IMPROVED FINANCIAL PERFORMANCE OF CP AND CN OVER THE PAST TWENTY YEARS: FACTORS CONTRIBUTING TO THE IMPROVEMENT

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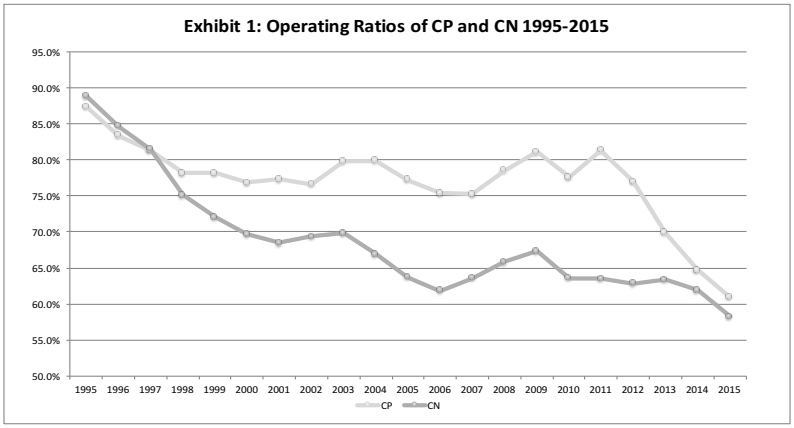
Over the course of the past two decades since the privatization of CN in 1995, and the further economic deregulation in 1996, each of CP and CN has seen their operating ratios improve by some 30%. This paper will examine how these impressive improvements were achieved – the changes to the networks, operations, freight rates, commodity mix, and labour, and their contributions to the improvement.

Overall Finances

More recently it has become fashionable to summarize the overall financial position of railways in terms of their operating ratio – the ratio of total operating expenses over total revenues. While this is a less than perfect summation, it does give a measure of overall financial performance, and Exhibit 1 presents the operating ratios of CP and CN from 1995 – the year of CN's privatization – to 2015.

The figures in Exhibit 1[i] have been adjusted in some years to exclude special charges – such as those associated with acquisitions and labour restructuring – and two overall points may be noted. First, both CP and CN began the period with operating ratios in the 90% range and have both improved significantly into the 60% range two decades later. These are impressive improvements.



Second, the changes over time may be divided into four periods which will be examined in greater detail:

- The early years from 1995 to 1997 when both railways improved their operating ratio, and CN closed the gap with CP;
- The years from 1998 to 2006, when the operating ratio of CN decreased dramatically to the low 60% range, while the operating ratio of CP stagnated in the low 70% range;
- The years from 2006 to 2011 when their operating ratios stabilized and markedly increased during the financial crisis;
- The years from 2012 to 2015 when the operating ratio of CP decreased dramatically to nearly match that of CN in the 60% range.

The Early Years: 1995 To 1997

CN was finally privatized in November 1995, and both railways were further deregulated in 1996 with amendments to the economic regulations in the *Canada Transportation Act.* Each of these developments had consequences. In Exhibit 2 are presented summaries of the financial and operating characteristics of each of CP and CN in 1995.

EXHIBIT 2	1995		1997	
	CP	CN	CP	CN
	(CDN$ millions)		(CDN$ millions)	
Freight Revenues	$3,409	$3,844	$3,429	$4,255
Non-Freight Revenues	$152	$110	$154	$97
Total Revenues	$3,560	$3,954	$3,583	$4,352
Operating Expenses	$3,113	$3,514	$2,915	$3,545
Operating Ratio	87.4%	88.9%	81.4%	81.5%
RTMs - millions	102,722	105,487	100,488	119,534
Total Revenues per RTM - cents	$3.32	$3.64	$3.41	$3.56
GTMs - millions	192,259	204,143	186,464	228,353
Operating Expenses per GTM - cents	$1.62	$1.72	$1.56	$1.55
Miles of Road - year end	18,064	17,918	15,097	15,292
Employees - average active	22,398	26,951	19,514	22,800

At that time when both operating ratios were in the high 80% range, CP had a 1.5% edge with 87.4%. Examining this more closely it can be seen that CN had higher total revenues per revenue-ton-mile (RTM) than CP, which would contribute to lowering the operating ratio, while CN also had higher total operating expenses per gross-ton-mile (GTM), which would contribute to increasing the operating ratio. For CN to close the gap would only have required a drop in expenses of $59 million – a mere 1.7% of their total.

Two years later both CP and CN had significantly lowered their operating ratios to low 80% and CN had closed the gap – see Exhibit 2 again. Specifically:

- CP had increased its revenues per RTM and decreased its expenses per GTM;
- CN had a decrease in revenues per RTM but a more than offsetting decrease in expenses per GTM[ii].

During this period when further deregulation took place in Canada, CP took the opportunity to reduce its miles of road by nearly 3,000 miles, or some 16%, with the more relaxed regime of branch line discontinuance or sale in Canada, and the sale of their Kansas City and Corn Lines in the US. Meanwhile, CN also reduced its miles of road by 2,500 miles, or 15%, but in addition: opened the St. Clair tunnel to accommodate double stack container trains; and reduced its labour force by over 4,000 employees or some 15%. CN reduced its labour force more than CP, and all of these changes combined led to a closing of the gap in operating ratios.

The Period 1998 To 2006

During this period CN underwent a number of significant network changes:

- The Illinois Central (IC) was acquired in 1998, together with the services of Hunter Harrison – as COO in 1999 and later CEO in 2002;
- The Wisconsin Central (WC) was acquired in October 2001;
- The British Columbia Railway (BCR) and Great Lakes Transportation (GLT) were acquired in 2004

As a result, the miles of road of CN increased from 16,991 to 20,264 between 1998 and 2006, while during the same period CP did not make any acquisitions and its miles of road decreased from 14,456 to 13,260.

In terms of employment, and despite the increased network, CN was able to reduce its number of employees from 24,993 to 22,092 between 1998 and 2006. CP also reduced its workforce from 19,323 to 15,327 over this period. Overall, and in general terms, CN was expanding while CP was shrinking with the results for 2006 depicted in Exhibit 3. In 2006 CP's operating ratio was stuck at 75% while CN had reduced its operating ratio to 62% - a 13-point gap!

EXHIBIT 3	2006	
	CP	CN
	(CDN$ millions)	
Freight Revenues	$4,427	$7,254
Non-Freight Revenues	$156	$675
Total Revenues	$4,583	$7,929
Operating Expenses	$3,455	$4,899
Operating Ratio	75.4%	61.8%
RTMs - millions	122,874	185,610
Freight Revenues per RTM - cents	$3.60	$3.91
Operating Expenses per RTM - cents	$2.81	$2.64
GTMs - millions	236,405	352,972
Operating Expenses per GTM - cents	$1.46	$1.39

EXHIBIT 4	CP 2006		CP 2006	
	Revenues		Expenses	Operating Ratio
	(CDN$ millions)		(CDN$ millions)	
Unadjusted	$4,583.2		$3,455	75.4%
+Yield	$232.7	-Productivity	-$173	
+Mix	$142.1	-Load Factor	-$38	
+Non-Freight Revenues	$291.0			
Adjusted	$5,249.0		$3,243	61.8%

The question therefore arises precisely how CP might match the performance of CN, and so a hypothetical analysis was conducted to illustrate what might have been done by CP to achieve an operating ratio equal to that of CN in 2006. The results are summarized in Exhibit 4. There are five factors identified in Exhibit 4 that would hypothetically change the actual revenues and expenses of CP in 2006 to adjusted values that would have an operating ratio that precisely matches that of CN for that year.

Yield – Average Freight Revenue per RTM

As indicated in Exhibit 5 an increase in revenue of $232.7 million would be obtained if the average yields of CP were raised to equal the average yields of CN in each of four lines of business where CN's yields exceeded CP yields: grains/fertilizers, forest products, automotive and a catchall other, which includes petroleum, chemicals, mines and metals and sulphur.

EXHIBIT 5	Freight Revenues per RTM 2006			2006	Difference X
	CP	CN	Difference	CP-RTMs	CP-RTMs
	(cents)				(dollar millions)
Grain/Fertilizers	$2.84	$2.85	$0.01	45,788	$6.3
Coal	$3.01	$2.70	-$0.32	19,650	
FP	$3.58	$4.11	$0.53	8,841	$47.1
IMS	$4.56	$4.23	-$0.33	27,561	
Auto	$12.83	$15.75	$2.91	2,450	$71.4
All Other	$3.49	$4.07	$0.58	18,584	$107.9
Yield					$232.7
Total - cents	$3.60	$3.91	$0.31	122,874	$374.9
Mix					$142.1
	Non-Freight Revenues per RTMs				
	CP	CN	Difference		
Total	$0.13	$0.36	$0.24	122,874	$291.0

This hypothetical increase would in reality take time to implement, given the longer-term nature of existing contracts, and more importantly the competition in specific transportation markets that might restrain CP's capability to match CN.

Mix

The increase in revenues of $142.1 million is the difference between the $232.7 million above, and an increase of $374.9 million that would occur if the overall average yield of CP were raised to equal the

overall average yield of CN – again see Exhibit 5. This difference reflects the significant difference in the traffic mix by volume. For example, CP has relatively higher volumes of lower-rated coal traffic while CN has significantly higher volumes of higher-rated forest products and chemicals traffic. This significant difference in volume mix by line of business is largely a function of the inherent economic output of the different regions served by the CP and CN networks. While some shift in volume mix is achievable over time, it is unlikely that the significant total change that would be required is achievable over the CP network as it then existed.

Non-freight Revenues

A further increase of $291 million would be obtained to the non-freight revenues of CP, if those non-freight revenues were to increase to match those earned by CN relative to their respective total traffic bases. The principal relative difference in non-freight revenues is associated with CN's efforts in value added services in vessels and docks, warehousing and distribution, ground transport, automotive logistics services, freight forwarding, transportation management and customs brokerage, as well as the passenger train services to VIA and commuter carriers.

Productivity

As indicated in Exhibit 6 a decrease in expenses of $173 million would be obtained if the average expense per GTM of CP were lowered to the average expense per GTM achieved by CN. Such an improvement in productivity at CP might have been achievable from a number of sources – yard rationalization, better integrated operating plan, longer heavier trains, fewer equipment rents, better hedging of fuel prices, lower administrative overhead – all of which can result in reduced dwell times, increased average velocity, and an increase in direct point-to-point service.

EXHIBIT 6	Expenses per GTM/RTM 2006			CP -	Difference X
	CP	CN	Difference	GTMs/RTMs	CP - RTMs/GTMs
	(cents)				(million dollars)
GTMs	$1.46	$1.39	-$0.07	236,405	-$173
RTMs	$2.81	$2.64	-$0.17	122,874	-$211
Load factor					-$38

Load Factor

The further decrease in expenses of $38 million is the difference between the $173 million decrease above and the decrease in expenses that would be obtained if the average expense per RTM of CP were lowered to the average expense per RTM achieved by CN – again see Exhibit 6. This difference of $38 million reflects the fact that by 2006 CN had higher utilization of its trains with revenue traffic, or higher load factors, than CP in terms of the ratio of RTMs to GTMs. This is probably due to the higher volume of 100% empty return CP bulk trains and the higher volume of lower-utilization intermodal traffic handled by CP.

Note that overall, from Exhibit 4, it can be seen than the needed increase in revenue requirements was some three times the magnitude of the needed decrease in expense requirements.

The Period 2007 To 2011

Early in this period in 2007, CN began intermodal service through the port of Prince Rupert, and in 2008 CP acquired the Dakota, Minnesota & Eastern Railroad (DM&E) in the US. In 2009 CN acquired the Elgin, Joliet & Eastern railroad that circumvents Chicago. Both railways suffered revenue reductions during the

financial crisis which increased their operating ratios, while increased development of the Canadian oil sands, the growth in shale oil in the US and Canada, and anticipated delays in the expansion of transmission pipelines led to a significant increase in the movement of crude oil by rail. Hunter Harrison retired as CEO of CN in 2009.

Nevertheless, by 2011 CP had still not narrowed the gap in operating ratio with CN as indicated in Exhibit 7 – in fact the gap had widened to 17.8 points! Another hypothetical analysis was conducted to illustrate what might have been done by CP to achieve an operating ratio equal to that of CN in 2011 with the results summarized in Exhibit 8.

EXHIBIT 7	2011	
	CP	CN
	(CDN$ millions)	
Freight Revenues	$5,052	$8,111
Non-Freight Revenues	$125.0	$917
Total Revenues	$5,177.0	$9,028
Operating Expenses	$4,210.0	$5,732
Operating Ratio	81.3%	63.5%
RTMs - millions	129,059	187,753
Freight Revenues per RTM - cents	$3.91	$4.32
Expenses per RTM - cents	$3.26	$3.05
GTMs - millions	247,955	357,927
Operating Expenses per GTM - cents	$1.70	$1.60

EXHIBIT 8	CP 2011		CP 2011	
	Revenues		Expenses	Operating Ratio
	(CDN$ millions)		(CDN$ millions)	
Unadjusted	$5,177.0		$4,210.0	81.3%
+Yield	$441.3	-Productivity	-$239.1	
+Mix	$82.1	-Load Factor	-$30.8	
+Non-Freight Revenues	$505.3			
Adjusted	$6,205.7		$3,940.1	63.5%

Notable differences between Exhibits 4 and 8 include:

- The needed improvement in CP yield requirements now included coal traffic;
- The needed improvement in CP non-freight revenue requirements had increased significantly.

Note that overall, from Exhibit 8, it can be seen that the needed increase in revenue requirements was now nearly four times the magnitude of the needed decrease in expense requirements.

The Period 2012 To 2015

Shareholders of CP voted to change the Board and replace the management team, and in early 2012 Hunter Harrison came out of retirement and became the CEO of CP. The tragic accident at Lac Mégantic involving crude oil led to stricter rail safety regulations regarding dangerous goods, and crude oil in particular. This combined with the collapse of global oil prices in 2014 led to a decrease in the movements of crude oil by rail after 2014. In 2014 CP sold the western end of the DM&E, in 2015 CP sold the southern portion of the Delaware and Hudson railroad, and latterly attempted to consolidate with Norfolk Southern (NS) railroad in the US – but NS has resisted and, at time of writing, the issue is unresolved.

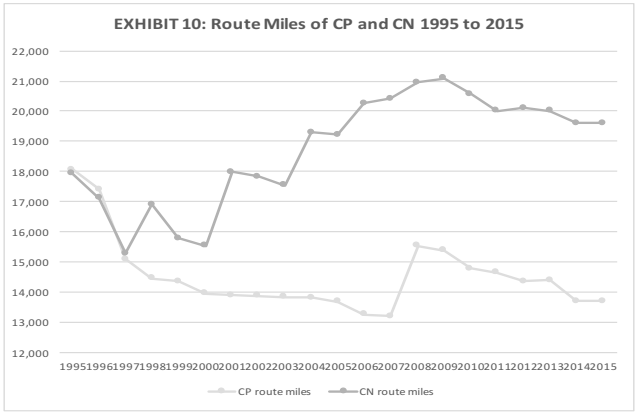
EXHIBIT 9	2015	
	CP	CN
	(CDN$ millions)	
Freight Revenues	$6,552	$11,905
Non-Freight Revenues	$160.0	$706
Total Revenues	$6,712.0	$12,611
OperatingExpenses	$4,092.0	$7,345
Operating Ratio	61.0%	58.2%
RTMs - millions	145,257	224,710
Freight Revenues per RTM - cents	$4.51	$5.30
Operating Expenses per RTM - cents	$2.82	$3.27
GTMs - millions	263,333	442,084
OperatingExpenses per GTM - cents	$1.55	$1.66

As indicated in Exhibit 9, by 2015 CP had dramatically lowered its operating ratio to 61% - just 2.8 points higher than the operating ratio of CN This was a remarkable change of fortunes in just four years, and it was accomplished by significant operating expense reductions.

By 2015 CP had reversed the operating relationship, and CP had operating expenses per GTM lower than that of CN, and now had an average load factor RTM/GTM higher than that of CN. However, the gap remained in average freight revenues per RTM with CN retaining a higher level. For CP to have matched CN's operating ratio would only have required a 4.8% increase in freight revenue associated with grain/fertilizers and the catchall other traffic, or alternatively a significant increase in non-freight revenue.

More Detailed Changes From 1995 To 2015

In Exhibit 10 are presented the route miles of CP and CN from 1995 to 2015. The CN increases in 1998, 2001 and 2004 due to the acquisitions of IC, WC and BCR are evident.



So too is the CP acquisition of the DM&E in 2007. Overall however, CN has increased its network by 9% while CP has decreased its network by 24% resulting in a CN network some 40% larger than that of CP.

The growth in rail traffic in terms of RTMs for both CP and CN has increased at a similar pace over most of the period – with the pronounced effect during the financial crisis – see Exhibit 11[iii]. Note the CN surge ahead of CP in 2014 which was due to a larger increase in the movement of the record grain crop and in a larger increase in the movement of industrial products associated with crude oil. Traffic growth rates have also exceeded Canadian and US real GDP growth rates.

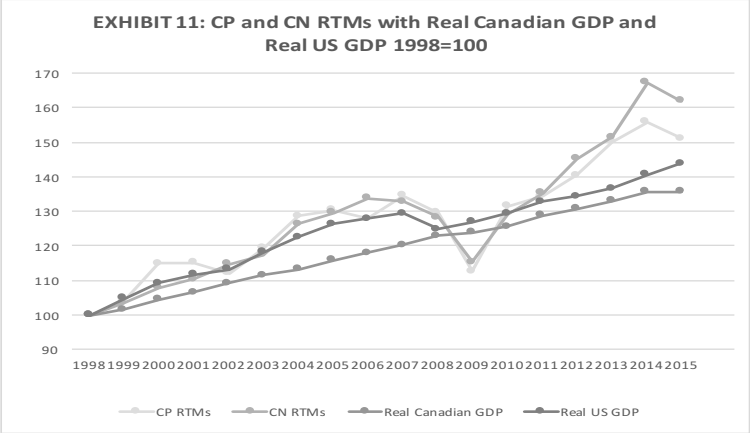


Exhibit 12 presents the changes in CP and CN average freight rates in terms of freight revenue per RTM – in both nominal and real terms. Changes in nominal freight rates were stable for the first decade and began to increase during the second decade. However, in real terms freight rates are lower in 2015 than in 1995 for CP and only fractionally higher for CN.

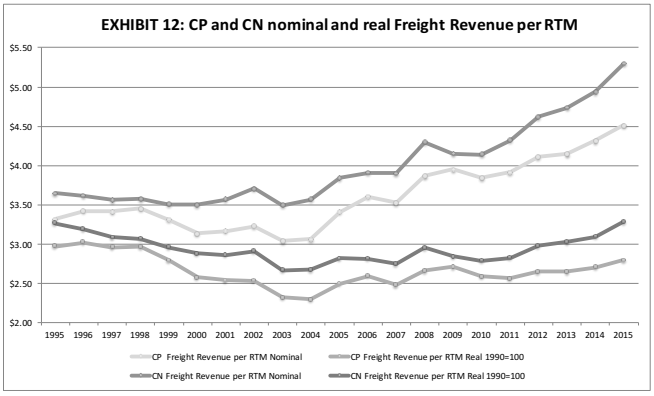
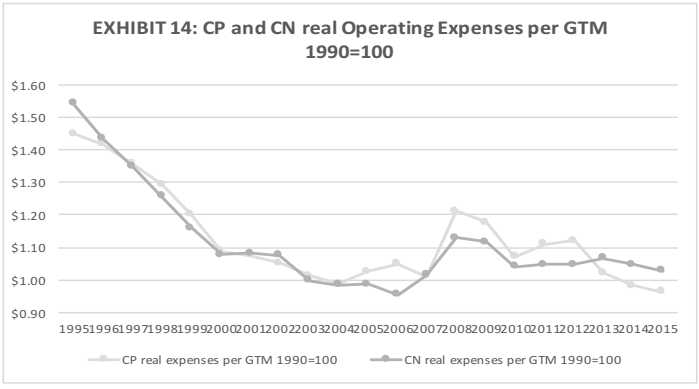


EXHIBIT 13	CP			CN		
	1995	2015	% Change	1995	2015	% Change
TRAFFIC MIX						
- Bulk	50.7%	43.7%		31.2%	22.5%	
- Mechandise	30.5%	35.8%		52.2%	53.1%	
- Intermodal	18.8%	20.6%		16.5%	24.3%	
Number of employees	22,398	13,813	-38.3%	26,951	24,635	-8.6%
RTMs/GTMs	53.4%	55.2%		51.7%	50.8%	

Note also that throughout the period CN has maintained a higher level of average freight revenue per RTM than CP. This gap suggests that the difference in traffic mix between CP and CN is not readily overcome by CP. In Exhibit 13 are presented the traffic mixes for each railway and their changes over the period.

Overall, CP is more of a bulk carrier and less of a merchandise carrier than CN throughout the period – despite a relative decline in bulk traffic for both railways and an increase in merchandise traffic at CP. Both railways have also seen a relative increase in intermodal traffic. Exhibit 13 also indicates that CP had a higher load factor than CN and has increased the gap over the period – although this increase was largely due to the improved operating performance of CP since 2011. Exhibit 13 also demonstrates that both CP and CN have decreased their labour forces over the period – but CP more than CN, given that CN has to operate a larger network.

Lastly, in Exhibit 14 are presented the real total operating expenses of CP and CN over the period[iv]. Both railways have seen a decrease over the period, and CN has generally had a lower level throughout – with the exception of the first two years and the years since 2013. Again the impact of the financial crisis is evident.



Conclusions And Future Developments

Overall, both railways have made impressive improvements in their financial performance. During the past two decades CN has increased its network to become 43% larger than CP, and, while CP has increased its

traffic by 41%, CN has increased its traffic by 113%. CP revenues have nearly doubled while CN revenues have tripled – given its increased size. Average freight revenues per RTM have increased by 36% and 45% for CP and CN respectively – which demonstrates that CN has continued to maintain its edge on pricing throughout the period, probably due to its traffic mix and competitive environment.

What of the future? While the railways should be able to serve the continued growth in the North American economy, there are uncertainties in energy markets: the hiatus in oil, which will impact the rail movement of crude oil, fracking sand, and pipeline pipes; and the increased regulatory pressure to decrease the use of coal, which will continue to affect rail movements particularly in the US. Rail technology should continue to generate productivity improvements – as evidenced by the future levels of capital expenditures projected by both CP ($1.1 billion) and CN ($2.9 billion) for 2016. Note however the words of caution expressed recently in *The Economist*[v].

On the matter of the proposed consolidation between CP and NS, at time of writing it is in a state of flux, but the following points may be noted:

- Beyond personal ambitions, the CP motivation for consolidation probably arises from its reduced size, its inability to close the pricing gap with CN, and the opportunity for Hunter Harrison to improve the operating efficiency of NS – which had an operating ratio in 2015 of 72.6% and a 16% decline in coal traffic between 2014 and 2015;
- The nature of the proposal as a voting trust, with Hunter Harrison running NS while having no involvement in the direct management of CP for the possibly two-year period while the Surface Transportation Board (STB) in the US considers approval, appears however to have been rejected by the STB[vi];
- NS and other US Class 1 railroads appear opposed to the consolidation, as do important rail unions, and various shipper associations;
- While the consolidation appears generally end-to-end, with few anti-competitive impacts, the need for "enhanced" competition under the revised STB review procedures – implemented following the 2000 proposal to consolidate CN and BNSF – appears problematic;
- CP's proposal to quote bottleneck rates in the US, and to provide terminal access, are attempts to "enhance" competition but the devil is in the details. If CP were to adopt the Efficient Component Pricing Rule[vii] to set bottleneck rates then this concession would have little impact. Similarly, if terminal access is only provided when CP-NS is not providing adequate service or competitive rates in those areas, then its impact would likely be limited;
- The above quoted article from *The Economist* has however suggested that consolidation may become a necessity for the North American rail freight industry over the longer term.

Finally, there is the wild card of economic regulation: this might be affected with the upcoming reauthorization of the STB in the US; and awaits the recommendation of the recently-completed review of the *Canada Transportation Act* – at time of writing these recommendations have not yet been made public.

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[i] All of the railway figures in this paper have been taken from the annual reports of CP and CN

[ii] Note that while CN had higher revenues per RTM and lower expenses per GTM than CP, CP still had a slightly lower operating ratio because CP had a higher load factor RTM/GTM.

[iii] Exhibit 11 begins in 1998 rather than 1995 to exclude the significant increase in CN RTMs associated with the acquisition of the IC. Sources for real GDP are Statistics Canada 380-0102 and the Bureau of Economic Analysis in the US.

[iv] Special Charges of each of CP and CN have been excluded

[v] Railways in America, *The Economist*, February 13, 2016 page 61.

[vi] For details see "STB throws Monkey Wrench into Possible CP-NS Merger while Opposition Grows", Material Handling & Logistics, January 12 2016.

[vii] For details see "Efficient Access Pricing for Rail Bottlenecks", Eric Beshers, for the Federal Railroad Administration, June 1 2000.