCA and the U.S.' USA regards a more explicit recognition that a railway operating entity may be a division of a company that undertakes significant non-rail activities. Until 1971, Canadian Pacific Railway Company (incorporated in 1881) was a diversified company with operations in other transport sectors (aviation and maritime), mining, hotels, and real estate.<sup>18</sup> Thus, Section 1202 of the UCA defines "Canadian Rail Operations" and indicates that regulation by the Agency and the reporting of data is to be only for rail operations in Canada. Financial information for non-railway operations and activities were not to be included in regulatory reporting to the Minister of Transport or the Agency.
- 2.2.5 While U.S. railroads historically had some non rail operations and activities within the railroad corporate entity, these were not of the same extent relative to railway operations as was the case for Canadian Pacific Railway Company (1881) prior to the creation of Canadian Pacific Ltd. Thus, the Canadian UCA has an important focus on confining the

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<sup>18</sup> Canadian Pacific Ltd. was created in 1971 as a holding company for CPRC and other companies/business (airlines, hotels, mining, ships, ...). CPRC retained the railway business in Canada and the U.S. and a few other businesses.

reporting of accounting and operations data to railway operations.<sup>19</sup> The U.S. is more greatly focused on accounting issues related to the large number of Class I railway mergers and acquisitions, something that has been a minor issue in Canada since the formation of CN.

## 2.3 The Agency's Adjustment to the Capital Structure of CPR-Canada

- 2.3.1 CPRC provided me with Agency letter LET-R-20-2020, regarding the CoC rate for use in determining the VRCPI for 2020-21. The VRCPI in turn is a factor in the Agency's determination of CP's maximum revenue entitlement (MRE) for transporting certain grains in Western Canada to export ports.
- 2.3.2 In the letter, the Agency discusses (Issue 1) whether general purpose debt should be considered as rail related when determining CPR-Canada's capital structure. The capital structure regards the portion of capital that is financed by debt, equity and some other elements.
- 2.3.3 I do not repeat the Agency's analysis and findings, other than to note the following broad characteristics that are relevant to my opinion in this report.
- The debt associated with a CPRL share buy-back treasury transaction was deemed by the Agency to be included in the CPR-Canada capital structure.
  - The Agency does not directly state this, but it reduced the equity of CPR-Canada by an identical amount.<sup>20</sup>
- 2.3.4 The latter seems to have been an unexplained assumption by the Agency.
- 2.3.5 I am advised by CPRC that in some cases cash provided by CPRC to CPRL is via a loan which would be recorded as an asset for CPRC, balancing the accounts for the payment of cash to CPRL. Notwithstanding whether any adjustment to the financial structure of CPR-Canada for share buyback associated debt is appropriate, the Agency could have recognized an asset (a loan) for CPR-Canada as the offset to the deemed debt, rather than reduce the equity balance of CPR-Canada. This would not have increased the debt-equity ratio of CPR-Canada to the same degree as the Agency's reduction of equity.
- 2.3.6 It is also important to note that there was no purchase of CPR-Canada shares by CPRL or

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<sup>19</sup> The USA also confines regulatory accounting and operational data reporting to railroad activities, but its focus is (part 1201) more on issues of accounting, issues of railway mergers, bankruptcies and acquisitions.

<sup>20</sup> Inferred from Canadian Transportation Agency, Confidential Appendix B to Decision number LET-R-29-2020.

- by CPRC.<sup>21</sup> Thus, the Agency's unexplained equity adjustment seems inappropriate.
- 2.3.7 As is discussed by CPRC in its Submission in this consultation,<sup>22</sup> the consequence of the Agency's increase in debt and corresponding decrease in equity is that the capital structure, i.e., its debt-equity ratio,<sup>23</sup> increased considerably. The deemed debt-equity ratio of CPR-Canada became 6.7, compared with the debt-equity ratio of CPRL of 2.2. CNRC's debt to equity ratio is 1.4.<sup>24</sup>
- 2.3.8 It is my view that the tripling of the debt-equity ratio of CPR-Canada as a consequence of the Agency decision, and the reversal of the cost of capital ranking of CPR-Canada relative to CNR-Canada vis a vis the market ranking of the cost of capital of the financial market traded entities CPRL vs CNRL are indications of the implausibility of the Agency's decision. Ultimately the Agency decision needs to reconcile on a common sense basis with the market judgement of the cost of capital of operating the two railways, CPRC and CNRC.
- 2.3.9 It is my opinion that these types of complications when introducing non-railway accounting activity into the accounting for the regulated railway entity is one reason why the UCA guidance is to confine regulatory accounting to railway transactions and to exclude non-rail costs, revenues, debt and equity.

## **2.4 The Agency's Treatment of CNR-Canada's Debt for Share Buy-Back Purposes Is Not a Precedent for Application to CPRC as the Corporate Structures Are Different**

- 2.4.1 The Agency's decision to adjust the debt of CPR-Canada is based on the Agency's decision regarding CNRC's issuance of debt for its own share buy-back program.<sup>25</sup>
- 2.4.2 However, the corporate structures of the two railways are fundamentally different.
- 2.4.3 In the case of CN, the company issuing shares to the public and debt to the bond market is the same company that is the railroad operator, Canadian National Railway Company (CNRC). The regulated entity is the Canadian operations of that company (CNR-Canada).

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<sup>21</sup> Another possibility is that CPRC could have transferred cash from new debt to CPRL via a dividend, which would reduce its retained earnings. However, the CP annual reports reveal relatively stable dividend payments for several years prior to and after the share buyback program of CPRL.

<sup>22</sup> CP Submission 20 August 2021, p. 11.

<sup>23</sup> Strictly speaking there are the other small elements other than debt and equity to consider, as per the previous footnote.

<sup>24</sup> Computations based on figures in Tables 1 and 2 of CPRC's 20 August 2021 submission.

<sup>25</sup> CTA LET-R-29-2020, paragraph 7 and following.

- 2.4.4 My understanding is that the 2009 Agency decision considered the actual debt and actual equity of CNRC, as that company undertook a treasury transaction for share buy-back purposes.
- 2.4.5 This is different from the case of CPR-Canada.
- 2.4.6 CPR- Canada is the regulated Canadian railway operations of CPRC in Canada. It is CPRL, not CPRC, that undertook a treasury transaction for purposes of share buyback. No shares of CPRC were bought by CPRL, nor bought back by CPRC. In the CN case, CNRC bought back its own shares.
- 2.4.7 It is my opinion that the circumstances of the two operating railways are not equivalent. Notwithstanding whether the Agency's adjustment of the capital structure debt and equity shares of CNRC was a justifiable determination of the Agency, a matter on which I have not been asked to provide an opinion, it is my opinion that using the CNRC decision as justification for adjusting the CPR-Canada capital structure shares was inappropriate.

## 2.5 Alternatives to the Agency's Adjustment and Recommendation

- 2.5.1 Notwithstanding whether any deemed adjustment to financial capital structure of a regulated railway is appropriate, there are alternatives that the Agency could have considered.
- 2.5.2 The Agency could have ignored the treasury transaction of CPRL for two reasons. The first is that the CNRC 'precedent' should not apply to CPR-Canada since the former's treasury action was in the same company that operates the railway while that is not the case for CPR-Canada. It is my opinion that the UCA guides the choice of this option, as I discussed earlier.
- 2.5.3 Second, the Agency could have utilized the capital structure of CPRL when determining the CoC of CPR-Canada. Adjustments would need to be made, but the capital structure of CPRL is more reflective of the debt to equity ratio of railway operations than the arbitrarily deemed financial structure of CPR-Canada action of the Agency.
- 2.5.4 Another alternative, discussed by CP in its Submission,<sup>26</sup> would have been to recognize an asset, a loan to CPRL, when the Agency deemed debt to CPR-Canada from the share buyback transaction.

## 2.6 Opinion

- 2.6.1 In sum, it is my opinion that the Agency action of deeming debt to CPR-Canada from the

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<sup>26</sup> CP Submission 20 August 2021, see Section C.i.

CPRL share buyback treasury action not consistent with the UCA, was arbitrary with an unexplained CPR-Canada deemed equity reduction, and the 2009 Agency decision regarding deemed equity for CNR-Canada should not be a precedent for CPR-Canada due to different corporate structures.

- 2.6.2 My opinion is that the best choice regarding CPR-Canada is to follow the guidance of the UCA and ignore the CPRL non-rail treasury transaction.
- 2.6.3 Should the Agency nevertheless decide to deem non-rail debt to the balance sheet of CPR-Canada, it could use the CPRL capital structure when computing the CPR-Canada CoC, or it could have recognized a deemed loan asset.

### 3. Employee Ownership and Corporate Performance

#### 3.1 The Agency Comment

- 3.1.1 At paragraph 17 of the Agency's LET-R-29-2020, dated April 28, 2002, the Agency states:<sup>27</sup>

*"17. The Agency notes that share buy-backs will also reduce the number of outstanding shares on the market, which increases the relative ownership stake of the remaining stakeholders. Many CP employees receive stock as a form of incentive-based compensation ... The possibility of an increase in ownership stake may lead to an increase in employee performance, **which is rail-related.**"*  
[emphasis added]

#### 3.2 There is No Evidence Offered for the Agency's Contention

- 3.2.1 First, I observe that the last sentence in the paragraph 17 is not supported by any evidence. It is a hypothetical statement. I provide some comments on what evidence is available momentarily.
- 3.2.2 Second, the Agency's contention is that share buybacks could possibly create a railway benefit via greater railway employee motivation. This too is hypothetical simply because employees may have sold some or all of their shares. It is possible that some current employees have previously sold and surrendered their shares, or may have done so following a buy-back transaction. I (and I suspect the Agency) have observed past employee share ownership plans where almost immediately upon receipt of the shares a large number of employees sold those shares.<sup>28</sup>

#### 3.3 The Research Evidence on the Link Between Employee Share Ownership and Corporate Performance Is Mixed

- 3.3.1 Third, there is no strong evidence that employee share ownership is linked to improved corporate performance.
- 3.3.2 For several decades, and in many economic sectors, there have been cases of employee share ownership of the companies they work for. Such ownership is found in many

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<sup>27</sup> This paragraph was repeated in Canada Transportation Agency CONF-9-2020 (31 Dec 2020) at paragraph 27.

<sup>28</sup> In particular, I am thinking of one of two rounds of employee share ownership of Canadian Airlines International.



- countries including Canada, where formal programs for employee ownership of railways and airlines have been implemented.
- 3.3.3 The relationship between employee ownership and corporate performance has been investigated by a number of researchers – academic as well as consultants and industry organizations. The findings have been mixed. Some researchers have found positive relationships, while other have found negative ones. This should not be surprising as share ownership schemes are often part of compensation packages and negotiations, and as non-cash compensation can be resented by some employees. Many employees and their families have pressing cash needs and replacing certain and immediate cash income with uncertain future investment income creates hardship, greater cash flow problems for the employee and her/his family, and can be accompanied by resentment toward the employer, not improved employee performance.<sup>29</sup>
- 3.3.4 Further, the perception of any benefit by employees of share ownership can vary with the business cycle.
- 3.3.5 In reviewing academic and other research on the issue of whether there is a link between employee share ownership and corporate performance, one paper stands out. This paper, in the *Human Resources Management Journal*, was a meta analysis, meaning that they surveyed and synthesized the finding of multiple studies (102 studies covering data on 56,984 firms) in multiple academic disciplines.<sup>30</sup> The authors observed that employee ownership has been an area of significant practitioner and academic interest for the past four decades, but the empirical results on the relationship between employee ownership and firm performance remains mixed. They found no impact or effect for stock or stock option-based ownership plans, nor was there an effect linked to firm size (measure by number of employees). There were some positive findings in some studies, but no overall consensus or conclusion emerges from the studies.
- 3.3.6 Another particularly insightful paper examines the performance effect of different types of employee share ownership structures: Profit Sharing Plans, Employee Stock Ownership Plans, Stock Option Plans and Team Incentive Plans, rather than lumping all forms of employee share ownership together. Using data from South Korea, they found that productivity effects depends on type of ownership/incentive structure. In particular, profit sharing plans can be effective, but they found no productivity effects in relation to employee stock ownership plans or stock options plans.

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<sup>29</sup> This can be true not only for cases of reduction in employee wages for shares, but also for receiving shares in lieu of growth in income.

<sup>30</sup> "Employee Ownership and Firm Performance: A Meta-Analysis," on *Human Resources Management Journal*, 2010, By H. Ernest O'Boyle, C Pankaj Patel, and Erik Gonzalez-Mule.

### **3.4 Opinion: The Agency Comment Linking Higher Railway Performance (Hence Making the Treasury Transaction Rail Related) is Hypothetical and Not Evidence Based**

- 3.4.1 The Agency comment in its paragraph 17 seems to be offered as justification as to why a treasury transaction of the parent of CPR-Canada should be considered railway related, hence included in the computation of the CoC of CPR-Canada.
- 3.4.2 It is my opinion that this argument is hypothetical and not supported by evidence. The evidence that is available from the literature appears to be mixed. Further, there is no evidence that the treasury transaction to buy-back shares would actually increase the share of employee share ownership.

## 4. Signature

I am the person primarily responsible for the content of this statement. The above is my statement and opinion.

A handwritten signature in black ink that reads "M W Tretheway". The signature is written in a cursive style with a horizontal line underneath the name.

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Michael W. Tretheway  
*signed in Richmond, British Columbia*  
*20 August 2021*

## **Appendix A: Statement of Qualifications**

## Statement of Qualifications of Dr. Michael W Tretheway

I have been a researcher and educator in the field of railway economics and costing since 1976. Railway economics was my first area of specialisation in the general field of transportation economics.

As described in Appendix B, I have published one book and several peer reviewed papers on various topics in railway economics since 1976.

I note in particular the book (item A4 on my CV), which was an examination of the growth and performance of Canadian railways. The key results of that book have been updated three times in journal articles or reports.

I have published a series of papers, many of which were peer reviewed, on the subject of the economic performance of the railway industry. These included research on economic efficiency in the industry as well as the performance of individual carriers. Key papers include the following papers in Appendix B: B2, B4, C5, C27, C32 and C35. I have studied railway costing methodologies, both in my academic career and in my consulting practice.

I was a member of the Productivity and Costing Committees of the Association of American Railroads during the late 1980s and early 1990s.

On behalf of the Association of American Railroads I participated in the Ex Parte 431 development of the Uniform Rail Costing System (URCS), used in the U.S. for regulatory proceedings regarding railway rates. I use the URCS, as well as other railway costing systems, in my consulting practice. In the research undertaken during the development of URCS, I became familiar with the costing systems used by several rail carriers. Since then I have been an advisor to several railways on costing issues, including CN, CP and Queensland Rail. This work included both the determination of long-run variable cost for specific traffic, as well as determination of stand-alone costs.

I have also been engaged by the Canadian Transportation Agency to assist them in the development of rail input price indices used in regulatory proceedings.

Recently the Surface Transportation Board of the U.S. commissioned a team that I headed as Principal Investigator to provide an independent assessment of the Board's stand-alone cost (SAC) rate reasonableness methodology. Among other things, I led an examination of potential alternative methodologies to SAC that could be used to reduce the time, complexity, and expense historically involved in rate cases. We concluded that while SAC is appropriate for rate cases, the Board's simplified methodologies were also appropriate alternatives to SAC. Our simulation of two past full SAC rate cases determined that the simplified approaches would likely have led to the same result as the more time-consuming and expensive full SAC approach. I was invited to participate in an economic roundtable in Washington D.C. in October 2016 with economists from the National Academy of Sciences, Georgetown University and the Surface Transportation Board to discuss the findings of the study.

I have been an advisor to governments on rail and freight shipping issues, including the Competition Bureau (Canada), the Government of Alberta, the Bureau of Transport Economics (Australia) and the New Zealand Commerce Commission.

I have participated in a number of roundtables on rail economics and supply chain issues for the International Transportation Forum of the Organization for Economic Cooperation and Development.

I have served as an advisor or consultant to government agencies. For example:

- The Competition Bureau (Canada)
- The Canadian Transportation Agency
- Transport Canada
- The Minister of Transport (Canada)
- The Canada Transportation Act Review Panel
- The U.S. Surface Transportation Board
- The New Zealand Commerce Commission
- The Australian Bureau of Transport and Communication Economics;
- The City of Churchill;

to rail carriers and rail carrier associations, including:

- CN
- Canadian Pacific Railway Company
- BC Rail
- Rocky Mountain Railtours
- Quebec North Shore and Labrador Railway
- Queensland Rail
- The Railway Association of Canada;
- The Association of American Railroads;

to shippers, e.g.:

- Canfor
- Husky
- Western Coal Transportation League;

To terminal operators:

- BC Marine Terminal Operators Association
- Ashcroft Terminals

to labour organisations:

- The Canadian Union of Public Employees
- The Canadian Auto Workers

to a consumer group:

- The Consumers Association of Canada;

to roughly 100 airports in Canada, the U.S., Europe, Asia, Latin American and Australasia

to airlines in Canada, the U.S., Europe, Asia and Australasia:

to aviation industry organisations:

- The International Air Transport Association
- Airlines for American (formerly the Air Transport Association)
- The Canadian Airports Council
- The Australia Airports Association
- SITA
- National Business Aviation Association;
- The Canadian Business Aviation Association;
- The Helicopter Association of Canada;
- Canadian Owners and Pilots association;

to tourism organisations:

- Council of Tourism Associations of British Columbia
- Tourism British Columbia

- Tourism Nova Scotia
- Tourism Saskatchewan
- Puerto Rico Dept. of Tourism
- The Council of Ministers Responsible for Tourism;

Among others, I have provided expert witness statements on behalf of:

- Canadian Pacific Railway (CP) before rail rate arbitrators pursuant to Federal legislation;
- CN before rail rate arbitrators;
- Quebec North Shore & Labrador Railway before a rail rate arbitrator;
- CN and CP before the Canada Transportation Agency on issues of rail service.
- Hallcon Transportation Services before the B.C. Motor Carrier Commission and its replacement the BC Passenger Transportation Board;
- Rocky Mountaineer Rail Tours Ltd. before the Canada Transportation Act Review Panel;
- the (Canadian) Competition Bureau before the (Canadian) Competition Tribunal and the National Transportation Agency;
- Qantas and British Airways before the Australian Trade Practices Commission;
- Qantas before the New Zealand Commerce Commission;
- Lufthansa, SAS and United before the Commission of the European Union;
- Comair before the South African Air Services Licensing Board;
- T1T2LP (Terminal 1 – Terminal 2 Limited Partnership) before the Federal Court of Canada;
- The International Air Transport Association before the Australian Competition and Consumer Commission;
- Airport operators in Sydney Australia, Gander Newfoundland and Sault Ste. Marie before property assessment commissions and/or courts regarding valuation of airport infrastructure properties.
- the British Columbia tourism coalition for improved air services (BC AIM) before the Canada Transportation Act Review Panel;
- the Canadian Airports Council before the House of Commons Standing Committee on Finance;
- The Toronto Port Authority before the federal court regarding allocation of airport slots;



- The Port of Prince Rupert before a commercial arbitrator in a rate dispute with a shipper; and
- AUT Technologies before the Federal Court in the United States.

I have provided expert witness statements in several labour arbitrations, including for:

- The Canadian Auto Workers representing the pilots of Morningstar Airlines.
- The Canadian Auto Workers representing airline customer service agents.
- The Canadian Air Line Pilots Association, in several arbitrations.
- The Air Line Pilots Association, in several arbitrations.
- The Canadian Union of Public Employees representing flight attendants.

My qualifications to comment on issues regarding rail transport economics have never been rejected in any of the forums in which I have appeared as an expert witness.

## **Appendix B: Curriculum Vitae**

# Curriculum Vitae

## MICHAEL WILLIAM TRETHEWAY

Updated August 2019

### *EDUCATION*

- a) Graduate
  - 1981: University of Wisconsin-Madison, Ph.D. (Economics)
  - 1978: University of Wisconsin-Madison, M.S. (Economics)
  - 1976: University of Wisconsin-Milwaukee, M.A. (Economics)
- b) PhD - Thesis Title
  - "Productivity Growth and Returns to Scale in the U.S. Trunk Airline Industry, 1972-1978"
- c) Undergraduate
  - 1974: University of Wisconsin-Milwaukee, B.A. (Economics)

### *PROFESSIONAL EMPLOYMENT RECORD*

- 1999-present Executive Vice President & Chief Economist, Inter *VISTAS* Consulting Group.  
Various times served as Chief Strategy Officer and Chief Operating Officer
- 1997-1998 Vice President, Marketing Services, Vancouver International Strategic Services Ltd., subsidiary of the Vancouver International Airport Authority
- 1997-2017 Adjunct Professor, University of British Columbia, Faculty of Commerce and Business Administration/Sauder School of Business, (most years)
- 1994-1996 Special Advisor to the President, Vancouver International Airport Authority
- 1988-96 Associate Professor, Faculty of Commerce and Business Administration, University of British Columbia
- 1983-88: Assistant Professor, Faculty of Commerce and Business Administration, University of British Columbia
- 1978-83: Senior Economist/Research Associate, Laurits R. Christensen Associates, Inc.,  
Research Associate, Department of Economics, University of Wisconsin

1976-81: Research Assistant, Economics, University of Wisconsin

1973-75: Tutor, Department of Learning Skills, University of Wisconsin-Milwaukee

### ***FELLOWSHIPS***

1994 Visiting Fellow, Australian Bureau of Transport and Communications Economics

### ***PROFESSIONAL MEMBERSHIPS***

Various years

Air Transport Research Society

American Economics Association

Association for Public Policy Analysis and Management

Canadian Economics Association

Canadian Transportation Research Forum

Econometric Society

German Aviation Research Society

Midwest Economics Association

National Association of Business Economists

Transportation and Public Utilities Group, AEA

Transportation Research Forum

Western Economics Association

### ***PROFESSIONAL PAPERS***

#### **A. Books and Monographs**

1. *Airline Economics: Foundations for Strategy and Policy*, 1992, Centre for Transportation Studies, Vancouver.
2. *Productivity in the Canadian Lumber Industry: An Inter-regional Comparison*, Forestry Canada, Information Report 0-X-411, Great Lakes Forestry Centre, 1990 [with A. Ghebremichael and D.G. Roberts].
3. *Airline Deregulation, a special issue of the Logistics and Transportation Review*, editor and author of introduction, Volume 22 (4), December 1986.
4. *Identifying and Measuring the Impact of Government Ownership and Regulation on Airline Performance*, report submitted to Economic Council of Canada and Consumer and Corporate Affairs Canada, March 1985, revised October 1986, published as a

- refereed technical report by the Economic Council of Canada 1987 [with T.H. Oum and D.W. Gillen].
5. *The Growth and Performance of the Canadian Transcontinental Railways: 1956-1981*, Centre for Transportation Studies, University of British Columbia, Vancouver, 1987 [with K.D. Freeman, T.H. Oum and W.G. Waters II].
  6. *Deregulation and Airline Employment: Myth Versus Fact*. Centre for Transportation Studies, University of British Columbia, Vancouver, 1986 [with R.J. Andriulaitis, D.L. Frank and T.H. Oum].
  7. *Airline Cost and Performance: Implications for Public and Industry Policies*, Centre for Transportation Studies, University of British Columbia, Vancouver, 1986 [with T.H. Oum and D.W. Gillen].
  8. *Canadian Airline Deregulation and Privatization: Assessing Effects and Prospects*, Centre for Transportation Studies, University of British Columbia, Vancouver, 1985 [with T.H. Oum and D.W. Gillen].

## B. Chapters in Books

1. "Airport Competition for Freight," (with R. Andriulaitis), in P. Forsyth, D.W. Gillen, J Mueller and H.M. Niemeier (eds.), *Airport Competition, the European Experience*, Ashgate publishing, 2010, pp. 137-147.
2. "Competition between airports: occurrence and strategy," (with I. Kincaid), in P. Forsyth, D.W. Gillen, J Mueller and H.M. Niemeier (eds.), *Airport Competition, the European Experience*, Ashgate publishing, 2010, pp. 119-136.
3. "Airport Policy in Canada: Limitations of the Not-for-Profit Governance Model," (with R. Andriulaitis), in C. Winston and Gines de Rus (eds), *Aviation Infrastructure Performance: A study in comparative political economy*, Brookings, 2008, pp. 136-155.
4. "Airport Marketing: An Oxymoron?" in G. Butler (eds.), *Handbook of Airline Marketing*, McGraw Hill, 1998.
5. "Impediments to Liberalization in Asia Pacific International Aviation," in C. Findlay (ed.), *Asia Pacific Air Transport*, 1997, pp. 65-73.
6. "Canada-U.S. Open Skies" in C. Findlay (ed.), *Asia Pacific Air Transport*, 1997, pp.154-169.
7. "Costing the Movement of Hazardous Materials by Rail," (with W.G. Waters II) in L. Moses and D. Lindstrom, eds., *Transportation of Hazardous Materials: Issues in Law, Social Science and Engineering* (Kluwer Academic Press) 1993, pp.277-294.
8. "Island Programs: The UBC Experience with a Summer Program in France," in A.M. Rugman and W.T. Stanbury (eds.), *Global Perspective: Internationalizing Management Education*, University of British Columbia Centre for International Business Studies, 1992, pp. 345-352.
9. "Canada and the Changing Regime in International Air Transport," in M. Zacher (ed.) *Canadian Foreign Policy and International Economic Regimes*, UBC Press, 1992, pp. 189-214 [with M.E. Dresner].

10. "Costing the Movement of Hazardous Materials by Rail," in L. Moses ed.). *Transportation of Hazardous Materials: Issues in Law, Social Science and Engineering*, Kluwer Academic Publishers, 1991, pp. 6-39 to 6-58 [with W.G. Waters II].
11. "Airline Deregulation in Canada," in K. Button (ed.), *Airline Deregulation: International Experiences*, David Fulton Publishers, London, 1991, pp. 124-179 [with T.H. Oum and W.T. Stanbury].
12. "Airline Deregulation in Canada and Its Economic Effects," in Hayashi (ed.), *The New Dimensions for Public Utility*, (in Japanese), 1990 [with T.H. Oum and W.T. Stanbury].
13. "An Assessment of the Efficiency Effects of U.S. Airline Deregulation via an International Comparison," in E.E. Bailey (ed.), *Public Regulation: New Perspectives on Institutions and Policies*, MIT Press, Cambridge, 1987, pp. 285-320 [with D.W. Caves, L.R. Christensen, and R.J. Windle].
14. "Air Canada," in Mark C. Baetz and Paul W. Beamish (eds.) *Strategic Management: Canadian Cases*, 1986, pp. 127-144 [with D.W. Gillen and T.H. Oum].
15. "Network Effects and the Measurement of Returns to Scale and Density for U.S. Railroads," in Andrew F. Daughety, (ed.), *Analytical Studies in Transport Economics*, Cambridge University Press, 1985, pp. 97-120 [with D.W. Caves, L.R. Christensen and R.J. Windle].
16. "Economic Performance of U.S. and Canadian Railroads: The Significance of Ownership and the Regulatory Environment," in W.T. Stanbury and F. Thompson, editors, *Managing Public Enterprises*, Praeger, New York, 1982, pp. 123-151 [with D.W. Caves, L.R. Christensen and J.A. Swanson].
17. "U.S. Trunk Air Carriers, 1972-1977: A Multilateral Comparison of Total Factor Productivity," in Thomas G. Cowing and Rodney E. Stevenson, editors, *Productivity Measurement in Regulated Industries*, Academic Press, 1981, pp. 47-76 [with D.W. Caves and L.R. Christensen].

### C. Papers in Refereed Journals or Conference Proceedings

1. "Analysis of Airfares in An Era Of Significant Airline Ancillary Charges, *Proceedings of the Canadian Transportation Research Forum, 2019*. [with J Kositsky]
2. "Observations on Rail Costing in Canada," *Proceedings of the Canadian Transportation Research Forum, 2019*. [with J Kositsky and R Andriulaitis]
3. "What do we mean by a level playing field in international aviation," *Transport Policy*, October 2015, Volume 43, pp. 96-103. [with R. Andriulaitis]
4. "The Aviation Value Chain: Economic Returns and Policy Issues," *Journal of Air Transport Management*, 2014. [with K. Markhvida]
5. "Introduction," Introduction to proceedings of the 1<sup>st</sup> European Aviation Conference," *Journal of Air Transport Management*, 2014. [with H.M. Niemeier]
6. "Introduction," Introduction to proceedings of the 13<sup>th</sup> Hamburg Aviation Conference," *Journal of Air Transport Management*, forthcoming (expected January 2012). [with H.M. Niemeier]

7. "Introduction," Introduction to proceedings of the 12<sup>th</sup> Hamburg Aviation Conference," *Journal of Air Transport Management*, January 2011, Vol. 17 (1), pp. 1-2. [with H.M. Niemeier]
8. "Introduction," Introduction to proceedings of the 11<sup>th</sup> Hamburg Aviation Conference," *Journal of Air Transport Management*, July 2009, Vol. 15 (1), pp. 103-105. [with H.M. Niemeier]
9. "Emerging Tourism Markets: Ageing and Developing Economies," (with D Mak) *Journal of Air Transport Management*, 2006.
10. "The Effect of Market Structure on Airline Prices: A Review of Empirical Results," (With I Kincaid), *Journal of Air Law and Commerce*, 2005, Vol. 70 (3), pp. 467-498.
11. "Distortions of Airline Revenues: why the network airline business model is broken," *Journal of Air Transport Management*, 2004, Vol. 10, pp. 3-14.
12. "The Economics and Politics of Taxation and Subsidies for Ports and Airports," *Proceedings of the International Association of Maritime Economists*, Panama, November 2002, pp. 12 (with Trevor Heaver).
13. "Labour Payouts, Productivity Measurement and Price Cap Regulation," (with W.G. Waters II), *Proceedings*, (U.S. Transportation Research Forum, San Antonio, TX (October 1996) Vol. 2, 688-698, 2000. Also published in *Journal of the Transportation Research Forum* (2000), Vol. 39 (1), pp. 131-144.
14. "Labour payouts, productivity measurement and the price cap approach to regulation" (with W.G. Waters II) *Journal of Transportation Research Forum*, 2000.
15. "Comparing Total Factor Productivity and Price Performance: Concepts and Applications to Canadian Railways," (with W.G. Waters II) *Journal of Transport Economics & Policy*, Vol. 33 (2), pp. 209-220, 1999.
16. "Reregulation of the Airline Industry -- Could Price Cap Regulation Make a Contribution?" (with W.G. Waters II), *Journal of Air Transport Management* Vol. 4, 1998, 47-53.
17. "The Total Factor Productivity of Canadian Railways, 1956-1991," (with W.G. Waters II and A.K. Fok) *Journal of Transport Economics and Policy*, January 1997, pp.93-113.
18. "Aggregation and Accuracy in Measuring Total Factor Productivity: Evidence from Rail Productivity Studies," (with W.G. Waters II) *Journal of Transportation Research Forum*, Vol. 25:2, 1995.
19. "A Sensitivity Analysis of Total Factor Productivity Measurement: Evidence from Rail Productivity Studies," (with W.G. Waters II), *World Transport Research (refereed Proceedings of the World Conference on Transport Research)* Vol. 4, Transport Management, (New York: Elsevier), 1995.
20. "Modelling and Testing the Effect of Market Structure on Price: The Case of International Air Transport," *Journal of Transport Economics and Policy*, 1992, pp.171-184 [with M.E. Dresner].
21. "ICAO and the Economic Regulation of International Air Transport," *Annals of Air and Space Law*, Vol. 17, Part II, 1992, pp. 195-211 [with M.E. Dresner].
22. "Concepts, Methods and Purposes of Productivity Measurement in Transportation," *Transportation Research-A*, 1992, Vol. 26A No. 6, pp.493-505 [with T.H. Oum and W.G. Waters II].

23. "A Comparison of the Productivity Performance of the U.S. and Canadian Pulp and Paper Industries," *Journal of Business Administration*, Vol. 20 (1), 1992, pp. 212-235, [with T.H. Oum], also in *Emerging Issues in Forest Policy*, P.N. Nemetz (ed.) 1992, UBC Press, Vancouver, pp. 212-235.
24. "A Note on Capacity Utilization and the Measurement of Scale Economies," *Journal of Business and Economic Statistics*, January 1991, Vol. 9 (1), pp. 119-123 [with T.H. Oum and Y. Zhang].
25. "Airline Deregulation in Canada and its Economic Effects," *Transportation Journal*, Vol. 30 (4), Summer 1991, pp.4-22 [with T.H. Oum and W.T. Stanbury].
26. "Productivity Adjustment to Price Levels in Regulated Rail Markets: Recent Developments in Canada and the United States," *Journal of the Transportation Research Forum*, 1991 Vol. 32 (1), pp. 172-181.
27. "Globalization of the Airline Industry and Implications for Canada," *The Logistics and Transportation Review*, Vol. 26(4), December 1990, pp. 357-367; paper also appeared in *Proceedings*, Canadian Transportation Research Forum, University of Saskatchewan Printing Services, June 1990, pp. 150-159; paper appeared in *The Advocate*, Vancouver Bar Association.
28. "Allocation of Airline Seats Between Stochastically Dependent Demands," *Transportation Science*, August 1990, Vol. 24(3), pp. 183-192 [with S.L. Brumelle, J.I. McGill, T.H. Oum, and K. Sawaki].
29. "Productivity Performance of the Canadian Pulp and Paper Industry," *Canadian Journal of Forest Research*, Vol. 20, No. 6, pp. 825-836, June 1990 [with A. Ghebremichael, D. Frank and T.H. Oum].
30. "Airline Cost Structure and Policy Implications: A Multi-product Approach for Canadian Airlines," *Journal of Transport Economics and Policy*, January 1990, pp.9-34 [with D.W. Gillen and T.H. Oum].
31. "Airline Hub and Spoke Systems," *Journal of the Transportation Research Forum*, Vol. XXX (2), 1990, pp. 380-393 [with T.H. Oum].
32. "Frequent Flyer Programs: Marketing Bonanza or Anti-Competitive Tool?" *Proceedings*, Canadian Transportation Research Forum, University of Saskatchewan Printing Service, May 1989, pp. 433-446. Won honourable mention for best paper. Also published in *Journal of the Transportation Research Forum*, Vol. XXX (1), 1989 pp. 195-201.
33. "Privatization of Air Canada: Why is it Necessary in a Deregulated Environment," *Canadian Public Policy*, Vol. 15 (3), September 1989, pp. 285-299 [with D.W. Gillen and T.H. Oum].
34. "Hedonic versus General Specifications of the Translog Cost Function," *Logistics and Transportation Review*, Vol. 25 (1), March 1989, pp. 3-21 [with T.H. Oum].
35. "The Canada - U.S. Air Transport Bilateral: Will It Be Freed?" *Transportation Practitioners Journal*, Vol. 56 (4), Summer 1989, pp. 393-405, also in *Proceedings*, Canadian Transportation Research Forum, University of Saskatchewan Printing Services, May 1988 [with M.E. Dresner and C. Hadrovic]. Excerpts also appear in *Air Transport Management*, March/April 1988, Vol. 1 (1).
36. "Ramsey Pricing in the Presence of Externality Costs," *Journal of Transport Economics and Policy*, September 1988, pp. 307-317 [with T.H. Oum].



37. "Duopoly in Canada's Airline Industry: Consequences and Policy Issues," *Canadian Public Policy*, Vol. 14 (1), March 1988, pp. 15-31 [with D.W. Gillen and W.T. Stanbury].
38. "The Changing Role of IATA: Prospects for the Future," *Annals of Air and Space Law*, Vol. 13, 1988 pp. 3-23 [with M.E. Dresner].
39. "Airport Pricing Policies: An Application to Canadian Airports," *Journal of the Transportation Research Forum*, Vol. XXIX, No. 1, 1988. This paper won the A.T. Kearney Inc. Best Paper award at the Transportation Research Forum, Toronto, 1988 [with D.W. Gillen and T.H. Oum].
40. "Policy Choices for Canada in International Air Transport," in *International Business*, Ann Gregory (ed.), refereed proceedings of the Administrative Sciences Association of Canada, Vol. 8, No. 8, June 1987, pp. 83-94 [with M.E. Dresner].
41. "Airline Deregulation: A Bibliography," *Logistics and Transportation Review*, Volume 22 (4), December 1986, pp. 449-489 [with W.T. Stanbury].
42. "Airline Seat Management," *Logistics and Transportation Review*, Vol. 22 (2), June 1988, pp.115-130. Paper also appeared in Proceedings, Canadian Transportation Research Forum, University of Saskatchewan Printing Services, May 1986, pp. 232-245. This paper won the 1986 award for best paper on a management topic. Because of the award, the paper also appeared in the September 1986 Proceedings of the Transportation Research Forum [with D.J.H. Kraft and T.H. Oum].
43. "Entry Barriers and Anti-competitive Behaviour in a Deregulated Airline Market: The Case of Canada," in *International Journal of Transport Economics*, Vol. 15 (1), February 1988; also published in Proceedings, Canadian Transportation Research Forum, University of Saskatchewan Printing Services, May 1986, pp. 483-493. This paper won the 1986 award for best paper on a policy topic. Because of the award, the paper also appeared in the Sept. 1986 Proceedings of the Transportation Research Forum, [with D.W. Gillen and T.H. Oum].
44. "The Effect of New Entry on Productivity Growth in the U.S. Airline Industry: 1947-1981," *Logistics and Transportation Review*, Vol. 21, No. 4, December 1985, pp. 299-335 [with D.W. Caves, L.R. Christensen, and R.J. Windle].
45. "The Total Factor Productivity of the Canadian Class I Railways: 1956-1981," *Logistics and Transportation Review*, Vol. 21, No. 3, September 1985, pp. 249-276 [with K.D. Freeman, T.H. Oum and W.G. Waters II].
46. "Economies of Density Versus Economies of Scale: Why Trunk and Local Service Airline Costs Differ," *Rand Journal of Economics*, Winter, 1984, pp. 471-489 [with D.W. Caves and L.R. Christensen].
47. "Reforming Canadian Airline Regulation," *Logistics and Transportation Review*, Vol. 20 No. 3, September 1984, pp. 261-284 [with T.H. Oum].
48. "Productivity Performance of U.S. Trunk and Local Service Airlines in the Era of Deregulation," *Economic Inquiry*, July 1983, Vol. 21, No. 3, pp. 312-324 [with D.W. Caves and L.R. Christensen].
49. "Flexible Cost Functions for Multiproduct Firms," *Review of Economics and Statistics*, August 1980, pp. 477-481 [with D.W. Caves and L.R. Christensen].

#### D. Selected Non-consulting Reports

1. "The Feasibility of Grain-Specific Productivity Measurement for Regulating Railway Grain Rates in Canada," (with W.G. Waters II), for the Canadian Transportation Agency, Ottawa/Hull, 18pp. 14 March 1997.
2. "The Economic Impact of the Vancouver International Airport: Summary Report" February 1995.
3. "The Employment and Economic Impact of the Vancouver International Airport," February 1995 [with L. Erbe and K. Tse].
4. "A Study of Economic Multipliers and their Application to the Economic Impact of the Vancouver International Airport," February 1995 [with K. Tse].
5. "The Employment Impact of a South Airport Floatplane operator: Harbour Air," February 1995 [with L. Erbe and K. Kotlarchuk].
6. "The Employment Impact of Cathay Pacific's three times weekly cargo service," February 1995 [with S. Lui].
7. "The Economic Impact of a Transpacific Cargo Service" November 1994, for the Vancouver International Airport [with S. Lui].
8. "The Economic Impact Of A South Airport Operator: The Case Of Harbour Air," November 1994, for the Vancouver International Airport [with K. Kotlarchuk and L. Erbe].
9. "The Potential for Separating Rail track infrastructure from rail transportation," November 1994, for the Bureau of Competition Policy.
10. "Measuring Productivity Performance and Financial Returns for Canadian National and CP Rail, 1956-1991", UBC Centre for Transportation Studies. March 1994, 302pp.
11. "Report of the Ministerial Task Force on International Airline Policy," July 1992. [I was Director of Research for the Task Force].
12. "Monopoly versus Duopoly in Canada's Airline Industry: Policy Alternatives and Consequences," prepared for the Economic Research Branch, Transport Canada, October 1991 [with T.H. Oum].
13. "Comments on Transport Canada's Proposed New Cost Recovery Policy: Phase II Discussion Paper," March 1991 [with T.D. Heaver, G.C. Chow, T.H. Oum and W.G. Waters II].
14. "Critical Review of Economic Analysis of Capacity Enhancement Strategies for Vancouver International Airport," review submitted to Vancouver International Airport's Airside Capacity Enhancement Management Team, November 1989.
15. "Review of Research Report on URCS Regression Equations," in U.S. Interstate Commerce Commission, Uniform Railroad Costing System: Research Report, July 1988, Washington, DC [with W.G. Waters II].
16. "A Study of Peak Period Pricing with an Application to Toronto International Airport," report submitted to Airports Authority Group and Cost Recovery and Evaluation, Transport Canada, May 1988 [with D.W. Gillen and T.H. Oum].

17. "Alberta's Air Transportation System: Strategic Forces and Structural Alternatives," report submitted to Alberta Economic Development, April 1988 [with D.G. Dale, D.L. Frank, S.J. Ling and T.H. Oum].
18. "Logistical Marketing and Vancouver International Airport: The Need for a Strategic Approach," report prepared for Asia Pacific Committee and B.C. Department of Regional and Industrial Expansion, October 1987.
19. "Development of Vancouver International Airport: Environment and Factors Affecting Success," report prepared for Asia Pacific Committee, and B.C. Department of Regional and Industrial Expansion, September 1987.
20. "Bill C-18 Rail Labour Impact Study," submitted to Transport Canada, March 1987 [with the Trade and Transportation Group and the Productivity Study Group, UBC].
21. "The Impact of Bill C-18 on Employment in the Canadian Railway Industry," published as a Technical Report, Transport Canada, February 1987, [with F.W. Trotter].
22. "The Emergence of Airline Families: Issues of Control," report prepared for the Canadian Airline Pilots Association, February 1987.
23. "Grain Costing Indices," confidential report prepared for Trade and Transportation Group for submission in regulatory hearings, Ottawa, November 1986.
24. "Pricing Policies for Canadian Airports with an Emphasis on Airfield Operations," a report prepared for Airports Task Force, Transport Canada, September 1986, [with D.W. Gillen and T.H. Oum].
25. "Pricing Principles for Canadian Airports," a report prepared for Airports Task Force, Transport Canada, July 1986, [with A. Manoucheri, D.W. Gillen and T.H. Oum].
26. "Predatory Pricing in a Deregulated Canadian Airline Industry," confidential report submitted to Bureau of Competition Policy, Consumer and Corporate Affairs Canada, February 1986, [with D.W. Gillen and T.H. Oum].
27. "The Structure of the Canadian Airline System and the Expected Impact of the Movement Toward Deregulation," Three volume report submitted to Treasury Board of Canada, March 1985, [with T.H. Oum and D.W. Gillen].

#### **E. Papers Under Review**

1. "Benchmarking Airport Performance," accepted for publication in forthcoming book by Routledge, 2011. [with I. Kincaid]

#### **F. Other Publications**

1. "Open Skies at Last," Connector, Canadian Business Travel Association, June 1995.
2. "The Role of the Airport in the Post-Resource Economy," published as a working paper of the Vancouver International Airport, and as an appendix to the airport's strategic plan. First published June 1994.

3. "Regionalism in International Air Regulations," Working Paper 92-TRA-011, Faculty of Commerce and Business Administration, The University of British Columbia, Vancouver, December 1992.
4. "On the Urge to Merge," letter to editor, Policy Options, Vol. II (5), June 1990.
5. "Prom Night: Choosing Partners for the Global Airline Dance," Air Transport Management, Vol. 3 (2), May/June 1990, pp. 13-19.
6. "New Runways and the Environment," Air Transport Management, Vol. 3 (1), March/April 1990, p.19.
7. "Peak Period Pricing: An Idea Whose Time Has Come," Air Transport Management, Vol. 2 (1), January/February 1990, pp.16-17.
8. "Airport Pricing and Capacity Expansion: Economic Evaluation of Alternatives," Transport Review, published by Transport Canada, 1990 [with D.W. Gillen and T.H. Oum].
9. "Hidden Agendas are Distorting the Safety Issue," Air Transport Management, Vol. 1 (3), September/October 1988, p.11.
10. "Survival Under Freer Skies," Air Transport Management, Vol. 1 (2), May/June 1988, pp. 10-12 [with D.W. Gillen and T.H. Oum].
11. "Selling Air Canada: A No-Lose Situation," Globe and Mail, 16 May 1988, p. A7 [with W.T. Stanbury].
12. "The Canada-U.S. Air Transport Bilateral: Will It Be Freed?" Air Transport Management, Vol. 1 (1) March (April) 1988, pp.9-12 [with M.E. Dresner and C. Hadrovic].
13. "Airline Productivity Under Deregulation," Regulation, Nov./Dec. 1982, pp. 25-28, [with D.W. Caves and L.R. Christensen].
14. Many articles written for YVR Skytalk under pen name of Harold Michaels
15. Various articles written in industry trade magazines, including Airport World and Centerlines.
16. Issues in the Regulation of Railways in Mexico. International Transportation Forum of the OECD, forthcoming 2015.

#### **G. Computer Program Papers and Reference Manuals**

1. Econometric Programming Language: Programmer's Reference Manual, Computer manual available from Christensen Associates, 810 University Bay Drive, Madison, WI 53705, August 1981 [with S.A. Novogoratz].
2. Econometric Programming Language: Reference Manual, Computer manual available from Christensen Associates, 810 University Bay Drive, Madison, WI 53705, December 1981.
3. Econometric Programming Language: Primer, Computer manual available from Christensen Associates, 810 University Bay Drive, Madison, WI 53705, March 1981.

4. Econometric Programming Language: User's Manual, Computer manual available from Christensen Associates, 810 University Bay Drive, Madison, WI 53705, November 1980 [with D.W. Caves].
5. "Time Series Processor at the University of Wisconsin, Programmer's Reference Manual," mimeo., Department of Economics, University of Wisconsin-Madison, July 1979 [with C. Franklin].
6. "Time Series Processor at the University of Wisconsin (TSP-WISC)," Computer manual available from Madison Academic Computing Center, University of Wisconsin-Madison, October 1977, June 1978 [with D.W. Caves].
7. "Econometric Estimation Using the Time Series Processor at the University Wisconsin (TSP-WISC)," SSRI Discussion Paper #7711, Department of Economics, Madison, September 1977 [with D.W. Caves].

#### H. Work in Progress

1. Railway Freight Economics.  
[with R.A. Andriulaitis, J. Kositsky]
2. Airport Economics.
3. Airline Economics, 2<sup>nd</sup> edition.  
[with J. King]

#### *COURSES TAUGHT*

Air Transportation

Business Logistics

Business Statistics

Government and Business

International Business Logistics and Shipping

Introduction to Transportation

Logistics and Operations Management

Managerial Economics

Project Evaluation (Social Cost Benefit Analysis, and Environmental Impact Statements)

Seminar in Transportation Economics

Transportation Economics

Transportation in Economic Development

Transportation Policy

Urban Transportation

In addition, I have taught short courses in various countries on topics of business logistics, international business logistics, airport management, airport planning, airport strategic planning, airport marketing and airport finance.

### ***OTHER SERVICE***

#### **Editorial Boards**

Associate Editor, Logistics and Transportation Review, (1987-2001)

Advisory Editor, Quarterly Journal of Economics and Business (1991-2006) (renamed in next entry)

Advisory Editor, Quarterly Journal of Finance and Accounting (2006-present)

Associate Editor, Journal of Air Transport Management (1994-2002)

#### **Referee for the following academic journals:**

*Air Policy and Management*

*American Economic Review*

*Bell/Rand Journal of Economics*

*Canadian Journal of Economics*

*Canadian Public Policy*

*Economic Development and Cultural Change*

*International Journal of Transportation Economics*

*Journal of Air Transport Management*

*Journal of Econometrics*

*Journal of Economic Education*

*Journal of Industrial Economics*

*Journal of Political Economy*

*Journal of Public Economics*

*Journal of the Transportation Research Forum*

*Logistics and Transportation Review*

*Managerial and Decision Economics*

*Papers of the Regional Science Association*

*Quarterly Journal of Business and Economics*

*Quarterly Review of Economics and Business*

*Social Science and Humanities Research Council of Canada*

*Transport Reviews*

*Transportation Research*

*Water Resources Research*

**Reviewer for following publishers:**

MIT Press

North Holland Publishers

Transport Research Centre, Australia

Irwin Books

McGraw Hill

Ashgate Publishing

Routledge

**Reviewer for the following funding agencies:**

Earhart Foundation

Federal Environmental Assessment Review Panel

National Research Council/Transportation Research Board

Natural Sciences and Engineering Research Council of Canada

Social Science and Humanities Research Council of Canada

Transportation Research Board, National Academy of Sciences

## Appendix C: Documents Received from CPRC

- Annual Report for Canadian Pacific Railway – Canada, to the Assistant Deputy Minister, Policy - Transport Canada, for the year ending December 31, 2019.
- Canadian Pacific Railway, Annual Reports, various years.
- Canadian Pacific Railway, Investor Fact Books, various years
- Canadian Pacific Railway Company, "CP's Submission to the Agency's Discussion Paper: Whether general purpose debt should be included in the calculation of cost of capital rates," 20 August 2021.
- Canadian Transportation Agency Determination R-2020-81, April 30, 2020.
- Canadian Transportation Agency, Confidential Appendix B to Decision number LET-R-29-2020.<sup>31</sup>
- Canadian Transportation Agency, Decision Number LET-R-49-2009.
- Canadian Transportation Agency, Decision Number 125-R-1997, March 6, 1997.
- Canadian Transportation Agency, Decision Number LET-R-29-2020 with Appendix A, April 28, 2020.
- Canadian Transportation Agency, Consultation on General Purpose Debt, June 21, 2021.
- Canadian Transportation Agency, Discussion Paper: Whether General Purpose Debt Should Be Included in the Calculation of Cost of Capital Rates, July 20, 2021.
- Canadian Transportation Agency, Discussion Paper on the methodology to determine net rail investment and cost of capital structure for the calculation of cost of capital rates.
- Federal Court of Appeal, Memorandum of Fact and Law of the Appellant, May 28, 2020.
- Federal Court of Appeal, Reasons for Judgement, April 9, 2021, docket A-193-20.
- Federal Court of Appeal, Affidavit of Tyme Wittebrood, May 27, 2020.

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<sup>31</sup> I note that I have executed a confidentiality agreement with CPRC. I note that I have a secret level clearance from Public Works Canada for certain transportation research projects I have conducted for Transport Canada.



- Letter from Tyme Wittebrood, Directory Regulatory Finance, Canadian Pacific Railway Company, February 3, 2020.

## Appendix D: Documents Obtained on my Own Initiative

- Canadian Transportation Agency, Uniform Classification of Accounts, various issues including current.
- Frank Nay, 1913, Uniform Methods of Railway Accounting, *Journal of Political Economy*, Vol. 21 No. 10., pp 881-912.
- U.S. Surface Transportation Board, Uniform System of Accounts, various issues, including current.<sup>32</sup>
- H. Ernest O'Boyle, C Pankaj Patel, and Erik Gonzalez-Mule (2010), "Employee Ownership and Firm Performance: A Meta-Analysis," *Human Resources Management Journal*.
- Kato, Takao, Takao, H. Ju Lee, & Soo Jang Ruy (2010), "The Productivity Effects of Profit Sharing, Employee Ownership, Stock Option and Team Incentive Plans: Evidence from Korean Panel Data," by, in IZA Discussion Paper Series No. 5111. They used cross sectional data in a fixed effects econometric model.

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<sup>32</sup> CFR – Title 19 – title 49 - vol. 9.

## **Appendix E: List of Abbreviations**

Agency:

Canadian Transportation Agency

BRC: Board of Railway Commissioners  
a predecessor of the Agency

CNR-Canada:

The regulated Canadian railway operations of CNRC in Canada.  
It is the regulated entity for purposes of the MRE and other regulatory decisions.

CNRC: Canadian National Railway Company

CPR-Canada:

The regulated Canadian railway operations of CPRC in Canada.  
It is the regulated entity for purposes of the MRE and other regulatory decisions.

CPRC: Canadian Pacific Railway Company the certificated railway operating company

CPRL: Canadian Pacific Railway Ltd  
the parent and sole owner of CPRC. CPRL is not a railway operating company.

CTA: Canada Transportation Act

LRVC: Long Run Variable Cost

MRE: Maximum revenue entitlement

STB: Surface Transportation Board

UCA: Uniform Classification of Accounts  
Issued by Agency and its predecessors

UCS: Uniform System of Accounts  
Issued by the STB and its predecessor

U.S.: United States of America

URCS: Uniform Rail Costing System

U.S.C: United States Code

VRCPI: Volume-Related Composite Price Index