

Sifter Fund – Investment Case Study

Canadian National Railway

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Research conducted by Sifter Capital Oy analyst team. Approved by Investment Committee 17th October 2018.



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1. Canadian National Railway

Company Description

- Canadian National is the most efficient railroad operating in North America, spanning the entire width of Canada and crossing through the United States via Chicago to the Gulf of Mexico.
- The company transports a mix of containers, cars and parts, grain and other commodities over distances unreachable by trucks and other means of transportation (typically 500-2000 miles)
- Current CEO situation is diffuse but ingrained corporate culture will keep the company sustained.

Why we chose to invest

- The company has sole access to the port of Prince Rupert - one of the largest North American ports and the closest to the Asia-Pacific continent.
- Railways in the US and Canada own the tracks themselves. Competition is limited as the entry barriers are massive, both in the form of high upfront capital needs but also due to limited availability of land.
- CNR is the only railroad with access to three seas (Pacific, Atlantic and Gulf of Mexico) and the busy Chicago hub.

Risks

- 25 % of revenue is derived from intermodal transportation (i.e. containers) which partially originate from international sources.
- A global slowdown in the economy would lower container volumes proportionally.

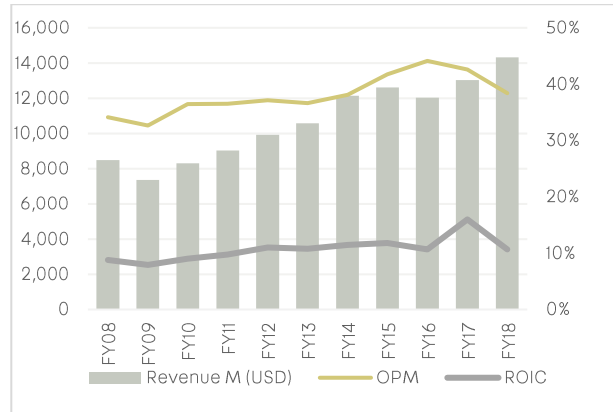


Figure: Key KPI's 2008-2018



Picture: Canadian National railroad coverage

Key valuation ratios (October 2018)

Mcap (m.€)	Revenue (m.€)	OPM	ROIC	ROCE	ROE	Ndebt/EbitDA	DY	SHY	PBr
60157	9362	38%	10.9%	13.5%	25.0%	1.9x	1.8%	4.5%	4.9x
EBITDA 5y CAG	Revenue 5y CAG	EPY Curr	EPY NTM	EPY FY+1	EbitDA/EV Curr	EBITDA/EV NTM	EBITDA/EV +FY1	Vola 260d	
6.1%	6.3%	5.1%	4.8%	5.7%	7.6%	8.0%	8.2%	19.8%	



2. Industry Description

10 per cent of all the goods transported in the North America (measured by weight) is done over the vast network of railroad that spans the continent (Figure 1). The type of goods most commonly transported is generally low-value commodities, as is evident from the fact that the share of freight (by value) transported by rail is only 3 per cent. Transportation by rail is most suited for commoditized goods that must travel in masse over very long distances.



FIGURE 1. NORTH AMERICAN RAILROAD NETWORK (ALL RAILROADS).

The sweet spot for rail transportation is in the 500-2000 miles range (Figure 2), as the cost savings from the better fuel efficiency and scalability outweighs the cost from loss of flexibility and the reloading of cargo for the last miles. Long-haul trucks are the most obvious competitor, as they have no limitations as to the originating or terminating location, but they suffer from scale disadvantages as a truck can realistically pull a maximum of two standard containers (needing one employee at the wheel). A train on the other hand can pull between 100 to 200 cars of double stacked containers (the record is 375 train cars) while needing only one train conductor. The low need for starts and stops translates into better fuel economy for the trains, but the limiting factor is the time required to offload the cargo, which often needs alternative modes of transportation for the last miles.

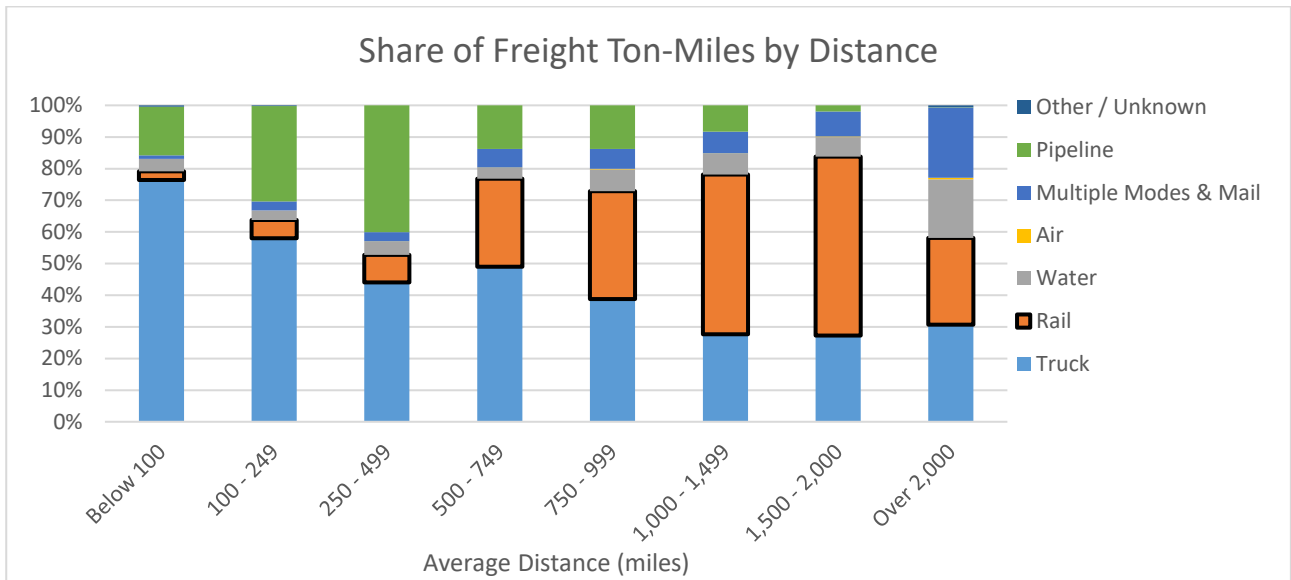


FIGURE 2. THE SWEET SPOT FOR RAIL IS BETWEEN 500 TO 2000 MILES. SOURCE: BUREAU OF TRANSPORTATION STATISTICS (US) 2015.

In the U.S. and Canada there are six major railroad operators which mainly operate as pairs of duopolies: Canadian National and Canadian Pacific in the North, CSX and Norfolk Southern in the East, and Union Pacific and BNSF in the mid-to-West. While the railroads, and especially the local duopolies, seemingly have a lot of overlap in their networks, the actual beginnings and endings of the routes differ substantially. For example, one railroad may have exclusive access to a specific port or run the only railroad lines from specific mines or agricultural zones. As a result, there is less competition as one could initially assume.

2.1. Main costs of operating a railroad

2.1.1. Operational spending

The cost structure for a typical railroad is mainly composed of labor costs (30%) purchased service and materials (25%), fuel costs (15%) and equipment depreciation (15%). The last 15% consists of equipment rents (typically one quarter of the fleet is rented to respond to peak demand), casualty expenses and other costs. Railroad operating expenses is compared to other modes of transport in Figure 3 (which for some reason lists 8% fuel expenses, probably due to data collected in a period of low fuel prices).

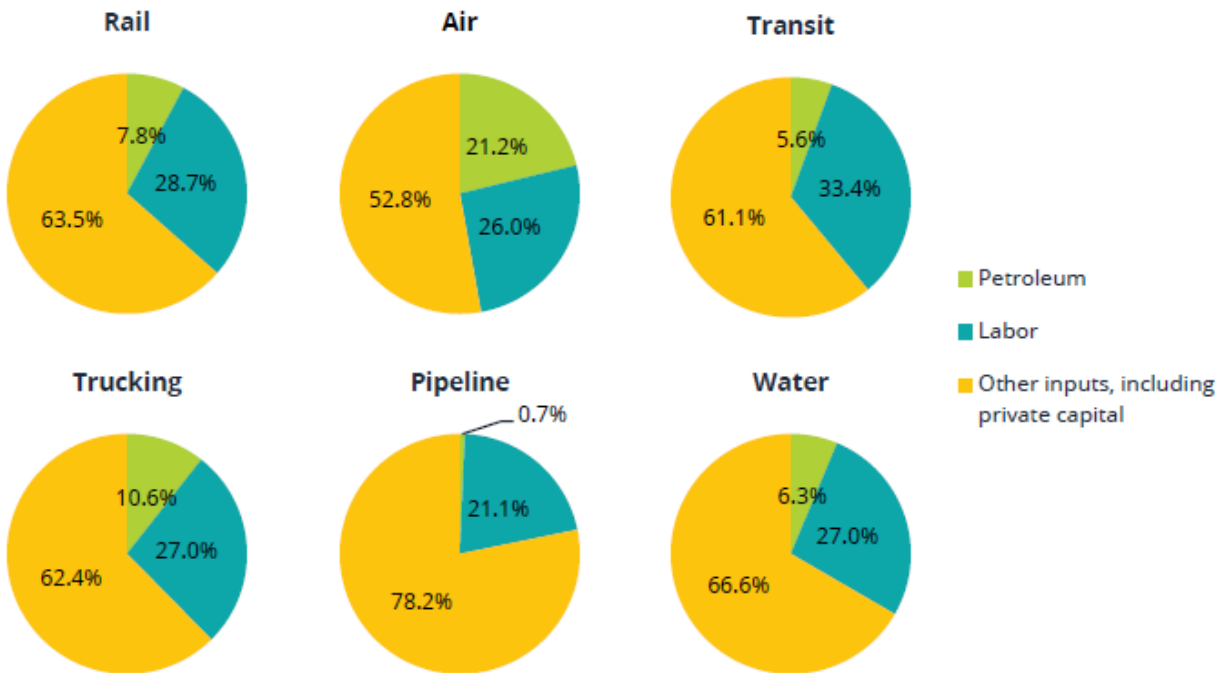


FIGURE 3. COST DISTRIBUTION FOR DIFFERENT MODES OF TRANSPORT. SOURCE: BUREAU OF TRANSPORTATION STATISTICS

Railroad companies can decrease costs by many different methods. They can raise the average speed by investing into railroad infrastructure by smoothening out curves, building strategic bridges and tunnels if the ROI allows for it. Smart scheduling will decrease personnel cost while increasing employee satisfaction if the train driver’s schedule brings him home for the night instead of sleeping in a costly hotel.

2.1.2. Capital Expenditure needs

The railroad sector is very capital intensive, with capital expenditures for this sector averaging out to 19 per cent of revenues, which can be compared to 3 per cent which is the average for U.S. manufacturing firms. Approximately 55-65 % of the capital spend can be classified as maintenance CapEx (replacement locomotives, cars, tracks etc.) leaving the rest to growth CapEx. In recent years this figure has exceeded the historical average, as U.S. regulators have forced railroad companies to invest in PTC (positive train control) – a nationwide GPS-linked safety system.

In general, a locomotive has a usable life of up to 30 years, a railroad car up to 50 years and tracks between 30 to 40 years. All the trains in North America run on diesel engines whose sole purpose is to run a generator which supplies the electric wheel motors. There is little or no talk about electrification of the tracks themselves (which would be a massive capital investment). Some companies mention hydrogen-propelled trains in their CSR reports, but no concrete plans have been made are unlikely to be realized soon. Future capital spending will be concentrated on renewed diesel engines, which are more fuel efficient now than they were twenty years ago (which is the current average age of locomotives)



2.2. Transportable goods

2.2.1. Intermodal

Intermodal freight is a transport where the cargo uses multiple modes of transport without handling of the freight itself during offloading and onloading, which in practice this means shipping containers (Figure 4). The railroads' role in this global supply chain is mainly to carry the containers obtained from ocean carriers via import/export harbors and transport these to various economic centers around the continent, and the other way around. There is also a certain degree of domestic transports (when the distance is too long for trucks) and shipments to and from Canada, Mexico and the United States.



FIGURE 4. CN INTERMODAL CONTAINERS OFFLOADING TO OTHER MODES OF TRANSPORT.

Intermodal transport is a segment with relatively low cyclicity and a secure future. The volumes of goods transported is closely tied to the general economy and trade relationships on the international markets. The United States-Mexico-Canada free-trade agreement (USMCA or "NAFTA 2.0") should help support intermodal traffic in North America. The current escalation of trade barriers between the United States and China is on the other hand a balancing negative trend.

2.2.2. Agricultural products

Agricultural products consist of all kinds of imaginable grains and other agricultural commodities such as fertilizers. The base level demand for this segment's products is very stable but is somewhat dependent on weather and climate conditions as these in turn affect quality and quantity of the crops which are used for food, livestock feed, and to some extent, biodiesel. The railroads are the logical means of transport for this commodity as there is existing integration from the grain storage facilities to the railroad networks (Figure 5). The bulk of the produce originates from the US Midwest and Western crop fields of Canada.



FIGURE 5. GRAIN TRAIN (LEFT) AND GRAIN ELEVATOR (RIGHT)

2.2.3.Coal

Coal has historically been one of the most important goods to be transported on the rail as it is usually transported over long distances from the originating mine to various powerplants across North America. Carbon extracted from coal is also utilized in steel production as 1-10% of it is mixed with iron to create various grades of steel (a low coal content creates tensile building steel while a higher content is used for cast iron steels). Coal is also the most common fuel for the heating ovens in steel plants.

The railroads' exposure to the coal industry is more prominent in the central- and eastern sectors with United Pacific being the largest coal transporter of them all. The Canadians also transport coal from various Canadian coal mines but are significantly less exposed to the demand of this commodity. This has been a wise decision as of late, as the demand has significantly reduced and the current outlook for coal as a fuel is bleak.

This is mainly driven by two factors; firstly, the effects coal for energy production has on the environment has raised political opposition against coal-fired plants. Secondly, and more importantly, the rise of fracking in the United States and Canada has significantly increased the domestic output of natural gas. The abundance of gas has shifted the price differential between coal and gas to strongly favor the latter, which as it happens is less harmful for the environment. Figure 6 presents the annual production of these two commodities in the United States since 2003. The effects of fracking can be seen from the rise of natural gas output starting from 2009 and the consequential downwards drift in coal production starts around the same time.

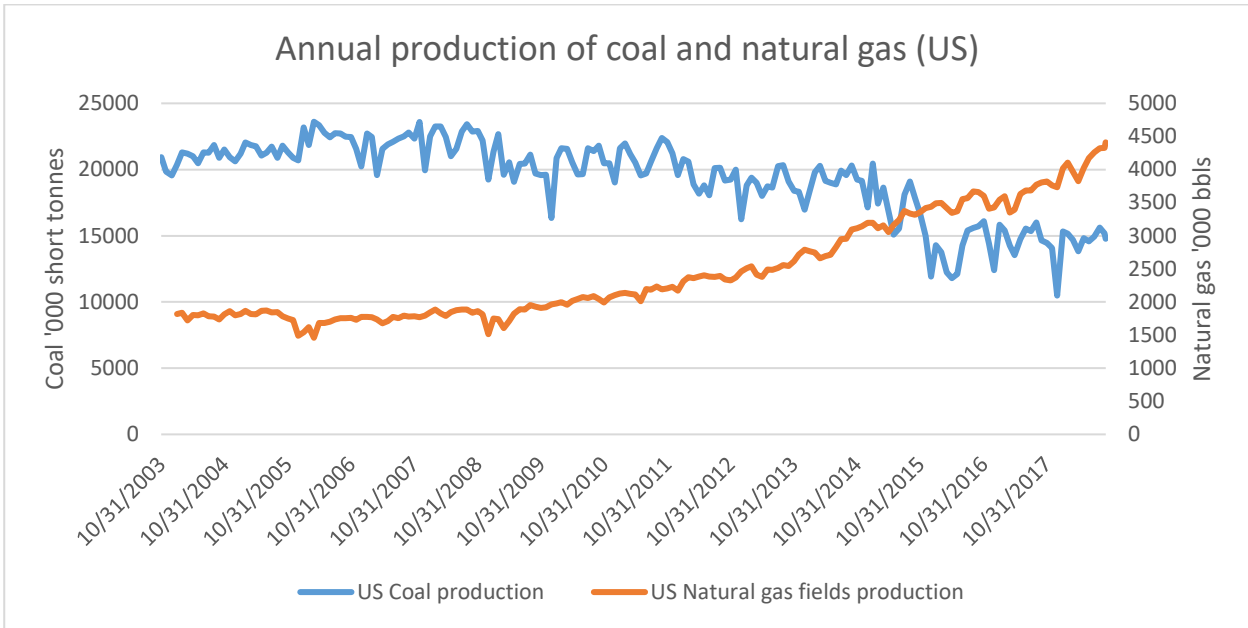


FIGURE 6. COAL AND NATURAL GAS PRODUCTION. SOURCE: US DEPARTMENT OF ENERGY.

It should not be a surprise to anyone that the annual production of coal is highly correlated to the annual value of coal transported on the various railroads. Figure 7 shows this relationship. Coal production still has a long way to go before it bottoms out as only about 7.1% of the annual coal consumption in 2017 was utilized for other purposes than energy generation. This could effectively mean that the coal demand can spiral down to approximately 10% of today's levels over the next 10 to 15 years.

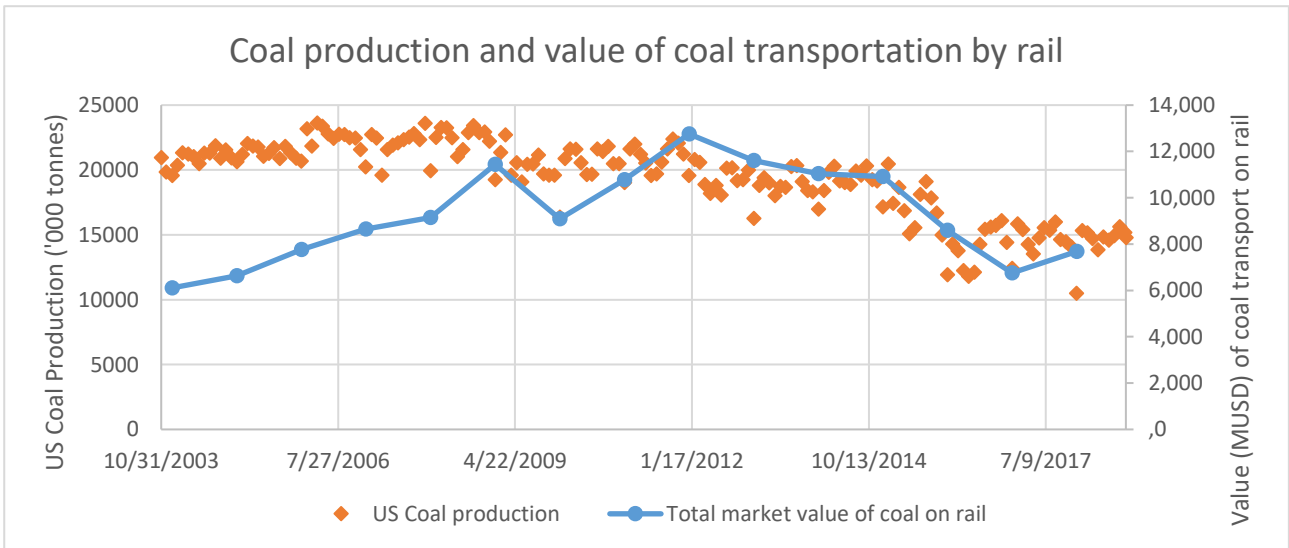


FIGURE 7. HIGH CORRELATION BETWEEN COAL PRODUCTION AND COAL TRANSPORTATION. SOURCE: US DEPARTMENT OF ENERGY AND COMPANY FILINGS.



2.2.4. Chemicals and Petroleum

Chemicals and petroleum are quite evenly distributed between bulk- and specialty chemicals shipments and cyclical crude- and refined oil products. The chemicals shipments are quite stable and is linked to the GDP and general economic activity. Oil shipments, on the other hand, is dependent on the demand for oil and the domestic production of oil. Before the shale boom vastly increased crude oil output, most of the oil-by-rail shipments derived from oil imports by tankers to major ports which were then reloaded to trains and set to various areas of the continent. The shale boom has to date doubled the annual production of oil the United States (since 2009) and part of this oil is transported over rail. Additionally, it has increased demand for fine quartz sand used in the hydraulic fracturing. This sand originates from specific mines the central and north America and is best transported by train.

Figure 8 presents the relationship between total crude-by-rail shipments and the West Texas Intermediate (WTI) oil price. Oil production and shipments have very positive outlooks in the short term, but the future for crude-by-rail is highly uncertain and most likely negative as pipelines, due to their massive cost advantages are likely to take share wherever permanent oil wells of sufficient scale are established. Note that crude oil transportation is only icing on the cake for railroad companies, as the bulk of petroleum shipments derive from the refined end product (gasoline, diesel and other oil derivatives) which is not dependent on shale production and is not threatened by pipelines.

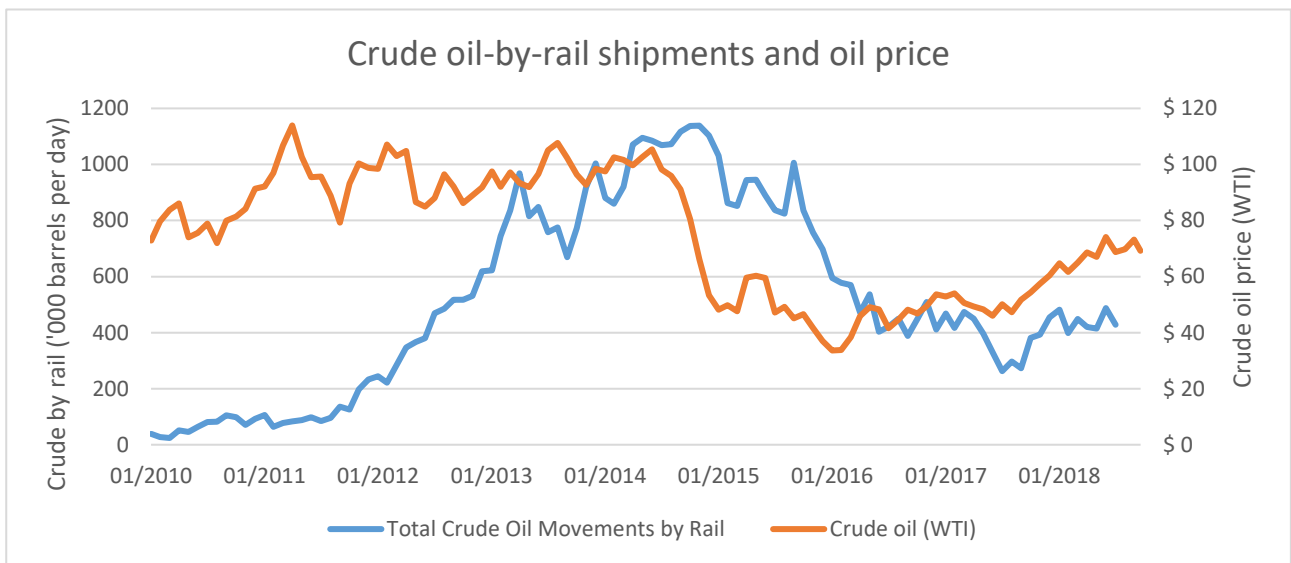


FIGURE 8. CRUDE SHIPMENTS BY RAIL. SOURCE: US DEPARTMENT OF ENERGY



The aggregated demand for shipments in the Chemicals and Petroleum is driven by slightly different factors. Chemicals are tied to the manufacturing output and is therefore closely correlated to the gross domestic product. Refined petroleum products are dependent on total demand and is a function of the demand for gasoline and diesel which is driven by the current economic activity and the oil price. Crude oil shipments on the other hand is mostly driven by the differential between the oil price and the break-even price for the various sources, of which some of them are listed in Table 1.

TABLE 1. BREAK-EVEN PRICE PER BARREL FOR DIFFERENT OIL PLAYS.

Canada oil sands	\$60-\$80
US Shale oil	\$45-\$55
Gulf of Mexico	\$40- \$45
Arab gulf states (for reference)	\$45-\$75

2.2.5. Forest products

Forest products include everything from raw materials (logs) to end products such as paper and wood pellets. Canada and the northern parts of the United States are the natural sources of timber which is refined and consumed evenly across the continent. The key drivers for this segment are related to construction and renovation activity (lumber), consumption of paper, tissue and cardboard (fiber and wood pulp).

The outlook for construction and renovation is starting to look bleak, as rising interest rates and shy-high house prices has a dampening effect on activity. Fiber products is on the other hand has a stable outlook.

2.2.6. Metals and Minerals

This category contains all kinds of metallic and mineral goods, ranging from base metals and ores to construction materials and machinery. A new development in this category is the increased demand of frac sand, which is mined in quartz quarries in the north and transported by rail to the central- and south U.S. shale plays. The most important drivers of demand are oil and gas development activity, non-residential construction and automotive production.



2.2.7. Automotive

Automotive is another important source of business for the railroads. New cars are best transported over rail for longer distances and there are plenty of long distances from the various automotive plants in the States to the end consumers all over North America. The factories are mostly concentrated in the eastern part of the US and to some degree in California (see Figure 9). From there the cars are distributed throughout the continent on suitable railroads. There is also a flow of parts needed in the assembly in the reverse direction (some of these even derive from Canada).

Likewise, there is a significant flow of imported cars arriving by freight vessels to the major ports and to some degree a flow in the other direction as well as American-made cars are exported overseas. The demand for car shipments is naturally dependent on the demand for newly produced vehicles which is linked to the general economy and average vehicle age. The pent-up demand for new cars that originated from the 2008 global financial crisis has according to many sources now been filled, which would mean that the demand will return to normalized levels going forward. Currently, many consumers are postponing acquiring new fossil-fuel vehicles as they await electric cars and the accompanying infrastructure to mature. This will likely soften the demand in the near future.

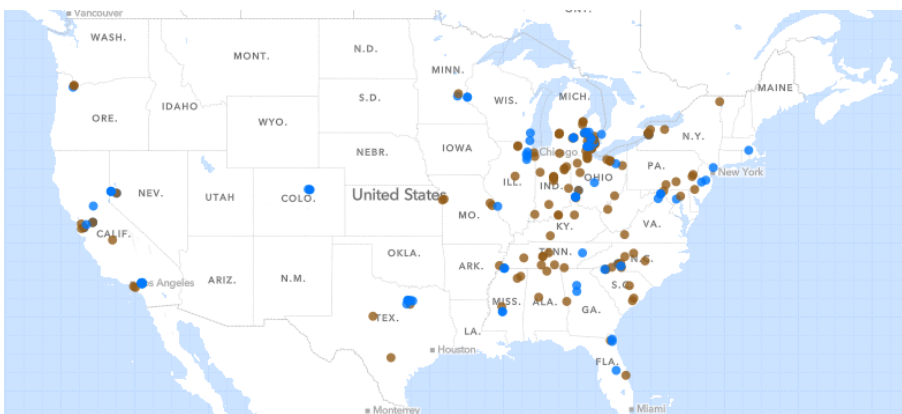


FIGURE 9. LOCATION OF CAR MANUFACTURING PLANTS (BROWN) AND DISTRIBUTION CENTERS (BLUE). SOURCE: BLOOMBERG



3. Company specific analysis

3.1. Brief history

Canadian National Railroad Company was initially created after the first world war as the Canadian government assumed ownership over two failing railroads. The company remained in the government's hands until 1995, when Canada took the company public and sold all its shares, under the condition that the headquarters remain in Montreal and that no single shareholders ownership exceeds 15 % (this was revised to 25 % in 2017).

In the years following the IPO, the railroad got the reputation of "the worst railroad in North America", as it was consistently losing market share to competitors and posted numerous weak results. The company had a toxic corporate culture of inefficiency which it had cultivated under the many years of government ownership. For example, mid-level supervisors would often let their employees go home six hours into their twelve-hour work shift, while still being paid a full day's salary. This was the situation of the company when the then current CEO Paul Tellier recruited industry veteran Hunter Harrison as its new COO.

Harrison thoroughly transformed the business over the following years, first by mandating the employees to work for the full time they were getting paid (even the unions had no arguments against this change of policy). He also made some massive organizational changes and fired plenty of middle-level managers that were unable to accept the new culture of efficiency. He then reorganized parts of the supply chain and was able to reduce the number of locomotives the company needed by a third, thus freeing up much-needed capital.

Perhaps the most significant change was the introduction of precision railroading, which he later wrote a book about which became the bible of the railroad industry. The then prevailing dogma was to let the trains wait at the supply terminals until the cars were fully loaded and all cars going to the same destination were assembled. This process could take up several days and the customers awaiting the arrival of their goods were quoted a delivery time of a wide range of days. Harrison challenged this concept and began implementing the precise schedules that we know from the passenger train industry, where trains simply leave on a given time. This increased customer satisfactory and cut the deliver time down from days to hours.

Harrison was able to turn the most inefficient company in North America to what it is today - the most efficient company. Even though he left the company in 2009, the institutional momentum of the company had shifted to the positive and the cultural change he implemented has so far been kept.

3.2. Businesses

The mix of goods transported over Canadian National's railroads are presented in Figure 10 and simultaneously compared to the weighted average the five largest North American railroads. The main take-aways from this figure is that Canadian National has a higher dependence on intermodal cargo than the average railroad, which is a good thing since this is one of the more attractive freights. Likewise, it is significantly less exposed to coal freight, which as we discussed earlier is in a steady decline. Another observation is that it has more forest and less automotive cargo compared to peers.

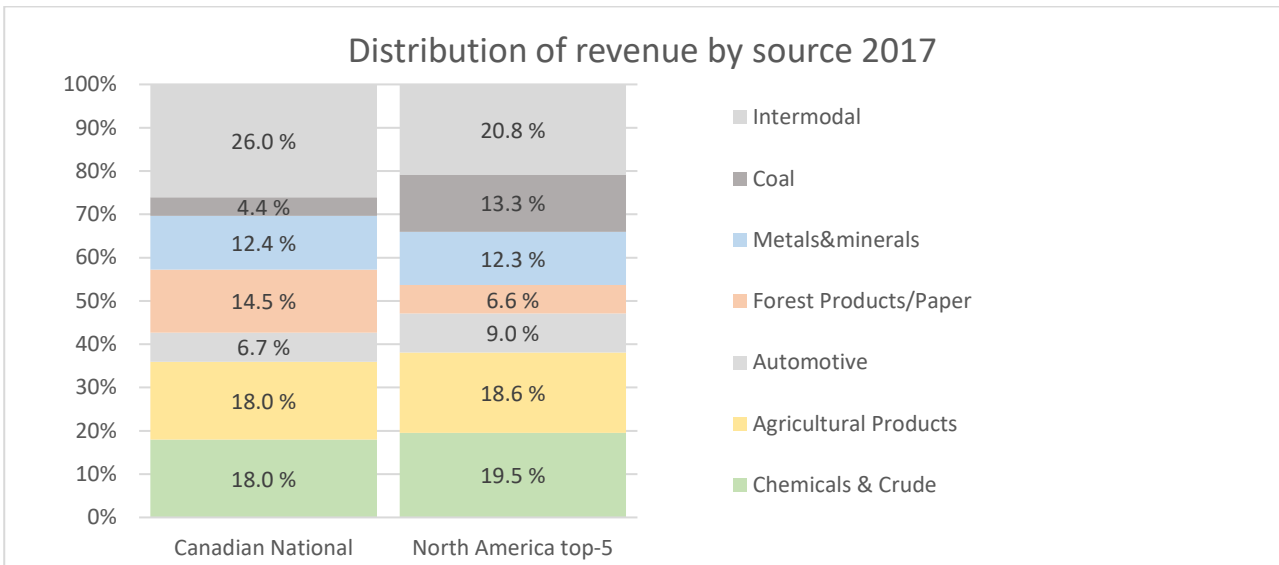


FIGURE 10. REVENUE EXPOSURE TO DIFFERENT TYPES OF FREIGHT.

The goods are roughly divided into these categories by the company and is not a perfect representation of the exposure this company faces in each economic sector. The more detailed list of goods transported and its relative important on company revenues is found in Appendix A. The same appendix shows the generalized flow of goods across North America across all main categories.



3.3. Competitive landscape & advantages

3.3.1. Railroad vs other modes of transport

The railroad industry itself enjoys significant barriers to entry deriving from many centuries of capital investments into the rail networks. The building of a railroad not only requires costly material in form of steel girders, but also building permits and either owned or leased land. All the valuable real-estate adjacent to ports and cities are by now either already owned by existing railroad companies or put to some other use (i.e. commercial or residential). It is therefore impossible to build a competing network of tracks today, except in some minor niche locations.

Other modes of transport also compete with the transportation contracts but will have a hard time competing against the railroads wherever these have existing rail between the start and finish of the supply line. Freight by sea is possibly a cheaper mode of transport, which is why there is relatively little tracks along the coastline, but the lack of rivers means that sea freight cannot reach the central economic zones. The only way for east coast cargo to reach the west coast by sea is by traversing the Panama Canal, which is a sizeable and costly detour. Trucks are more flexible with respect to routing but does not have scale advantages against a railroad that has the same start and goal terminals. Transportation by rail is by these reasons not threatened by disruption and the volumes transported by rail are likely to be constant or growing over time.

3.3.2. Canadian National vs peers

There is some degree of internal competition within the railroad industry, as many of the railroad overlap in zones of high economic density. However, there are a few distinguishing factors which gives Canadian National a slight edge over its closest peers in the industry.

3.3.2.1. Operating ratio

Canadian National has the lowest operating ratio, which is defined as railroad operating expenses divided by railroad revenue and is interpreted as a lower number is better (i.e. lower costs per unit of revenue). Figure 11 presents the historical development of this metric organized by duopolies (similar color means similar area of operation). Canadian National has clearly had the lowest operating expenses to revenues since 2008 (and even before). In itself this means that the company's profits are bigger but there is also another takeaway from this in the sense that the company, due to its superior efficiency, will be able to weather a downturn in demand much better than its competitors. Its operational cash flows will be greater and can be used for growth investments while the rest of the industry suffers.

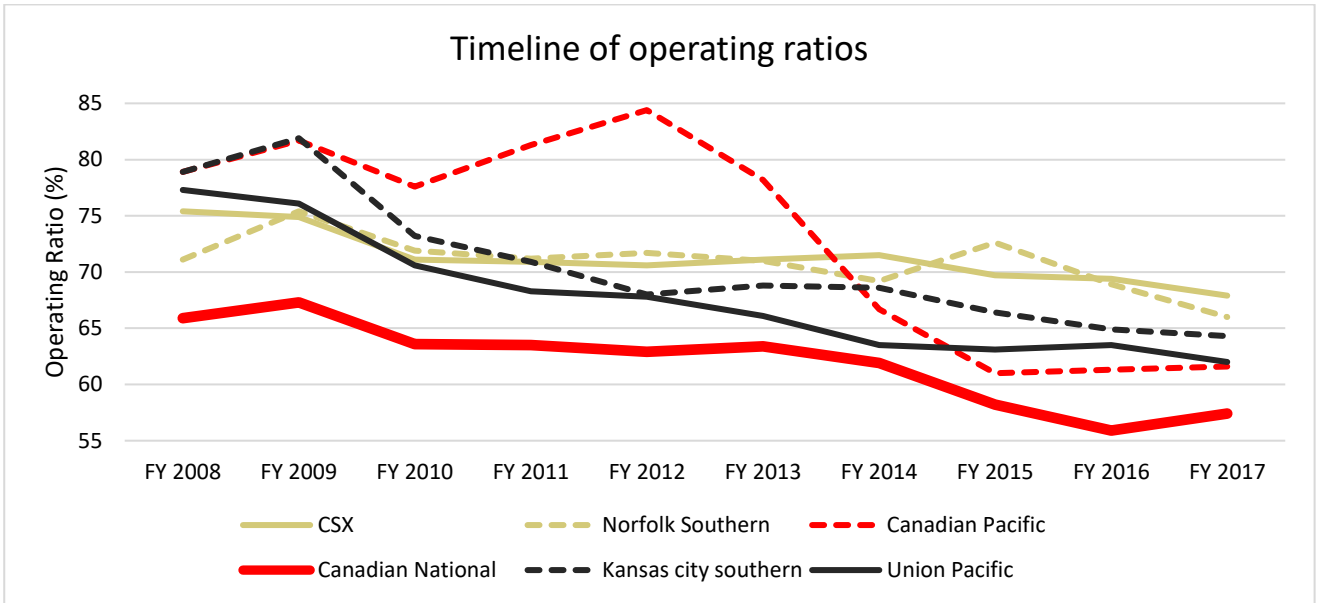


FIGURE 11. OPERATING RATIOS FOR NORTH AMERICAN RAILROADS.

Another factor, which to some degree is embedded in the operating ratio, is the lower break fuel consumption of the train fleet of Canadian National (Figure 12). Railroad companies can fully pass the cost of fuel to the customer in the form of fuel surcharge rates tied to the US highway diesel index, which is revised monthly. However, a lower fuel consumption means that the total cost of freight rates for the customer can be lower for Canadian National over its peers. Alternatively, the company can pocket the difference as profit.

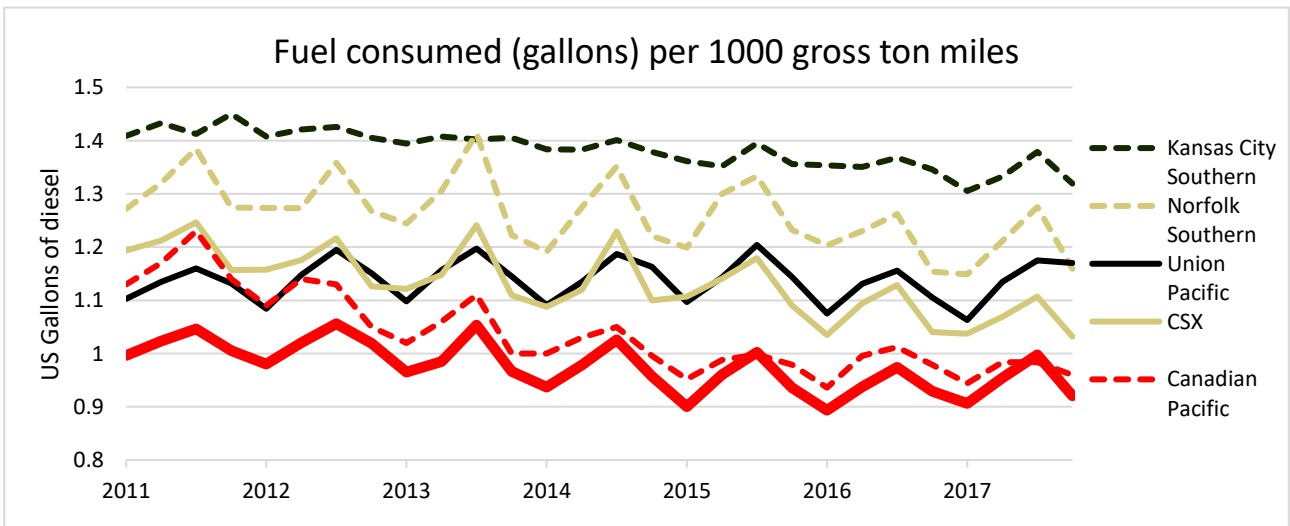


FIGURE 12. FUEL CONSUMPTION AMONG NORTH AMERICAN RAILROADS.

It is likewise an indication that the company has a young fleet of trains, as newer engines are more fuel efficient today than they were ages ago. The company does not disclose the average age of its fleet, but the fuel consumption graph is an indicator of a low average age. A young fleet leads to less maintenance spending and higher free cash flow as the modernization CapEx has been done in the past and of course lower fuel expenses.



3.3.2.2. Chicago route

Chicago is one of the most important railroad hubs in North America and around 25 % of all cargo moving on rail in the states will at some point go through here. A strategic acquisition in 2009 gave Canadian National a superior route in and around Chicago which allows the company to avoid the congested downtown area and keep a high train velocity in this area. The other companies have less elegant solutions.

3.3.2.3. Port of Prince Rupert and three seas



FIGURE 13. CANADIAN NATIONAL NETWORK (LEFT) AND CANADIAN PACIFIC (RIGHT).

This company is the only railroad operator that has access to the Northern East and West coast and the Gulf of Mexico, as seen in Figure 13. This gives the company access to plenty of different ports and is mostly able to transport the cargo all the way itself. The result is that this company has the highest origination-to-termination ratio among the industry, which is seen in Table 2. To some railroads, and especially the efficient ones, having a high score in this measure is an advantage as they are not reliant on the (perhaps unreliable) schedules of the transferring railroad.

TABLE 2. RATIO OF FREIGHT TRANSPORTED SOLELY ON ONE NETWORK.

Company	Origination/termination ratio (%)
Canadian National	70 %
Canadian Pacific	25 %
CSX	65 %
Norfolk Southern	60 %
Union Pacific	60 %
Kansas City Southern	20 %

The same table shows that the Canadian peer Canadian Pacific is much more reliant on other transport, having a ratio of only 25 %. Canadian National have another leg on its Canadian rival as it shares access to the same Canadian ports but has extra exclusive access to the major port of Prince Rupert. This is by the looks of it a small destitute village close to the Alaskan border but is one of the major ports in the US and Canada (Table 3). The remoteness of the port, which is 144 kilometers away from the nearest village and is connected by a single road leading in and out, means that the only viable mode of transport is by the railroad owned by Canadian National. The Prince Rupert activities generate approximately 7 % of this company's total revenues.



TABLE 3. RELATIVE SIZE OF NORTH AMERICAN PORTS. MEASURED BY TWENTY FOOT EQUIVALENTS (CONTAINERS).

Port	Million TEUs	Percentage of North American ports
Port of Los Angeles	9.34	23.5 %
Port of Long Beach	7.54	18.9 %
Port of New York - New Jersey	4.80	12.1 %
Port of Savannah	4.04	10.2 %
Port of Vancouver	3.25	8.2 %
Port of Oakland	2.42	6.1 %
Port of Virginia	2.84	7.1 %
Port of Houston	2.46	6.2 %
Port of Charleston	2.18	5.5 %
Port of Prince Rupert	0.93	2.3 %



3.4. Financials

Canadian National has been able to grow its revenue, and even its operating margins, steadily over the lifetime of the company (Figure 14). Furthermore, the rate of sales growth has exceeded the North American nominal GDP growth over the same period by one or two percent. For example, the company’s sales CAGR since 2007 has been 5.8 % versus a compounded GDP growth in the USA and Canada of 3.2 % respectively. Over the last five years, the sales CAGR was 6.6 % while the nominal GDP grew 4.2 % in the states and only 3.4 % in Canada. The growth in operating income has been even better as there has been minor, but steady, improvements in profitability over the same time.



FIGURE 14. SALES AND MARGINS.

The root-cause of the outperformance of sales growth over GDP is not only related to growth in the railroad network and increased traffic, as a significant part of the growth comes from price increases. Figure 15 shows the quarterly railroad “same store sales” growth, or in other words, the comparable price increases the company has done compared to the previous year. The pricing has exceeded North American inflation rates is are surprisingly predictable in the 2-5 % range. This is an indication of great competitive advantages in this industry and for this company in particular. Few companies of this scale can consistently increase prices above inflation.

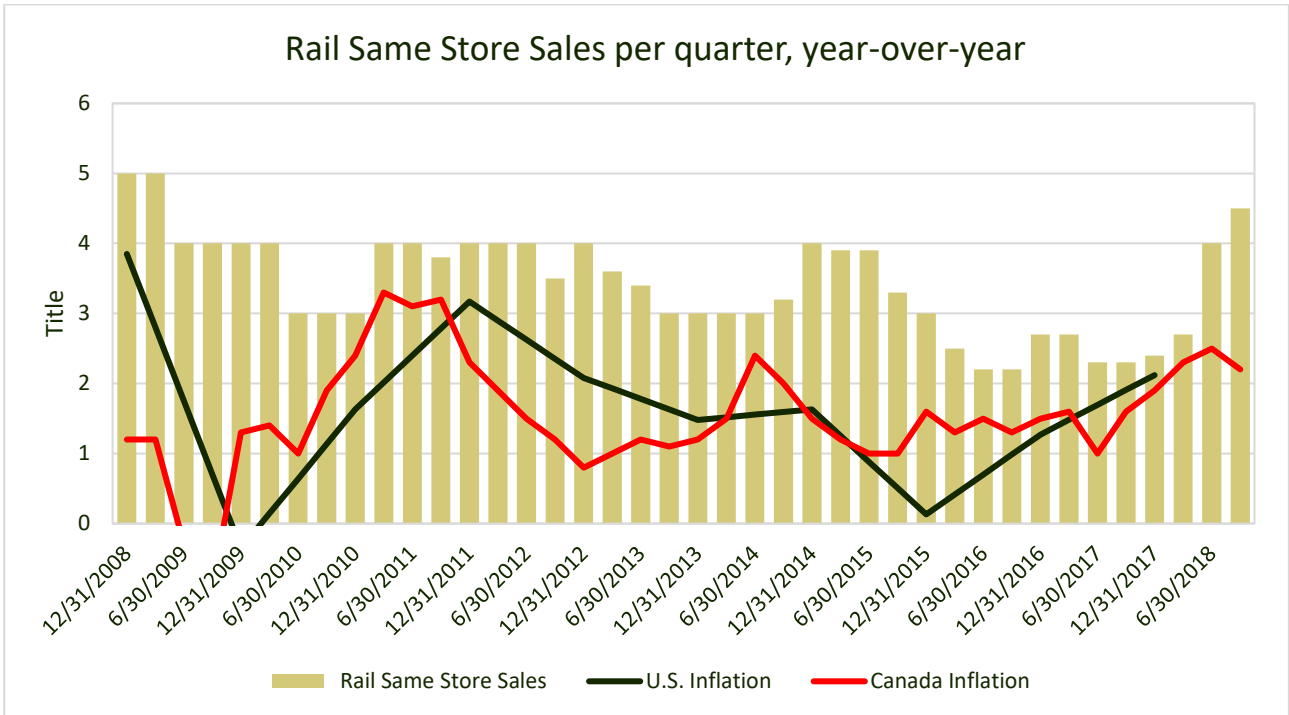


FIGURE 15. RAIL COMPARABLE STORE SALES GROWTH (%) AND U.S. INFLATION.

The outlook for sales growth continues to be good. The high economic activity in the US spurred by corporate-friendly tax policies and healthy global economic growth ensures that there is demand for railroad services. In fact, the company is currently struggling to cope with the increased demand as the railroad network is utilized to full capacity. The company aims to alleviate the pressure by investing in double-track networks in the areas with the highest congestion and by raising prices. The price increase can be seen in the spike of rail comparable store sales growth in Figure 15. Similarly, the increased investment activity us seen in Figure 14 from the drop in operating margins, which is due to high activity of hiring new people and other expansion costs.

The operating margin still has room to expand, or vice-versa, the operating ratio can come down even though this company is already best-in-class. There is always room to squeeze more efficiency out of the system and the company is currently investing a lot of CapEx on new trains both for expansion uses and for modernization.

3.4.1. Return on invested capital

The ROIC for this company and its industry peers is presented in Figure 16. Canadian National has been the clear winner for the most part of the 21th century and the legacy of Hunter Harrison is partially visible in the graph from the turnaround of ROIC in the early part of the century - and of course the consistent outperformance ever since.

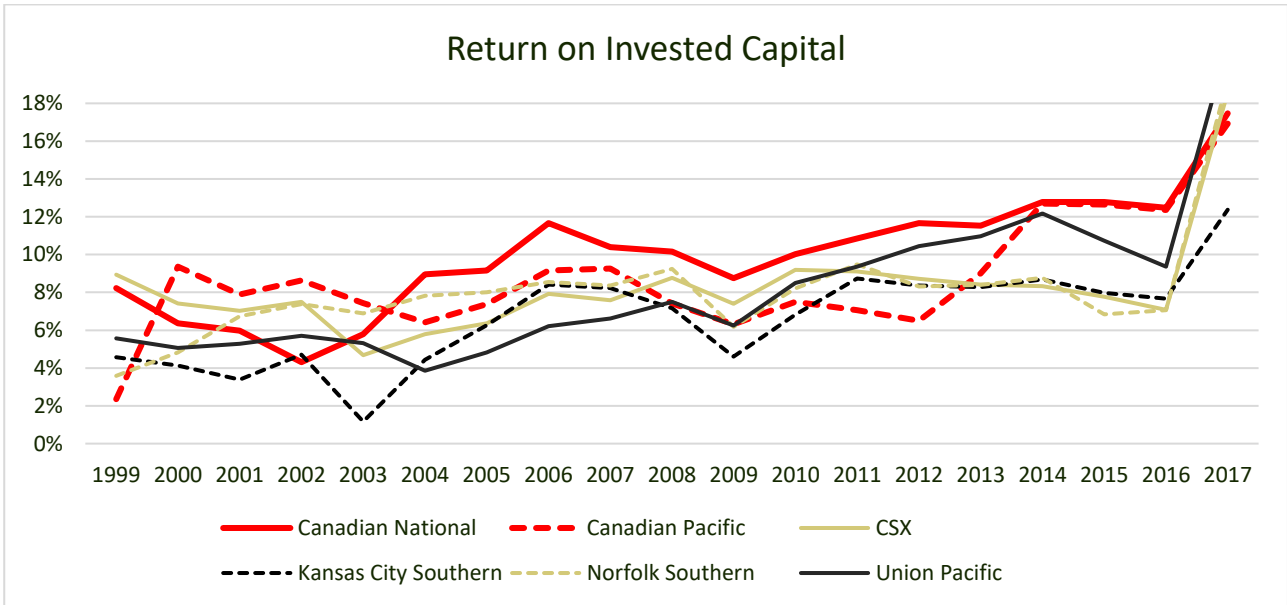


FIGURE 16. ROIC FOR CANADIAN NATIONAL (THICK RED LINE) AND PEERS.

The sudden spike-like increase in ROIC in the last fiscal reporting year is due to a change in the tax treatment in the United States, which allowed companies (especially railroads) to instantly depreciate the full value of some specific assets. U.S. incorporated railroads were able to eliminate all taxable income for 2017 and thus paid no taxes. Canadian companies with American subsidiaries were partially able to utilize the same tax incitements.

The statutory tax rate for corporations in USA was lowered from 35 % to 21 % and will have a positive effect on ROICs in the next few years. However, in the longer term, competition amongst railroads and other transportation companies should bring the ROIC down to historical levels, which is close to 8 % for the railroads. Companies with superior ways of working and strong relative competitive advantages should be able to keep the ROIC a few percentage units above this, which should be the case for Canadian National.



3.5. Management & Board

3.5.1. CEO Situation

The top-level leadership has undergone some drastic changes in the latest years since Harrison retired. His successor Claude Mongeu (CEO: 2010-2016) stepped down due to health reasons. Luc Jobin took over but was fired about 1.5 years later for unclear reasons but is apparently linked to underperformance of the company and his role as CEO.

Jean-Jacques Ruest has now taken over as interim CEO while the company searches for new talent. He has been the Chief Marketing Officer since 2009 for Canadian National and he has been active on the conference calls ever since he joined, which indicates that he is and has been an important part of the core leadership team and knows the business in-and-out. I would not be surprised if he was made the company’s permanent CEO.

The board consists of 12 members with tenures ranging from 1.5 years to 24 years. The average tenure of board members is 10 years with a population standard deviation of 8 years.

3.6. Shareholders

The shareholder list for Canadian National differs from the typical North American railroad, as there is a single person that has an abnormal concentration of shares. That person is Bill Gates who owns shares through his investment vehicle “Cascade Investment” and a separate investment through the Bill and Melinda Gates foundation. He initiated his position in 2011 and then bought more shares in 2012 and 2015. The rest of the ownership list consists of Canadian banks and wealth managers.

	Shareholder	Description	Percent owned
1	Cascade Investment LLC	Bill gates investment vehicle	13.75
2	Sun Life Financial Inc	Investment Advisor	5.53
3	Royal Bank of Canada	Bank	5.45
4	Wellington Management Group	Investment Advisor	4.09
5	Toronto-Dominion Bank/The	Bank	2.83
6	Vanguard Group Inc/The	Passive fund	2.54
7	Bill & Melinda Gates Foundation	Bill & Melinda Gates	2.34
8	BMO Financial Corp	Bank	2.29
9	Caisse de Depot et Placement du Qu	Investment Advisor	1.92
10	Canadian Imperial Bank of Commerce	Bank	1.82



4. Valuation & Risks

4.1. Valuation

The sifter earnings yield puts this company comfortably in the second highest quartile, as shown in Figure 17. The assumptions underlying the estimates are a 7-8 % revenue growth in the coming two years, which is realized both by aggressive price increases and additional capacity coming online as current bottleneck-relief investments are completed. The demand from customers is there to justify this increase. The revenue growth in years 2020 to 2022 is set to average to 4.5 % per annum which is derived from estimated GDP growth plus 1-2 % percentage units.

The operating ratio (and the consequential operating margin) is expected to stay in line with recent historical levels, although not as low as the recent quarters' which was depressed due to aggressive expansion.

Sifter cylinder ranking

Anticipated yields on buy price

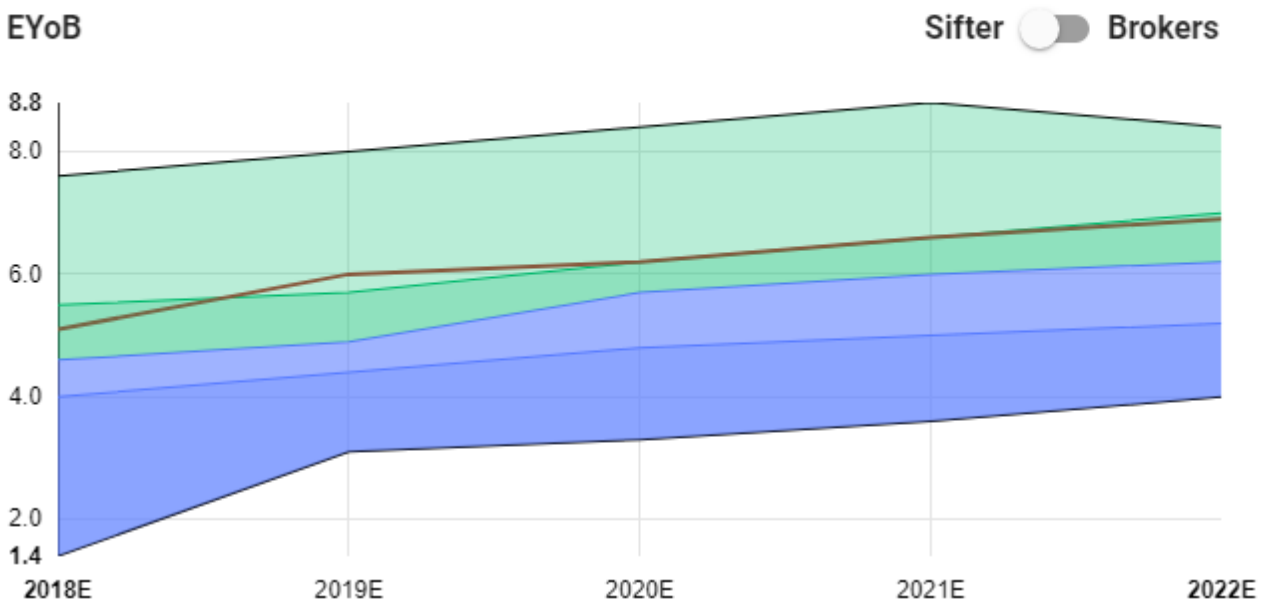


FIGURE 17. YIELD FOR CANADIAN NATIONAL 26/10/2018.

4.2. Risks

4.2.1. Regulatory risk

Perhaps the biggest threat to the future of railroad transport is the risk of government intervention in the business. Prior to 1980 there were numerous legislations in place which ruled how railroads could operate, one of the most restrictive was the cap on pricing. The law was eventually abolished ("the Staggers rail act, 1980") as railroads were frequently placed into bankruptcy when less regulated highway- and airline traffic became more numerous and took market share. This resulted in a resurrection of the railroads and over the next three decades both returns on invested capital and the capital invested in the railroad industry grew rapidly. The risks presented here thus concerns revitalization of future government meddling in this



industry, as the railroads with their vast private networks is enjoying a monopoly of sorts. It was only last year that the Canadian regulations concerning domestic grain transport by rail (a pricing regulation) was abolished.

4.2.2.Accidents

Large-scale train accidents are relatively infrequent but can cause major mayhem should they occur. In 2013, an American railroad operating in Canada carrying 74 carloads of crude oil from the Bakken shale fields accidentally rolled down a small hill while completely unmanned. The train derailed into a minor town and the resulting inferno destroyed half of the city center and killed 42 people. A repeated tragedy like this would be costly.

4.2.3.Cyclical demand for commodities

Some of the goods transported are cyclical (crude, forest products, coal, metals) and can be fluctuating widely in demand over time. Figure 18 presents the relative growth of carloads of goods since 2006, of which coal has exhibited the largest swings in demand. The cyclicality is, due to the high degree of diversification of transportable goods, not a major issue but the trains cars are engineered for specific purposes and sudden loss of demand can make some of the assets temporarily excessive. A substantial part of the train fleet is for this reason on lease contracts.

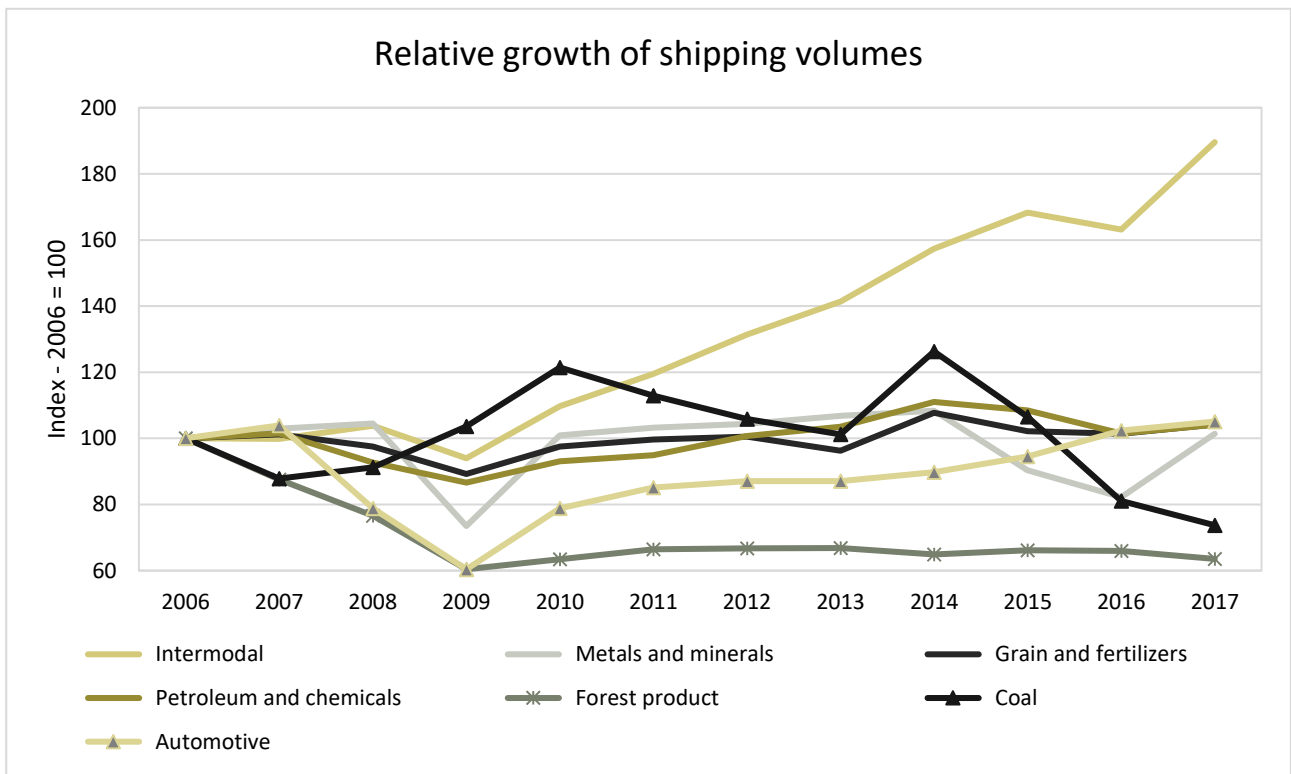


FIGURE 18. TREND AND CYCLICALITY FOR CARLOADS OF CARGO.



4.3. SWOT

The SWOT (Strengths-Weaknesses-Opportunities-Threats) analysis is presented below.

Strengths	Weaknesses
<ul style="list-style-type: none"> • Lowest operating expenses; fares downturn better • Exclusive port access and access to three seas • Ingrained corporate culture and great routes for intermodal goods • Young fleet and high average speed • Largest railroad in Canada, diversified portfolio 	<ul style="list-style-type: none"> • High exposure to Canada-USA international trade • Aggressive Canadian unions
Opportunities	Threats
<ul style="list-style-type: none"> • Future efficiency improvements • Strategic capacity expansions to grow traffic • Increased demand of grain products in biofuels 	<ul style="list-style-type: none"> • Political regulation • Self-driving long-haul trucks • Revolutionary energy invention removing railroads advantages (cheap fusion energy) • Panama Canal Expansion

5. Conclusions

The company is currently the most efficient railroad in North America and even though top-leadership uncertainties weights negatively in the short term, the company culture has been well seasoned over the years and one can expect the routines and systems set in place to continue working. The company is currently the most efficient railroad in North America and has a product mix set up for a favorable future. Recent capital expenditures both on new trains and equipment as well as bottleneck investments should facilitate a healthy revenue growth of one to two percent above North American GDP.

The CMT believes that this company is a good fit to the current cylinder.



Appendix A

TABLE 4. REVENUE BY CATEGORY.

Sorted by type			
Main category	Sub category	Revenue	Percentage
Intermodal	Intermodal (all)	3 200.0	24.5%
Intermodal	International	2 112.0	16.2%
Intermodal	Domestic	1 088.0	8.3%
Grain and fertilizers	Grain and fertilizers (all)	2 214.0	17.0%
Grain and fertilizers	Canadian Grain Regulated	863.5	6.6%
Grain and fertilizers	Fertilizers	487.1	3.7%
Grain and fertilizers	U.S. Grain - Domestic	442.8	3.4%
Grain and fertilizers	Canadian Grain Commercial	310.0	2.4%
Grain and fertilizers	US Grain Exports	110.7	0.8%
Petroleum and chemicals	Petroleum and chemicals (all)	2 208.0	16.9%
Petroleum and chemicals	Chemicals and Plastics	993.6	7.6%
Petroleum and chemicals	Refined Petroleum Products	794.9	6.1%
Petroleum and chemicals	Crude and Condensate	331.2	2.5%
Petroleum and chemicals	Sulfur	88.3	0.7%
Forest products	Forest products (all)	1 788.0	13.7%
Forest products	Lumber and Panels	947.6	7.3%
Forest products	Pulp	840.4	6.4%
Metals and minerals	Metals and minerals (all)	1 523.0	11.7%
Metals and minerals	Energy Materials	487.4	3.7%
Metals and minerals	Metals	441.7	3.4%
Metals and minerals	Minerals	350.3	2.7%
Metals and minerals	Iron Ore	243.7	1.9%
Automotive	Automotive (all)	825.0	6.3%
Automotive	Finished Vehicles	775.5	5.9%
Automotive	Auto Parts	49.5	0.4%
Coal	Coal (all)	535.0	4.1%
Coal	Coal	395.9	3.0%
Coal	Petroleum Coke	139.1	1.1%
Other Revenue	Other Revenue(all)	748.0	5.7%
Other Revenue	Vessels and Docks	374.0	2.9%
Other Revenue	Other non-rail services	299.2	2.3%
Other Revenue	Interswitching & other revenues	74.8	0.6%

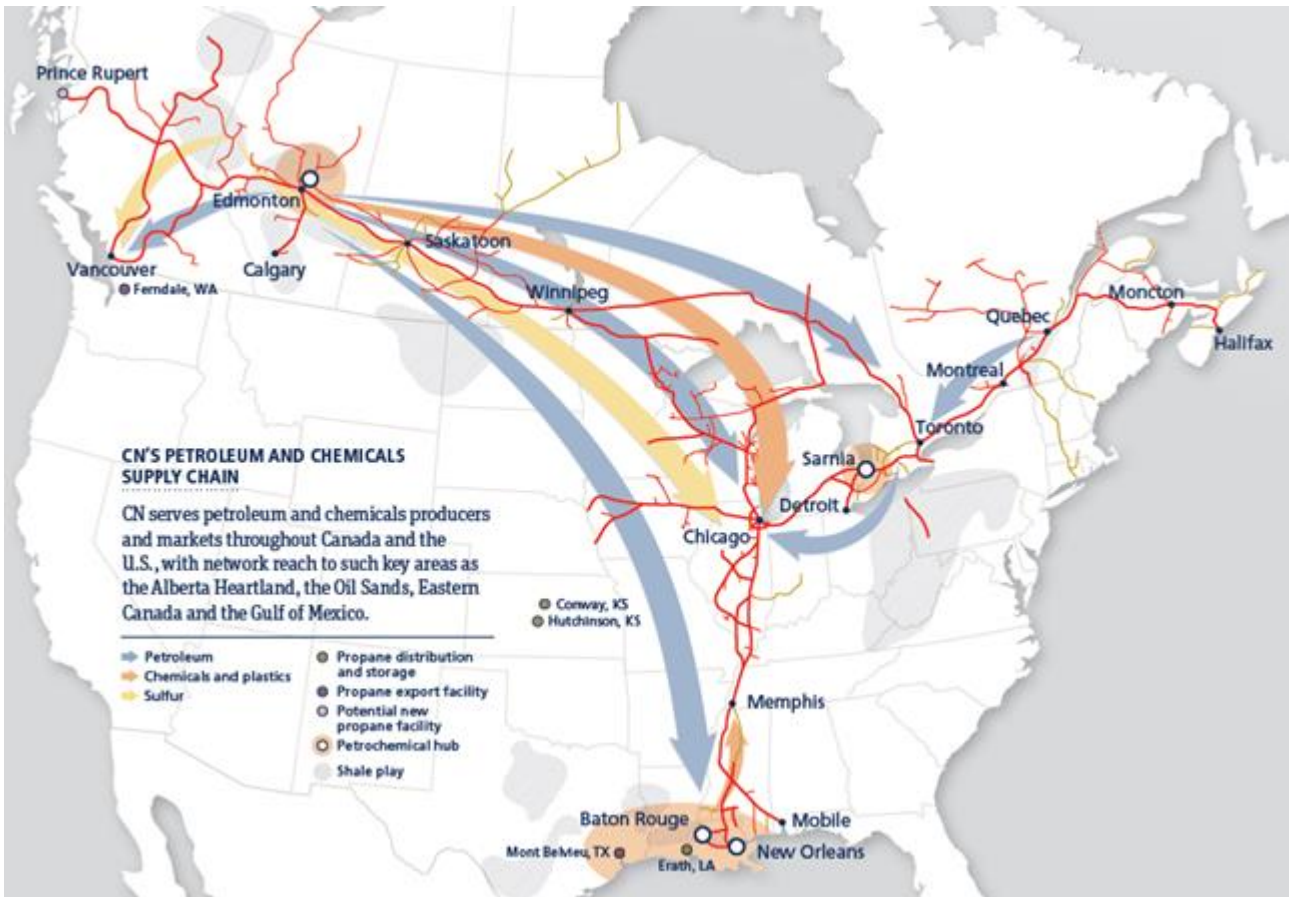


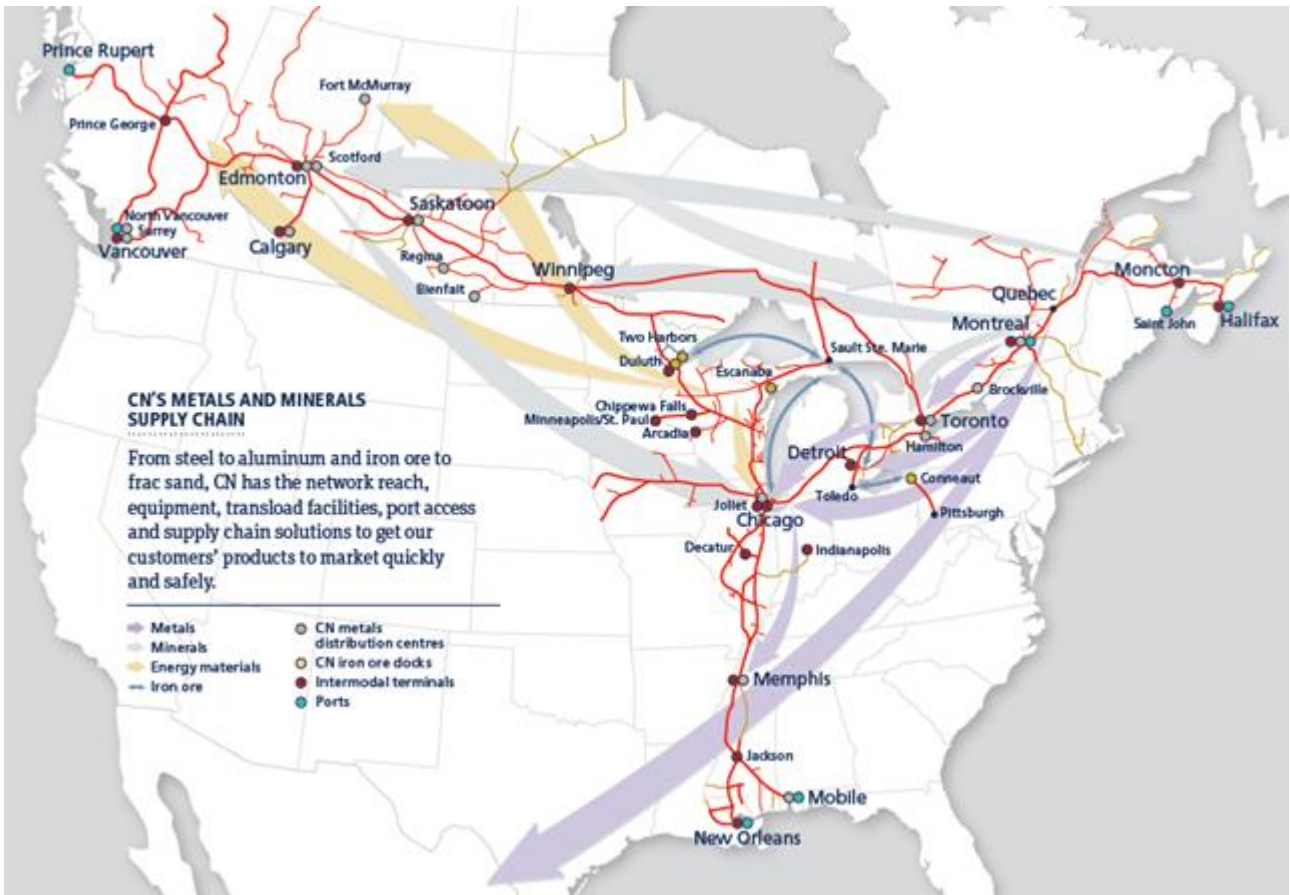
TABLE 5. REVENUE BY CATEGORY – SORTED BY SIZE.

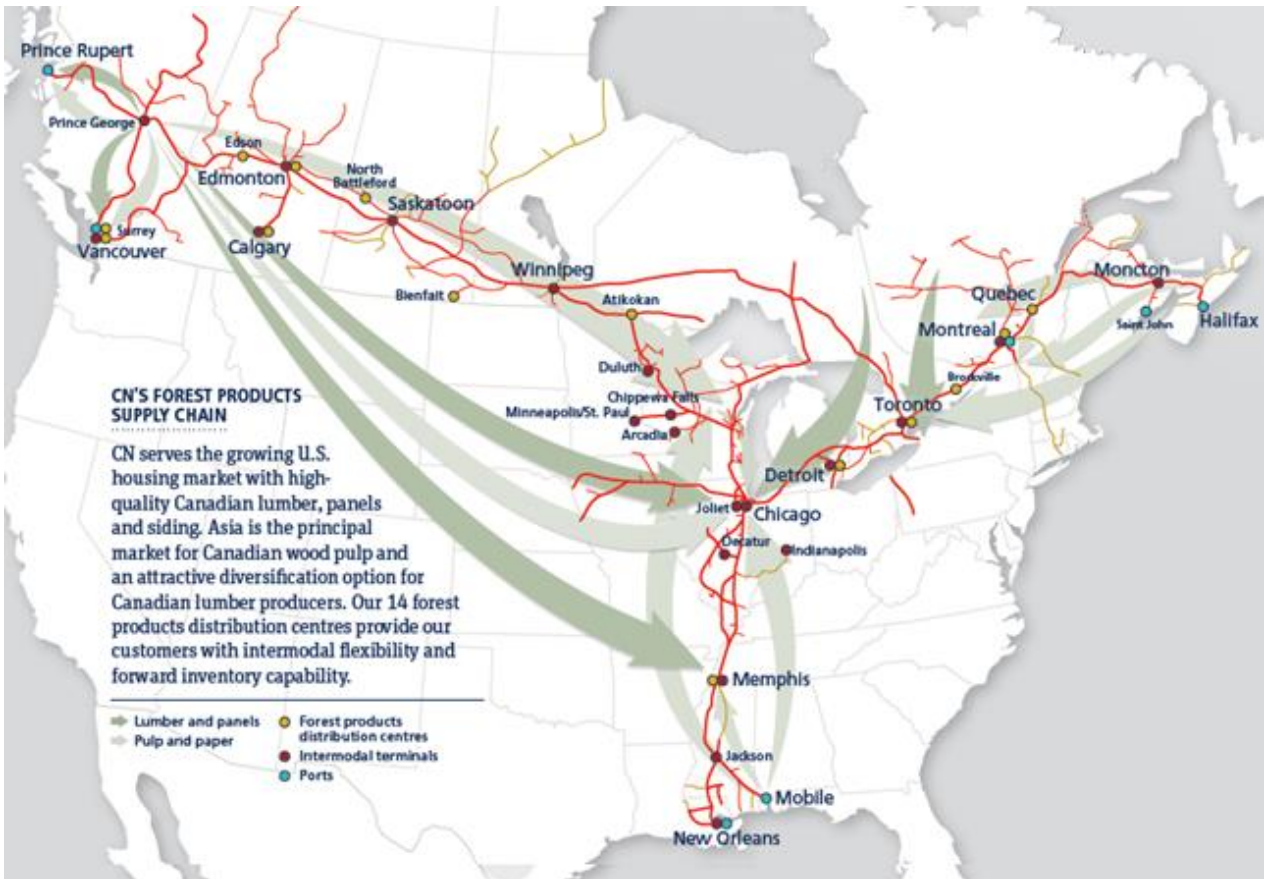
Sorted by size			
Main category	Sub category	Revenue	Percentage
Intermodal	International	2 112.0	16.2%
Intermodal	Domestic	1 088.0	8.3%
Petroleum and chemicals	Chemicals and Plastics	993.6	7.6%
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Grain and fertilizers	Canadian Grain Regulated	863.5	6.6%
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Other Revenue	Interswitching & other revenues	74.8	0.6%
Automotive	Auto Parts	49.5	0.4%

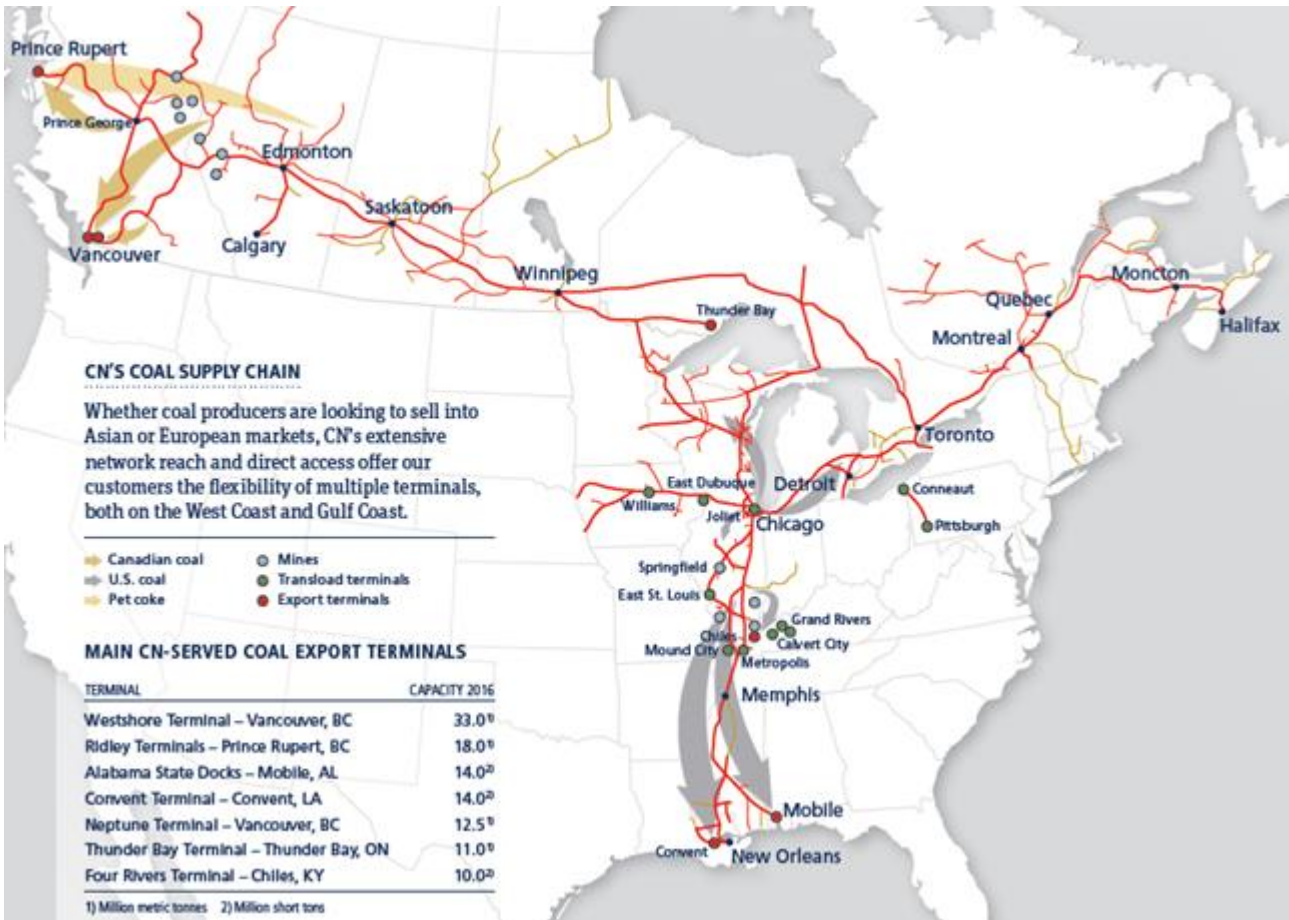
A.1. Flow of goods.

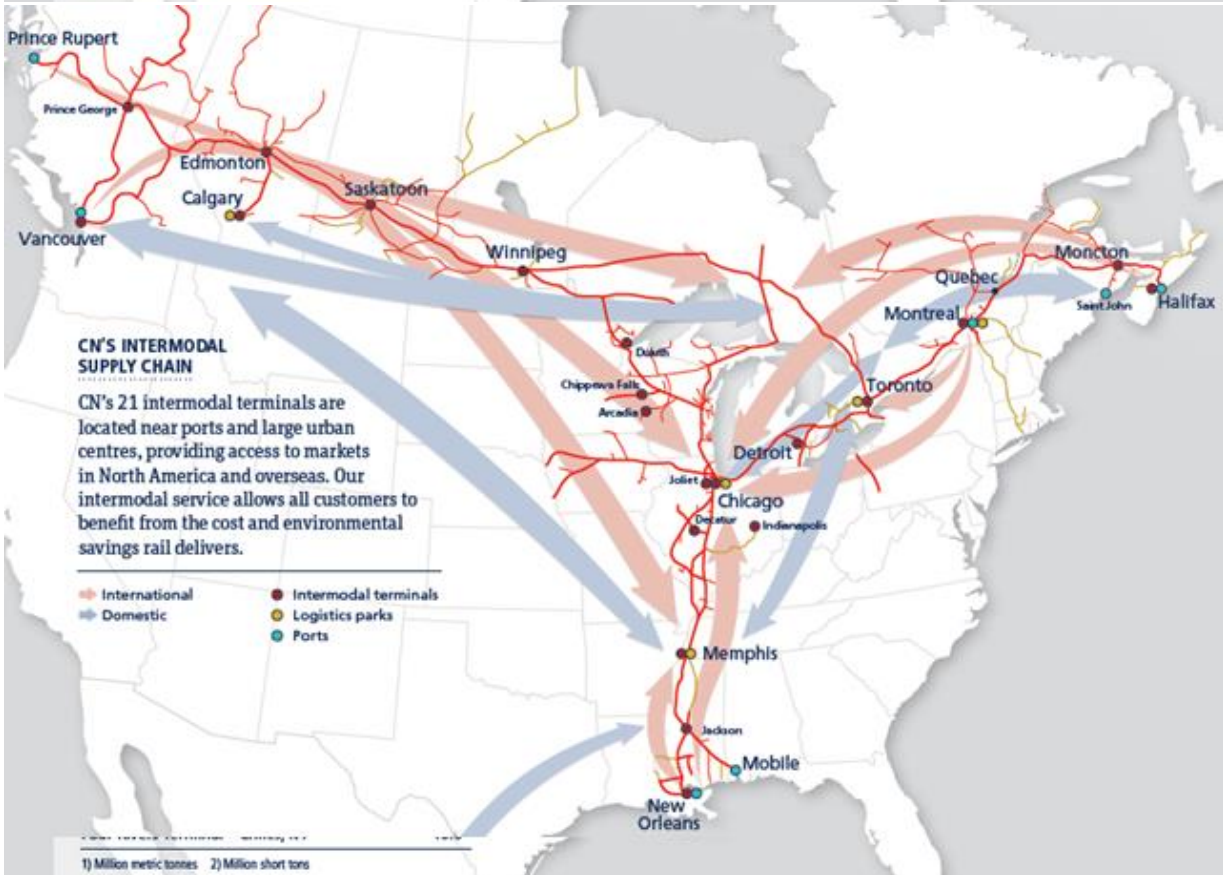
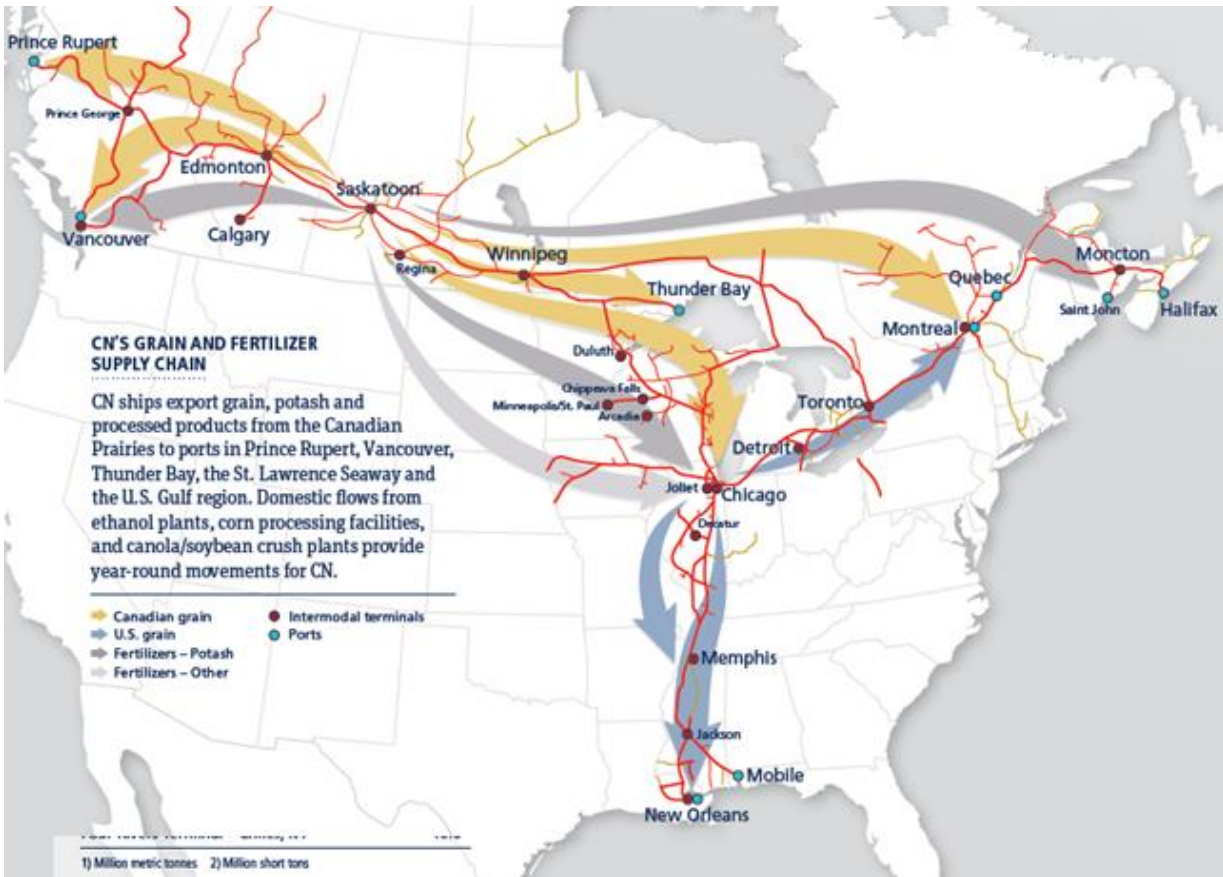
The following pages presents the flow of goods through Canadian Nationals railroad networks with focus on the major areas of origination to the major areas of termination. The figures are taken directly from the company's investor presentation and should give a reasonable overview of the company's operations and business exposures.

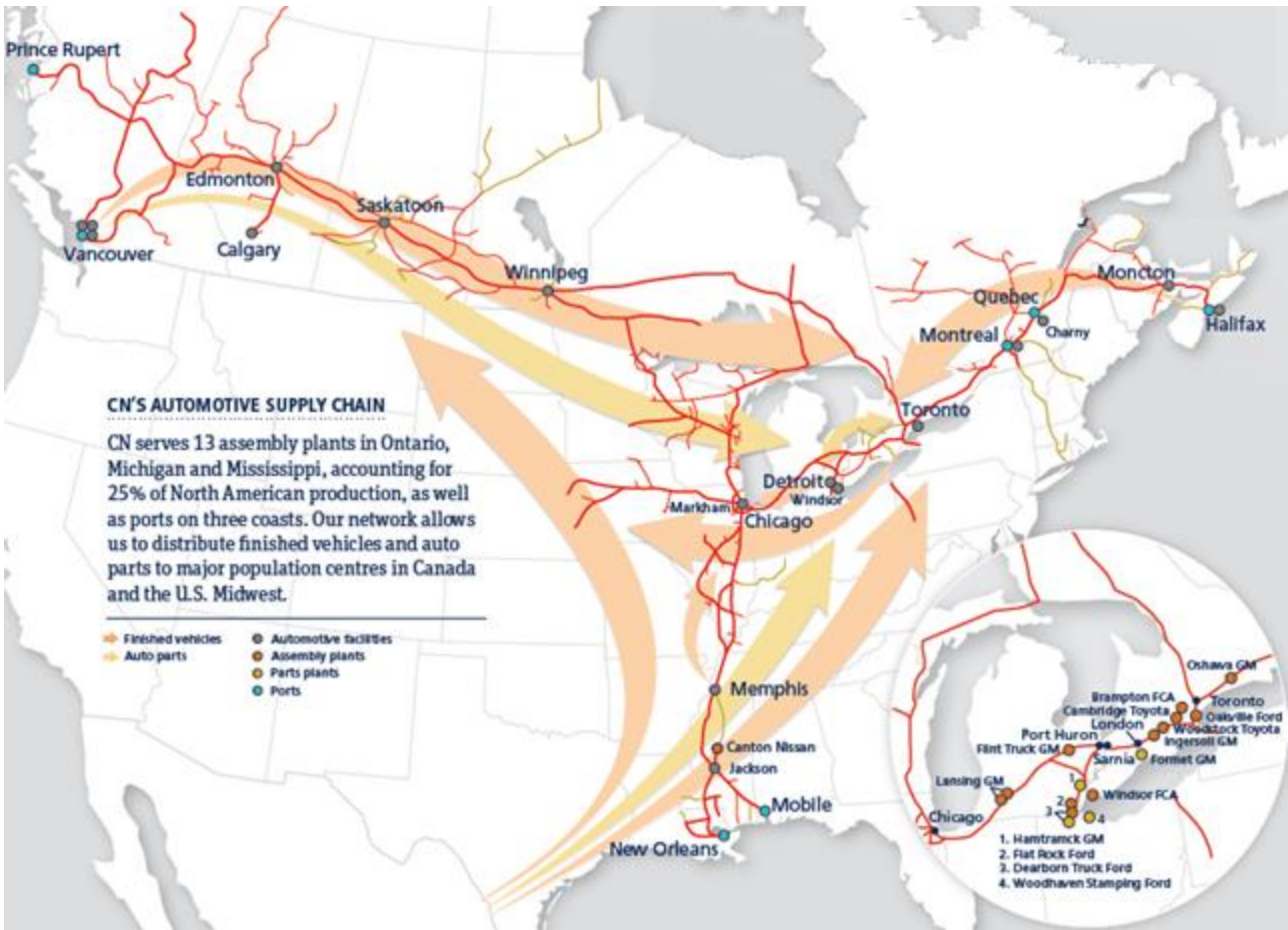














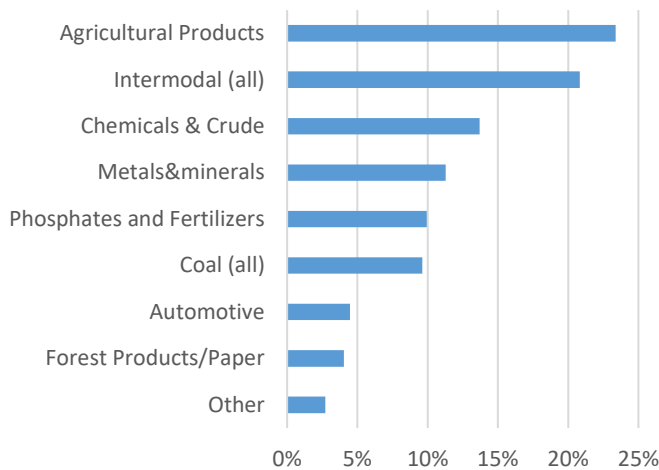
Appendix B. one-pagers for competitors

A short report about Canadian National's main competitors: Canadian Pacific, CSX, Norfolk Southern, Kansas City Southern and Union Pacific is presented next. The standardized reports contain the main transportation mix (standardized across companies), selected financial figures, a crude SWOT analysis and some commentary on the latest development for the company.



Canadian Pacific

Goods revenue share



Network



	5-year sales CAGR	5-year EBITDA CAGR	FY2016 ROIC	5-year ROIC average
Canadian Pacific	3.78 %	17.7 %	14.7 %	12.5 %
Peer group average	-0.67 %	3.76 %	11.9 %	12.2 %

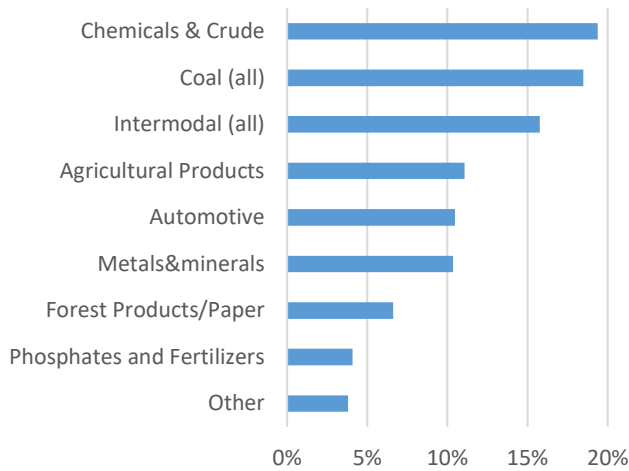
Canadian Pacific is the company that has performed the best turnaround in recent years, which is evident from the 5-year EBITDA average growth rate of 12 % since 2012. This is related to two factors: (1) it was not operating optimally, which (2) allowed Hunter Harrison (former CEO, now deceased) to improve the business greatly as he did with Canadian National in the early 2000's. I believe his 5-year tenure at CP has made a lasting footprint in the corporate culture (as it did in CN) which would allow the company to improve further, even though he is no longer present (Canadian National has been consistently excellent since the 2000's).

The company is very focused on Canadian grain transportation and even stated that it is going to invest further in this segment. Parts of the railroad is directly integrated into large grain silo terminals, which allows for seamless transfer. Canadian Pacific has recently invested heavily in its train fleet, bringing the average age down to 12 years (from 21), which is good for average fuel efficiency.

<p>Strengths</p> <ul style="list-style-type: none"> High exposure to non-cyclical products (agri & intermodal) Youngest (most fuel-efficient) fleet Room for expansion 	<p>Weaknesses</p> <ul style="list-style-type: none"> Smaller network High CFO turnover (5 since 2012) High debt (BBB+) but deleveraging is a goal
<p>Opportunities</p> <ul style="list-style-type: none"> Focuses investments in locomotive modernization Investments into track capacity Management sees more room for improvement in operating ratios 	<p>Threats</p> <ul style="list-style-type: none"> Aluminum tariffs (CAN-USA) Canadian car part exports threatened



Goods revenue share



Network



	5-year sales CAGR	5-year EBITDA CAGR	FY2016 ROIC	5-year ROIC average
CSX	-0.61 %	1.95 %	9.5 %	10.5 %
Peer group average	-0.67 %	3.76 %	11.9 %	12.2 %

CSX and its closest peer Norfolk Southern operates exclusively on the eastern coast of the United States. The largest transport category is chemicals and crude, which surprisingly contains a lot of oil-by-rail shipments which are funneled from the central oilfields to refineries in the east. The second largest transport is coal and coke which is used for energy generation and for steel making operations in the rust belt. Coal production in the states is in a slow, but steady, secular decline.

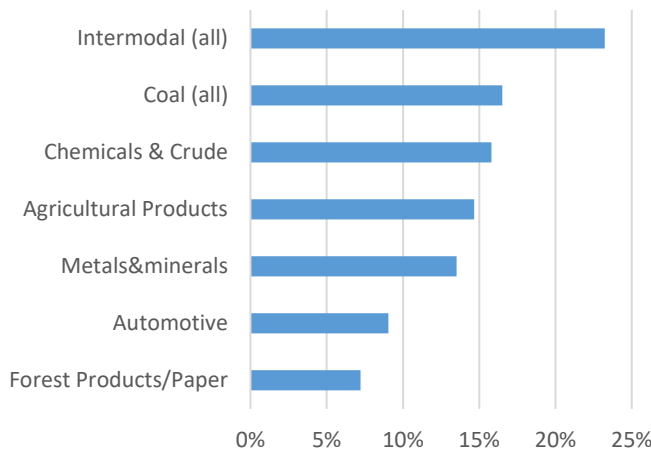
Hunter Harrison was brought back from retirement by activist investors (Mantle Ridge) to oversee the transformation of CSX (as he had for Canadian Pacific and Canadian National). However, he died shortly after (in late 2017) and CSX now has a new CEO who attempts to execute the turnaround according to Harrison's vision. The plan includes divesting unproductive train yards, re-scheduling trains and divesting some locomotives and networks.

<p>Strengths</p> <p>High exposure to high-activity economic region</p> <p>Innovative transport (Tropicana "Juice train" from Florida to New Jersey)</p>	<p>Weaknesses</p> <p>High exposure to cyclical goods</p>
<p>Opportunities</p> <p>Transformation is in early stages, lots of room to improve</p>	<p>Threats</p> <p>A lot of overlap with Norfolk Southern</p> <p>Coal is in a secular decline</p>



Norfolk Southern

Goods revenue share



Network



	5-year sales CAGR	5-year EBITDA CAGR	FY2016 ROIC	5-year ROIC average
Norfolk Southern	-0.9 %	2.80 %	9.1 %	9.9 %
Peer group average	-0.67 %	3.76 %	11.9 %	12.2 %

Norfolk Southern is the other Eastern US railroad competing mainly with CSX. It has a similar freight structure as CSX but derives more revenue from intermodal than coal and crude. Norfolk Southern has stated that they want to leverage their balance sheet to increase buybacks and have recently issued a 100-year bond @ 5.1%.

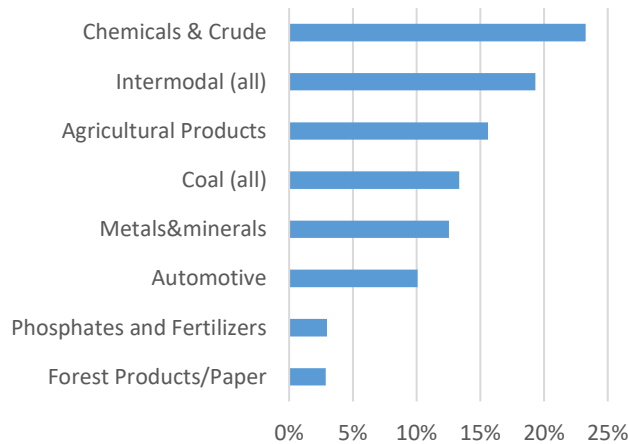
The company is currently investing in modernization of some of its older trains to increase the fuel efficiency and has a relatively old fleet.

<p>Strengths Strong exposure to "healthily"-growing segment: intermodal Congested eastern USA roads brings more business to railroads</p>	<p>Weaknesses High exposure to cyclical goods Wants to increase debt-fueled buybacks Oldest fleet</p>
<p>Opportunities Low historical efficiency could mean great room for improvement</p>	<p>Threats A lot of overlap with CSX Coal is in a secular decline</p>



Union Pacific

Goods revenue share



Network



	5-year sales CAGR	5-year EBITDA CAGR	FY2016 ROIC	5-year ROIC average
Union Pacific	-0.30 %	3.63 %	16.0 %	15.6 %
Peer group average	-0.67 %	3.76 %	11.9 %	12.2 %

Union Pacific is the second biggest railroad in North America, only barely trailing Berkshire Hathaway’s BNSF which operate in the same region (mid- to west). Unsurprisingly, the mid-American placement means that this company ships a lot of crude oil products as is seen from the summary graph above. Unlike the Canadians, this company is (like its American peers) looking to leverage the balance sheet to 2.7x from 2.0x and plans to use share buybacks to distribute the cash. The company, like all others, have adopted the “precision scheduled railroad” principle and is attempting to undertake measures to improve the efficiency of the network.

The company has good connections in the Gulf of Mexico (supporting off-shore oil shipments) and have plenty of crossings into Mexico. A lot of shipments in recent years have been frac-sand for the Permian basin and other shale oil plays.

Strengths Wide and long railway network is hard to compete with Best scale advantages due to it being the biggest	Weaknesses Competes with Buffet’s private BNSF → no exact data available
Opportunities Increased demand from Mexico Efficiency program	Threats Shale oil may become unprofitable in the future



SIFTER

People behind the Sifter Fund

This report has been produced by Sifter's Investment Committee (IC) and Advisory Team.



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Do you need help?

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