



INVESTA
INSIGHTS

CANADIAN TELECOMMUNICATIONS REPORT

YOU USED TO CALL ME ON MY CELLPHONE

Telecommunications has become a fundamental part of our everyday lives and this has become unequivocally clear during this global pandemic. The Canadian telecommunications industry has surpassed revenues of \$53.1 billion and has experienced rapid growth of 5.5% as a result of breakneck technological advancements. The uncertainties surrounding the long-term impact of the COVID-19 have permeated this industry as the question of whether telecom providers will have enough credit bandwidth for 5G is raised. It has been estimated that the introduction of 5G in Canada will contribute an annual GDP of \$40 billion but concerns remain regarding accusations on its impeachment of citizens' privacy. Simultaneously and symmetrically, the industry's wired counterpart has seen a steady decline due to its digital incumbent.

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Industry Overview

Telecommunications Overview

The telecommunications industry is within the information and communication technology sector and consists of companies that transmit data globally through various forms. It is composed of six key sectors: fixed internet, mobile, data, local and access, long distance, and private line. Total industry revenues reached \$53.1 billion in 2018, with the majority sourced from internet and wireless services as Canadians continue to use more data and higher bandwidth through fixed internet and mobile data services.

Service providers are separated into two main categories: incumbent telecommunications service providers (TSPs) and alternative service providers. TSPs provide local communications services on a monopoly basis and include mobile wireless communication companies, competitive local exchange carriers, and incumbent local exchange carriers. Alternative service providers consist of all telecommunication service providing entities such as cable-based carriers, and other facilities-based service providers – which are companies offering services through using other companies' facilities.

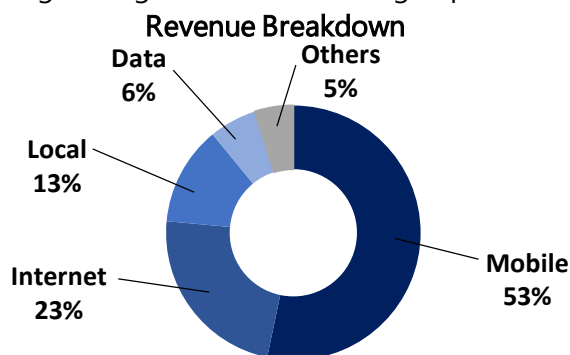
Canadian telecom companies have experienced a surge in demand for services due to COVID-19 work conditions, as more individuals are forced to telecommute from home. Rogers Communications Inc. has reported a 50% increase in home internet usage along with voice call usage up 40%.

Key Players

The three key players in the Canadian telecommunications industry are Rogers Communications, Bell Canada Enterprise Inc, and Telus Corporations. These three companies provided service to approximately 90.3% of all Canadian mobile subscriptions in 2019. The industry is privately owned and essentially an oligopoly.

Rogers Communications is the leading Canadian provider – boasting the largest customer base with over 10 million subscribers at the end of 2019 and annual revenues of 15.1 billion. They are the first Canadian telecommunications company to commercially introduce a 5G network. Rogers Communications owns a number of telecommunication subsidiaries including Fido Solutions and Chatr. Bell Canada Enterprise (BCE), Inc has the longest history amongst telecommunications companies, founded over 140 years ago as Bell Canada. Bell remains the second largest telecom provider featuring 9.9 million subscribers in the year end 2019 with an overall revenue of \$10.9 billion. Telus Corporation has approximately 8.7 million subscribers, in addition to owning subsidiaries Koodo Mobile and Public Mobile, both ranked highly among mobile providers.

Other players in this industry include Shaw Communications, Videotron, and SaskTel. These companies are significantly smaller than the three key providers, providing specific services in both the wired and wireless service space. Shaw Communications is strong in the Western provinces, serving over 3.2 million customers in landline, broadband internet, and TV service Videotron on the other hand is available in mostly Francophone areas, being especially popular in Quebec. SaskTel is a crown corporation, serving over 1.4 million customers in Saskatchewan and reported an annual revenue of \$1.2 billion in 2018.

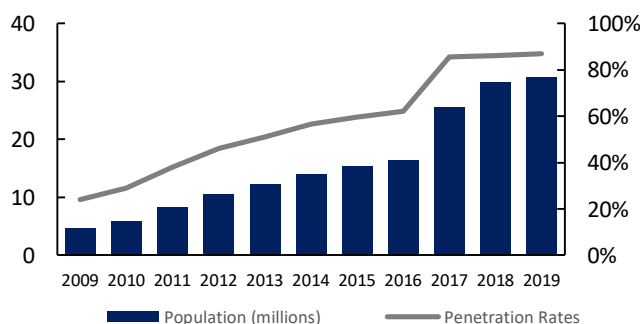


Development and Trends – Wireless Telecommunications

Growth in Adoption

The telecommunications sector can be further divided into two sub-industries: wireless and wired. The wireless telecommunications industry has been on a positive trajectory, growing at an average rate of 4.2% over the past five years, valuing the industry at \$36.6 billion. This has been due to a few major trends. The first being increasing mobile penetration and a greater percentage of subscribers purchasing high margin services. The number of mobile telephone subscriptions has continued to rise at an annualized rate of 3.8% to currently 34.3 million, with broadband connections expected to rise at a rate of 3.5%. These figures are further driven by households cutting wired services in favor of the more efficient and convenient wireless communication, and increased proliferation of smartphones and tablets. Another factor in the adoption of wireless technology and rising prices has been the expanding coverage of the fourth-generation (4G) and Long-Term Evolution networks (LTE). These advancements in network infrastructure have enabled provision of high-speed and high-margin broadband services to new sections of the population. With high-speed packet access networks currently covering more than 99% of the population, smartphone users typically have monthly bills twice those of voice-only clients due to greater appreciation for data services. These factors have contributed to an increase in revenue growth of 1.8% in 2019.

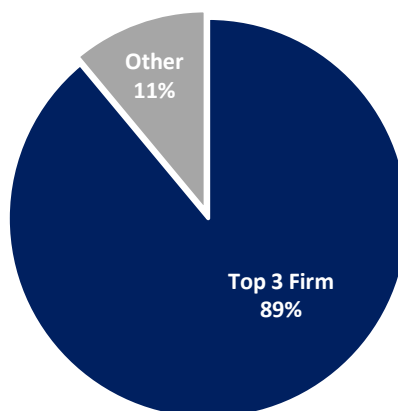
Smartphone Penetration Rate



Fluctuating Industry Structure

Since 2014, the number of businesses in the Canadian telecommunication industry has decreased at an annualized rate of 1.8%, down to 32 companies. This is due to a reduction in average profit margin in the industry, now at 25.9%, caused by new entrants and increased competition. This increased competition has led to providers subsidizing handset purchases to incentivize consumers, pressuring margins. This pressure was furthered by the CRTC rule established in 2017 which prohibits providers from levying a surcharge for “unlocking” handsets. The increase in entrants was caused primarily by major auctions of spectrum licenses for advanced wireless services (AWS). New entrants included Globalive Wireless Management Corp, or Freedom Mobile Inc. which was acquired by Shaw Communications Inc. Dave Wireless, under the brand name of Mobilicity, was also eventually acquired by Rogers. The eventual decrease and consolidation of companies has increased market share concentration for the three key providers to almost 90%, allowing them to charge a premium for their services.

Market Share



Investments in Evolving Technology

The growing investment in evolving technology is another key trend in the telecommunication industry. This includes 5G spectrum auctions and infrastructure advancements. With the 5G spectrum auctions scheduled from mid to late 2020, Canada inches closer to a high speed and standalone 5G roll-out. These developments are estimated to increase investments in 5G infrastructure by 89% from 2019, to a total of \$4.2 billion. The Ministry of Innovation, Science and Economic Development has provisioned 40% of the 5G spectrum brands for smaller carriers with an intent of reducing the oligopolistic power that the big three providers currently enjoy. Broader proliferation and access to 5G technology allows a variety of applications, including Internet of Things systems, increased automation, stronger home networks and even fixed wireless networks.

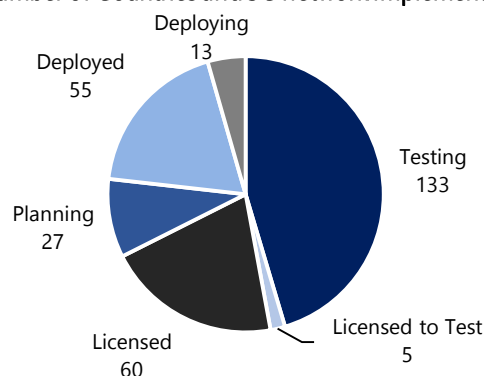
Further contributing to the blooming investment in next generation technology are investments in edge computing and IoT devices. Edge computing involves increasing the efficiency of processing and transferring information by moving storage to cloud servers closer to the user. Edge computing has various benefits such as decentralized hardware processing power across a multitude of nodes which aids in deterring latency and mitigates the risk of outages. Internet of Things devices are also expected to grow in popularity with edge computing. IoT technology involves connecting an exceptionally large group of internet-enabled devices, across a variety of physical and computing capabilities into a single network. Investments in IoT are expected to consistently grow at 13.6% annually through 2022.

IoT currently has more than 200 applications in the workspace and continues to grow exponentially. In conjunction, many telcos are increasing investments in fibre optics cabling to increase efficiency of transmitting packages. Bell has been a leader in such investments, announcing a further investment of \$854 million in Montreal, targeting superior connectivity for 1.1 million residents.

Huawei and 5G

While the other members of the global intelligence alliance, Australia, US, UK and New Zealand have banned or limited Huawei's involvement in 5G infrastructure due to the accusations regarding its impeaching of citizens' privacy, Canada has yet to decide. Despite various political, trade and security tensions, major telcos such as Telus extensively use Huawei gear in their networks. A ban on Huawei technology would lead to a reinvestment of around \$1bn required in replacing Huawei infrastructure, leading to a derailment of 5G deployment. Huawei has recently lost key partners such as Microsoft and Google due to being blacklisted in the US technology sector. The growing tension of Canada's decision and the potential repercussions have caused uncertainty in investors, which is detrimental for a capital-intensive industry.

Number of Countries and 5G network Implementation



Development and Trends – Wired Telecommunications

Growing Discontinuation

Wired telecommunications are being disrupted by their wireless counterparts, with Voice over Internet Protocol (VoIP) software reducing demand for local and long-distance telephony services. The industry has contracted at an annualized rate of 8.5% to \$5.4 billion, with revenue falling by 11.2% in 2019 alone. This follows an increasing preference for wireless systems, leading households to abandon traditional telephone and TV services. The biggest illustrator of this is the decrease of residential landline systems, with 83.8% households with landlines falling to 66.8% in the mere four years leading up to 2016.

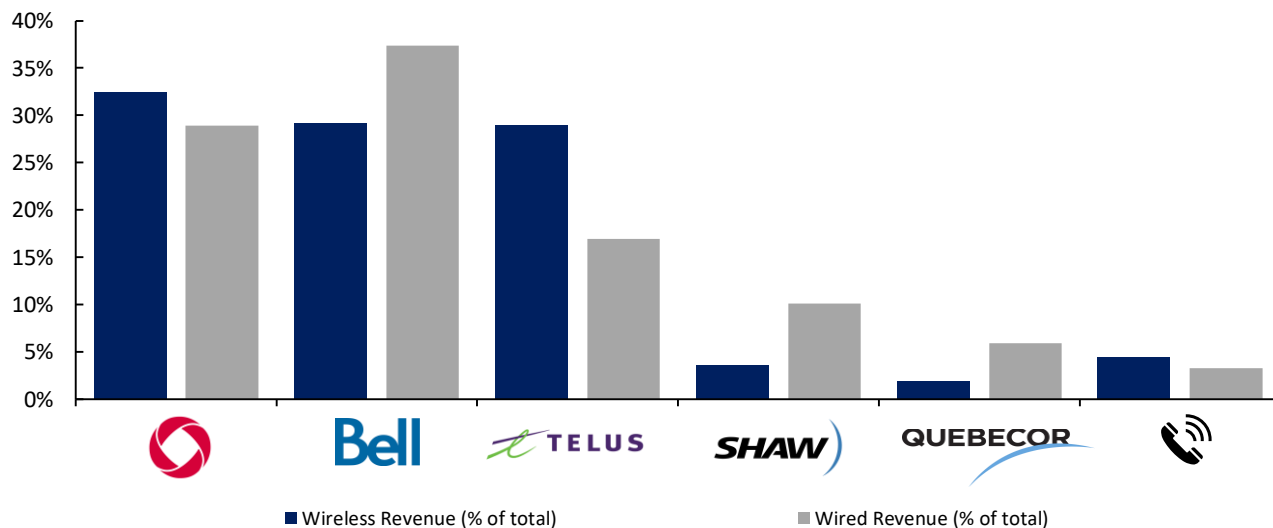
A diminishing discrepancy in quality between wired systems and long-distance VoIP software is also contributing to the services' decline. However, a relatively healthy average profit margin of 6.7% due to bundling techniques and high operating leverage. Furthermore, more predictable usage patterns and longer-term contracts allows for a lower churn rate. This effect is further amplified in certain markets such as business enterprises.

Smaller businesses have been slower to discontinue their wired services due lack of proactivity and desire to segregate business and personal operations. Additionally, while the incentives to convert landlines to wireless connection endure the switching costs for larger businesses, smaller organizations do not experience the same incentive due to their minimal number of devices. Customers such as households with children where parents prefer ensuring an emergency call device are also slower to convert to solely wireless connections. However, these niche markets are unable to offset the widely declining demand for landline services.

Industry Structure Trends

The economics of the wireless industry allow for a natural oligopoly, with the four largest companies in the sub-industry having a market share of greater than 70% due to high barriers to entry and a lack of economies of scale or operating leverage for new entrants. The concentration and decline in the industry have led to operators exiting at an annualized rate of 2.4% to 548 facilities.

Wired vs Wireless Revenue



Revenue Drivers - Wired

Broadband Internet Connections

Over the last two decades demand for broadband internet connections has sharply risen and continues to do so. Broadband internet infrastructure currently covers 98.8% of the Canadian population, with high-speed connections available to just under 86% of the population. The implementation of fiber-optic and broadband infrastructure that support voice and internet services transmitting through one cable has allowed providers to offer bundle deals of voice services with high-speed internet connections. These packages offer traditional voice services in combination with a household broadband connection for very little added cost, supporting demand for these otherwise declining services. Provision of fixed broadband connections is essential to both direct broadband revenue and supporting declining demand for providers traditional wireline services. Fixed internet services accounted for 23.2% of telecommunication revenue in 2018, a steady increase from 19.4% in 2014. Broadband internet services are essential to providers generating revenue from expensive wireline infrastructure amongst dwindling demand for traditional services.

Long Distance Voice Services

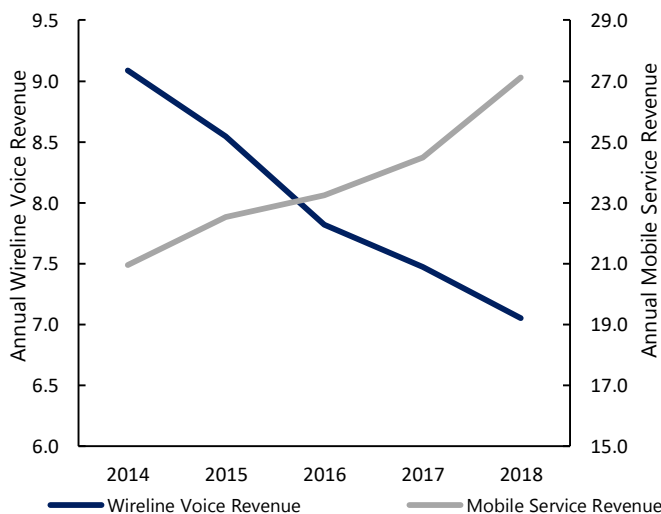
Long distance voice services accounted for an estimated 2.5% of all telecommunication revenue in Canada in 2018, and 50.4% of wired voice service revenue in 2019. Long distance service revenue has rapidly declined over the last 5 years and is expected to continue doing so until at least 2024. The reduction in revenue share is due to evolving telecommunication infrastructure allowing for automated routing and digitization of information. These improvements have allowed telecommunication companies in North America to lower or abolish long distance charges.

Long distance revenue is further impeded by the growing popularity of Voice over Internet Protocol, where voice calls are directed over internet infrastructure. This allows consumers to conduct long distance calls with little or no addition to their usual data charges. The reduction in reliance on long distance voice services has forced pricing down, and is projected to continue to shrink long distance services as a share of revenue over the next 5 years.

Local Voice Services

Local voice services represented approximately 12.5% of telecommunication in Canada during 2018, a sharp decline from 17.6% in 2014. Similar to long distance voice services, local voice services accounted for a reduced share of revenue over the last 5 years due to households shifting to entirely wireless connections in the home. Further increased usage of VoIP technology as an alternative to dedicated voice services has led to declining demand, with audio-calling features like FaceTime Audio provided with smart devices at sale. Local calling demand is expected to continue to decline as consumer preferences shift towards both wireless voice services and VoIP options.

Wireline voice vs Mobile revenue (\$B CAD)



Revenue Drivers - Wireless

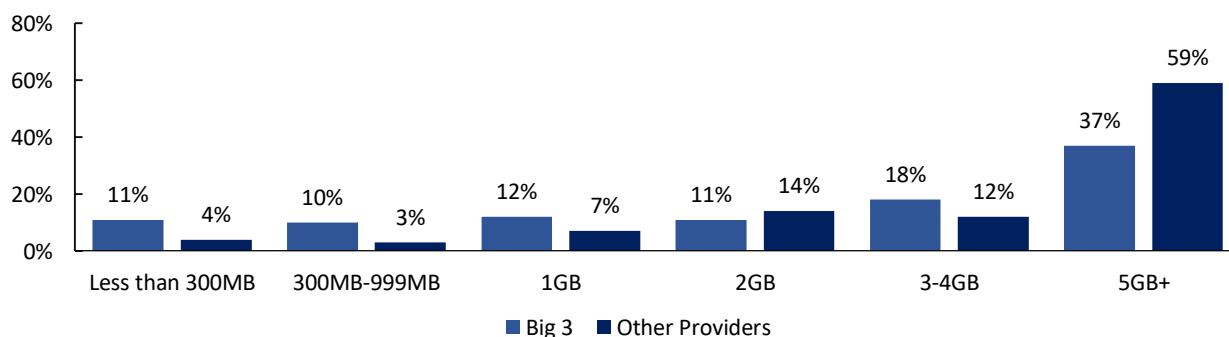
Mobile Data

Over the last 5 years the wireless telecommunication industry has shifted from primarily providing voice services to chiefly providing data services. As 4G and LTE services developed, mobile broadband connections emerged as the primary feature of mobile service plans. This trend is expected to continue well into the 5G revolution, as the capabilities of wireless networks advance. High-margin data plans are highly profitable on established networks, as evident by the emergence of these premium mobile data packages.

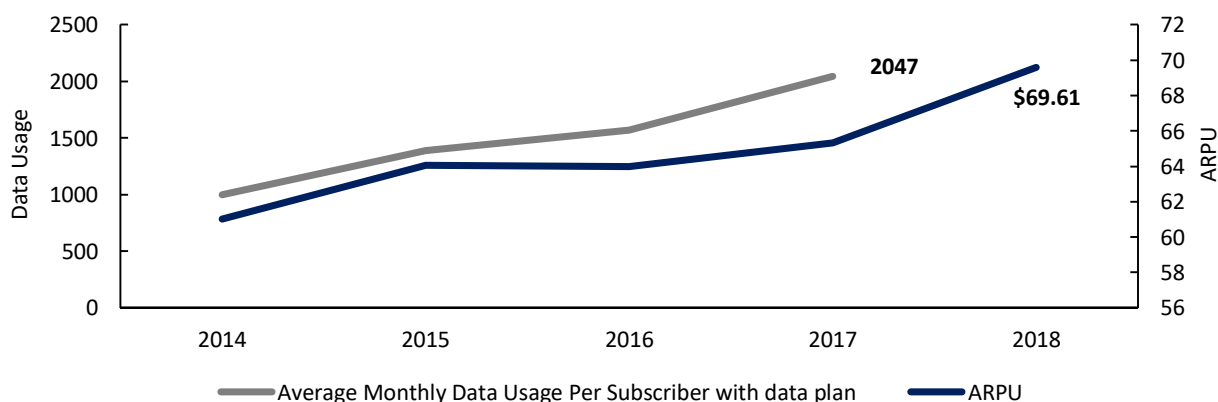
These high allowance data plans offer favorable profit margins with little added variable cost. Mobile data services have rapidly grown as a percentage of revenue for wireless communications over the last 5 years. Data services currently account for 50.9% of wireless telecommunication revenue and this figure is expected to increase with the growing accessibility of 4G enabled smart devices. Data services have been established as the primary revenue driver for wireless providers, with monthly mobile service ARPU growing 14% from 2014 to 2019.

As smartphones continue to add data-dependent features and add-ons, high-margin data plans have risen in popularity. The rise of 4G capable tablets and smart devices has further driven demand for both voice and data plans alongside standalone data packages. This trend is expected to continue as device producers and software developers continue to offer value add-ons that depend on wireless bandwidth connections.

Data Plan Size By % of Subscribers 2019



ARPU (\$CAD) vs Data Usage (MB)



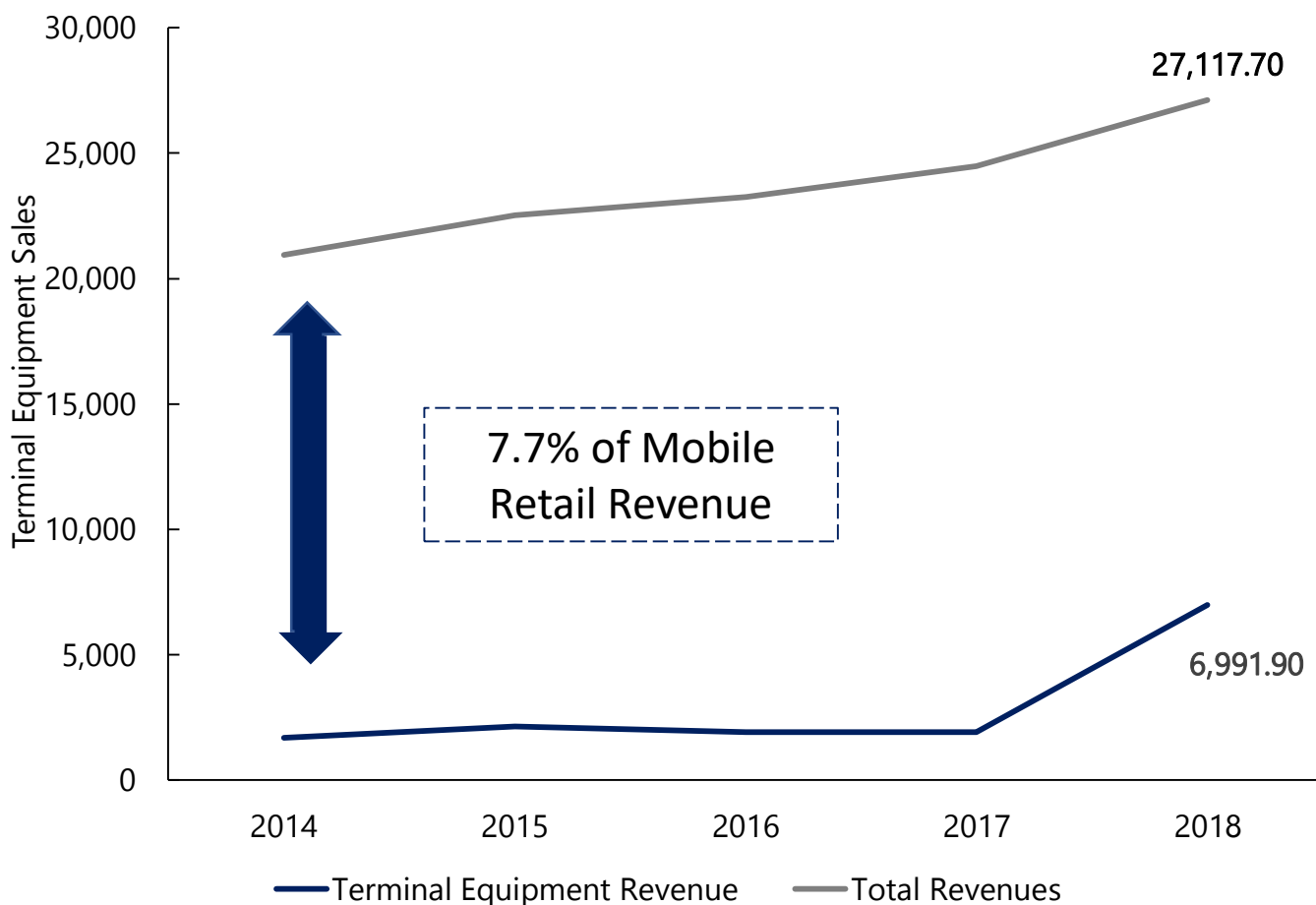
Terminal Equipment Sales

Terminal equipment sales accounted for 7.7% of wireless telecommunication revenue in 2019. The average cost of smart devices has risen sharply over the last decade, forcing providers to offer purchase incentives to customers. Wireless providers have introduced subsidy programs that mandate premium plans, but greatly subsidize device cost to the consumer. While revenue from these plans has sharply risen over the past five years, terminal equipment sales as a portion of revenue has remained relatively stagnant due to these subsidy programs.

Number of Mobile Subscribers

The number of wireless telecommunication subscriptions is rapidly growing as consumers swap out their wired landline connections for voice and data wireless subscriptions. These comprehensive subscriptions tend to be twice as expensive as their voice-only counter-parts. As the number of mobile subscriptions increases (even if cannibalized from a previous landline subscription), overall revenue for comprehensive providers grows. Wired-only providers will suffer revenue loss as a result of this shift in preferences if they fail to secure spectrum share through auction or lease from other providers.

Terminal Equipment Sales vs Mobile Retail Revenue (\$CAD 000's)

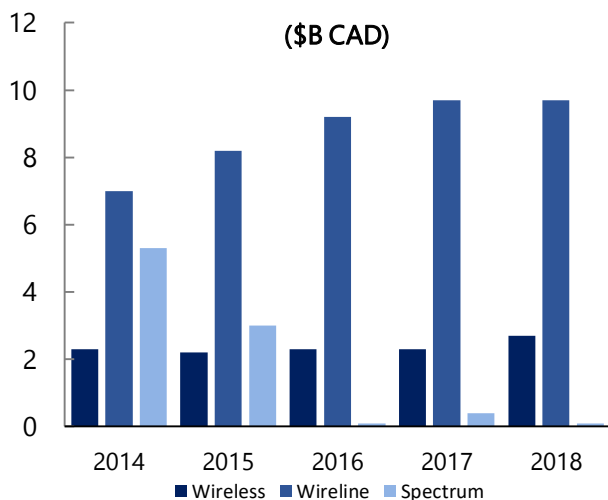


Cost Drivers

Infrastructure and Network Purchases

The telecommunication industry is capital expenditure intensive, with enormous fixed costs for both wireless and wired communication infrastructure. These capital expenditures typically fall into investment in wireline networks, investment in wireless infrastructure, and investment into gaining spectrum share. As demand for traditional voice services fall, wired providers are preferring to upgrade current infrastructure to fiber-optic technology rather than investing in new infrastructure. Fiber optic technology further decreases the variable cost of providing voice services, through increased traffic flows allowed for by internet protocol technology. Fiber optic cabling is notably more expensive than traditional copper wiring, and the upgrade to such technology drives capital expenditures for wired providers. However, with basic wired infrastructure already established, the wired sector maintains a lower capital intensity ratio of 0.52 in 2019 compared to the wireless sectors exceedingly heavy 1.22. The wireless sector bears such a heavy capital intensity due to spectrum auctions, as well as upgrading infrastructure to 4G technology, and eventually 5G. 2014 was a notably expensive year for wireless firms, when the Canadian government auctioned 700MHz spectrum rights to wireless providers.

Telecommunication Capital Expenditure by Area



Depreciation

Wireless providers are continuing to expand spectrum coverage and move to 5G technology, while wire providers are upgrading their outdated copper infrastructure in favor of fiber-optic cabling. The upgrade to fiber-optic technology not only drives capital expenditures for wired providers, but greatly increases depreciation costs as these assets rapidly devalue. Over the next 5 years these depreciation expenses are expected to rise as copper infrastructure is phased out. Depreciation accounted for approximately 7.8% of wired provider expenses in 2019. Similarly, as wireless providers expand their 4G LTE networks, and begin to adopt 5G coverage, the value of 3G and early 4G infrastructure diminishes. Depreciation expenses totaled 9.4% of wireless provider revenue in 2019.

Wages

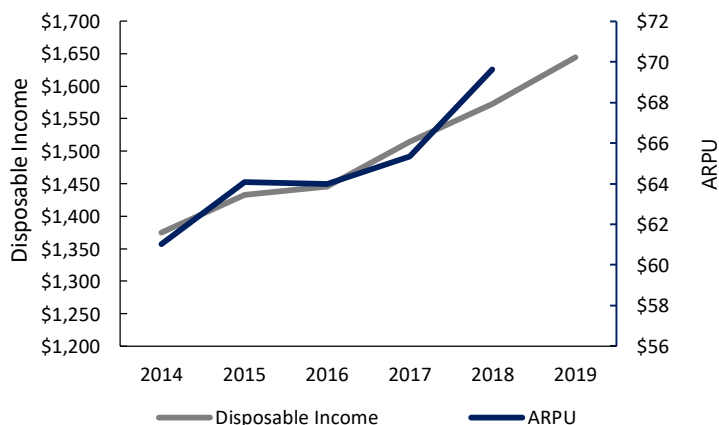
Due to the highly technological structure of the telecommunications industry, specialized labor is required for the setup, repair, and operation of infrastructure. For wired providers this includes wireline technicians for network maintenance and repair, as well as customer service personnel. These technicians perform work on both maintaining infrastructure, as well as connecting new customers to the network. Despite downsizing in areas of traditional telephony services, the increasingly specialized nature of fiber-optic network repair and maintenance demands high hourly wages for technicians. Wage expenses totaled approximately 15% of wireless provider revenue in 2019, and is expected to continue to rise as wired providers expand their fiber-optic networks. Wireless providers allocated a lower 7.7% of revenue to wages in 2019, and this figure is expected to continue to fall. While infrastructure repair does still require highly specialized laborers, setting up customer connections is delegated to salespeople who compel much lower per hourly employee wages.

External Drivers

Per Capita Disposable Income

Performance in the telecommunications industry is heavily correlated to per capita disposable income in the market of operation. When per capita income decreases, disposable income is dissolved for many middle and lower class households. Many households reduce the number of phone plans held, or shed features to leaner phone plans. Often these plans are voice and text only, or have very small data allowances. For wired connections, households may reduce broadband speeds or accept data caps for cheaper plans. Features like mobile data allowances or broadband speed boosts are highly profitable add-ons that add little variable cost for telecommunication companies. When consumer preferences shift to leaner service packages, profit margins decline on individual plans. Conversely, when household disposable income increases, mobile service revenue increases proportionately, as consumers purchase add-on features to plans with higher data caps. Adjusted average Canadian disposable income grew a substantial 14% from 2015 to 2019, with average revenue per user for mobile services growing the same amount during this period.

Average Monthly Household Disposable Income (\$CAD) vs ARPU



Corporate Profit

Telecommunication heavy industries, such as the retail and finance sectors, represent a large portion of telecommunication revenue. Business subscribers generated 20.6% of wired telecommunication revenue in 2019. Corporate profit in such industries directly impacts their investment in technology and infrastructure, including telecommunications. This includes corporate purchase of high-speed internet packages and large data caps, or additional landline services. For wireless plans, higher corporate profit is correlated to the purchase of more generous mobile service packages for company phones. Business subscriber revenue is expected to fall following a 26.46% decrease in Canadian corporate profit.

Age Demographic of Market

Consumers aged 20-64 compose the telecommunication industry's most profitable demographics. Subscribers of this category are more likely to purchase profitable high-data phone plans and faster broadband connections. Specifically, consumers aged 25-34 are typically the highest revenue generating demographic of the wireless telecommunications industry. These individuals are more likely to purchase high-margin wireless plans over traditional landline services, as well as carry premium mobile data plans. The size of both these demographics is expected to decrease slightly in 2020, and will likely be represented with a proportionate decrease in new mobile data and high-speed internet subscriptions.

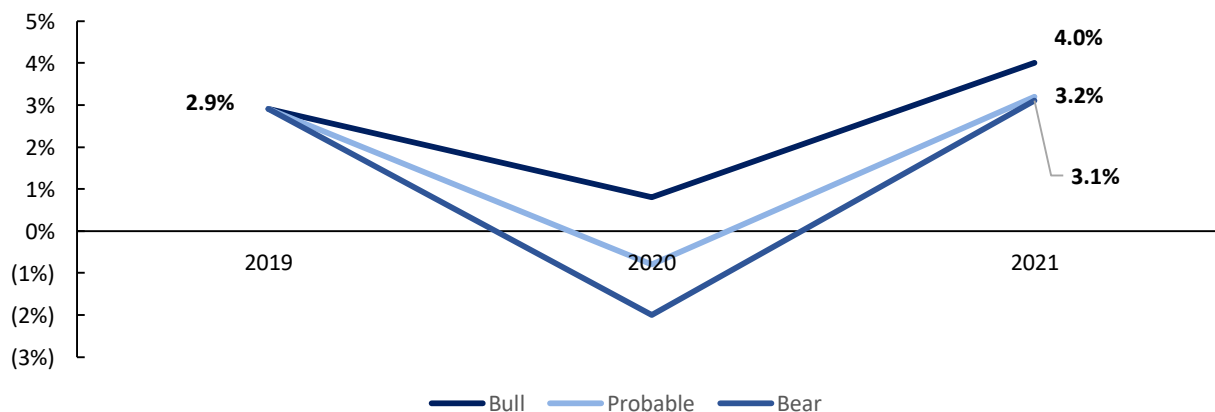
Short-Term Outlook

Impact of COVID-19

The COVID-19 pandemic has imposed several potential impacts on the telecommunication industry. The most immediate impact is the exponential increase in network usage and pressure on constrained spectrum flexibility. With an increase in audio and video calls, network usage is spiking. To cope with increased volumes of data, the pandemic has led to unanticipated collaboration between operators as they borrow and lend spectrum capacity from competitors. Further, customers on contracts may defer exchanging or replacing their current devices or upgrading their current subscriptions due to lower consumer confidence. Furthermore, with the closed retail stores, online self-service has become critical. With regards to government involvement, data is increasingly being used to track and contain the pandemic. Plans to track invigilance through cellular data have developed, currently opposed by privacy concerns. Financially, although telcos have usually not been severely impacted by recessions, their level of involvement in advertising may dictate the negative impact they face due to lack of live media coverage of sporting and other events. Providers have started considering earlier investment in 5G infrastructure, given the rising demand for strengthened networks.

Many analysts' predictions and first quarter earnings report indicate a contraction of 0.8% in 2020 before a recovery in 2021. This may result in loss of up to \$1.5 billion in revenue, with total revenue falling to \$35 billion. This is due to a forecasted reduction in IT spending by 5% in 2020, reduced disposable income and small business closures in light of macro trends such as reduced GDP forecasts. In a pessimistic scenario, wherein the pandemic does not subside before the end of the year, growing unemployment and reduced business investment leading to lower disposable income would cause further repercussions. Whilst the aforementioned increase in network usage does mitigate some of these externalities, the negative impact of business closures and lay-offs is not mitigated and operators look to increase prices in the latter part of 2020 for the services of 5G and currently overburdened 4G networks. Wired telecommunication services are hit the worst as the economic downturn has urged businesses to engage in cost-cutting and switching to more cost-effective wireless connections.

Canadian Telecommunications Growth Post COVID-19

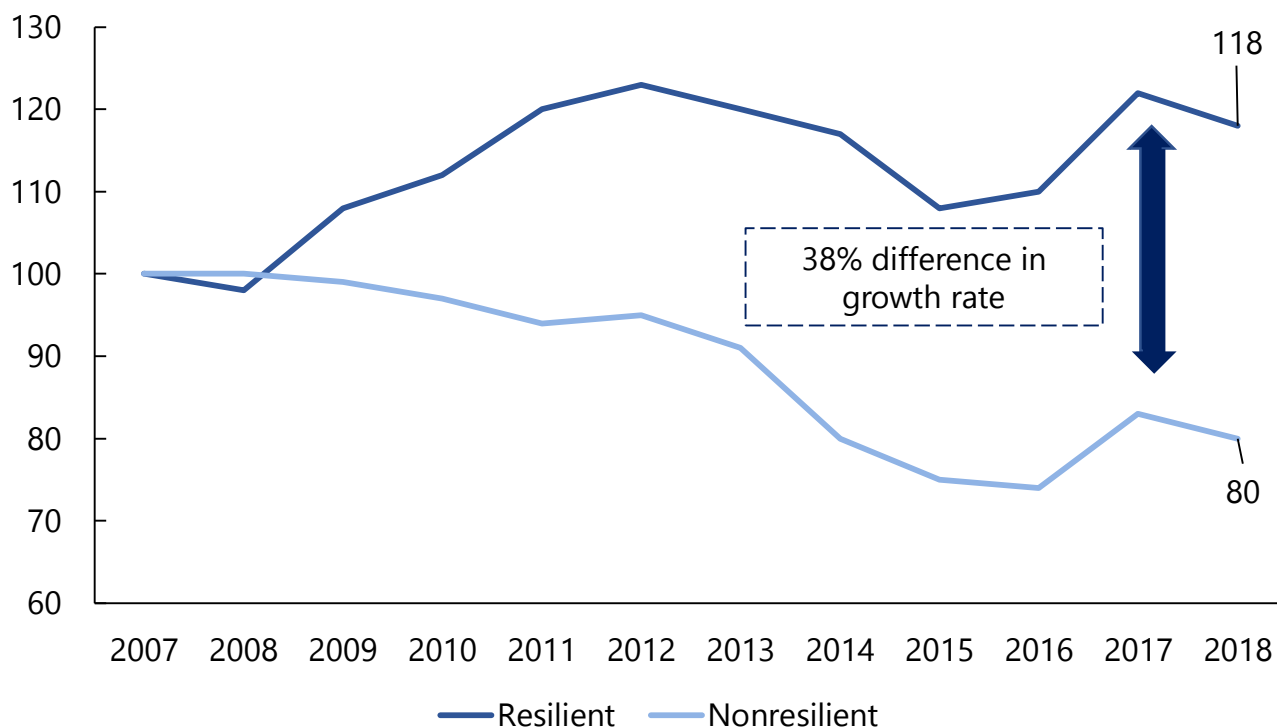


Comparison to the Great Recession

The Canadian Telecommunications industry was relatively resilient compared to other sectors during the 2008-2009 financial crisis as the industry retained positive annual growth. As the internet, devices, and internal networks become ever more integral to modern life, the industry becomes further insulated and less cyclical. However, this did not avert the 15% decrease in Average Revenue Per User (ARPU) and a churn rate which increased by the same amount worldwide. Many of the factors that caused this loss in the telecommunications industry are still apparent today: increased capital-expenditure induced leverage and exposure to liquidity risks, increased competition limiting the ability to adjust pricing, and competition from non-traditional operators, especially media and tech players with over-the-top services (OTT) such as video streaming and cloud storage.

The characteristics of a variety of different telcos throughout North America and Europe during the recession allowed for two distinct groups of businesses: the resilient and the non-resilient. The key characteristics that distinguished the two groups were the streamlining of operations and focusing on core operations. This involved delivering and holding excess cash before the recession, making quick decisions and protecting key investments during the recession, as well as conducting investments into M&A and R&D to sustain growth. In general, larger telcos were able to undertake such sophisticated procedures more effectively, eventually leading to the "Resilients" being mainly comprised of larger telcos.

Difference in Growth Rates Through Recession (Indexed at 100)



Long-Term Outlook

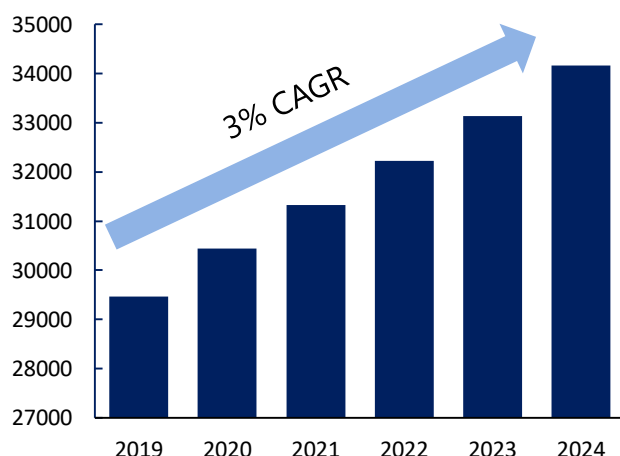
Passing the Torch

Over the next five years, the increasing importance of wireless devices in everyday life will propel growth at an annualized rate of 3%, especially as consumers' eventual increase in disposable income will allow a revert to purchasing high-margin data plans. The roll-out of 5G networks will allow providers to offer additional profitable data plans to consumers. Furthermore, these increases will also spur a growth in mobile telephone subscriptions, which are anticipated to rise at 3.4% per annum to 40.5 million in 2024.

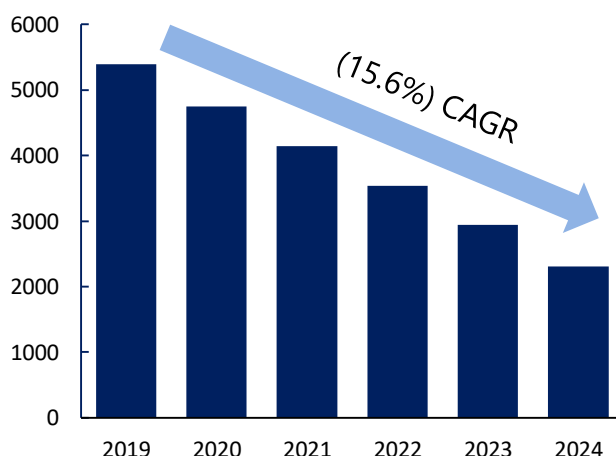
Investment in technology is predicted to continue strongly. In a recent April 2019 spectrum auction, nine operators spent \$3.5 billion for carrier access to the 600MHz band. This spectrum will be capable of anchoring 5G networks. It is expected that operators will invest \$26 billion in deploying 5G infrastructure between 2021 and 2026, contingent on the verdict of Huawei Technologies, as well COVID-19 recoveries. While the government attempts to encourage competition in the industry through reservations on spectrum auctions for new entrants that would enter the market attracted by the lucrative opportunities of unserved markets and growing network potential, it is expected that the major players will continue to engage in consolidation to acquire more licenses and market share.

However, the future for wired services seems bleak. With 60% of households with residents under the age of 35 reporting that they do not own a landline connection, it is clear that consumers consider landline connections outdated and inefficient. As operators are unable to provide new services in the sector, consumers are shifting to wireless voice services and VoIP. This also means that operators are shifting their investments into the same sector. The industry value add for wired telecommunications is expected to fall 10.7% annually and revenue, 15.6% to \$2.3 billion. As more consumers realize the cost advantage of substituting their landlines in favor of wireless options, this trend is expected to heighten. However, the extent of the sunk cost into wirelines would prohibit operators from making a swift exit, with players expected to decrease at 7.3% per annum.

Wireless Telecommunications Revenue (\$ millions)



Wired Telecommunications Revenue (\$ millions)



Overview of Performance

Financial Overview

Telecommunications companies grew steadily at a rate of 5.5% between 2017 – 2018 (5- year CAGR of 3.2%). The largest revenue contributors are mobile and fixed internet, contributing \$28.3 billion and \$12.3 billion respectively to total revenue. Incumbent TSPs, along with cable-based carriers, own and operate most of the infrastructure used by other service providers. Large incumbent TSPs made up 57.2% of total revenue market share in 2018 and held a 5-year CAGR of 1.7%, while cable-based carriers made up 33.6% of total revenue market share and grew at a 5.9% 5-year CAGR. Since April of 2020, the S&P/TSX Canadian Telecommunications index rose approximately 4.2% to date, after hitting record lows of \$133.2 near the end of March, indicative of positive long-term growth prospects.

Focusing on capital expenditures made into acquiring spectrum, capital intensity, and EBITA, CAPEX in the industry is directed towards maintaining and upgrading networks. TSPs invested over \$12.4 billion on CAPEX with 78.2% spent on wireline networks. Wireless CAPEX grew at an annual rate of 8.2% between 2014 and 2018, although large incumbent TSPs' share of CAPEX fell from 67.8% to 59.1%.

The capital intensity rose from 32.7% in 2014 to 44.1% in 2018 for incumbent TSPs and cable-based carriers. Over the 2014-2018 period, margins for wireless services were consistently above wirelines with a gap of 9.5%. Over the same period, EBITDA margins for the cable carriers and incumbents remained stable at 45.1% and 38.4% respectively.

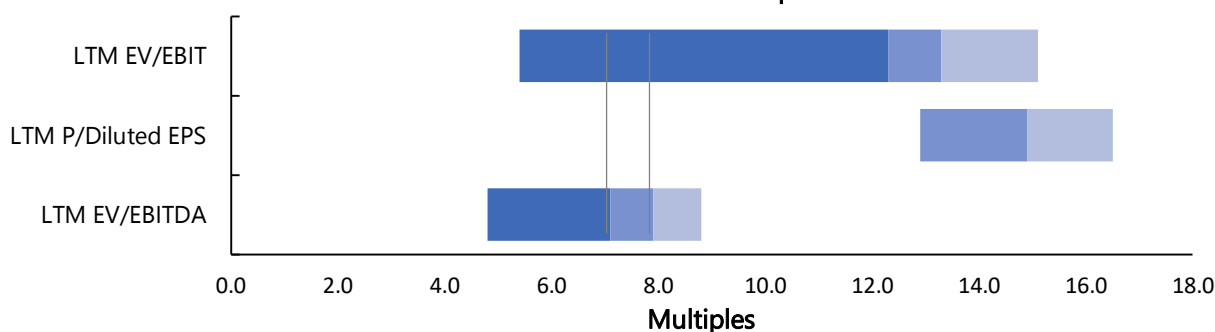
Valuation Overview

When analyzing the Telecommunication industry, important multiples to keep in mind are P/E and EV/EBITDA.

Due to the capital-intensive nature of the telecommunication industry, companies tend to finance their capital expenditure through debt, which results in high financing costs. Telecommunication companies have a high depreciation expense due to their networks' large fixed asset base. Due to the nature of the P/E multiple, we believe it would be best to use the EV/EBITDA multiple as it is capital structure neutral and paints a better picture of the industry's operational efficiency, alienating the large depreciation expenses incurred. The median EV/EBITDA LTM for the Canadian Telecommunications industry was 5.84x.

According to the S&P 500 Communication Services index, the aggregate Telecommunications equities were trading at \$184.03 (on June 17, 2020), being 33.33% higher than its low of \$137.76 in March, showing strong crisis performance as more businesses and people transition into a virtual work environment, strengthening demand for telecommunication services.

Valuation Landscape



Comparable Analysis

Operational Metrics

Comparable Company Analysis							
Telecommunication Industry - Operational Metrics							
Company Name	Ticker (TSX:)	Market Data		Operational			
		Price (\$/Share)	Market Cap (\$M)	EV (\$M)	Gross Margin LTM %	EBITDA Margin LTM %	EBIT Margin LTM %
TELUS Corporation	TSX:T	\$16.31	\$21,390.65	\$34,838.38	38.3%	31.7%	20.3%
BCE Inc.	TSX:BCE	\$40.71	\$36,816.00	\$59,715.53	43.2%	36.2%	23.8%
Roger Communications	TSX: RCI.B	\$39.46	\$20,484.64	\$35,561.54	41.7%	40.4%	24.7%
Shaw Communications Inc.	TSX:SJR.B	\$16.04	\$8,414.35	\$12,687.53	43.2%	37.4%	21.0%
Quebecor Inc.	TSX:QBR.A	\$21.06	\$5,357.95	\$10,157.82	60.0%	40.4%	26.1%
Cogeco Communications Inc.	TSX:CCA	\$71.62	\$3,448.61	\$5,833.56	48.6%	47.6%	27.0%
Corus Entertainment Inc.	TSX:CJR.B	\$2.13	\$443.90	\$1,834.76	35.0%	33.2%	29.8%
25th Percentile			\$3,448.61	\$5,833.56	38.3%	33.2%	21.0%
Mean			\$2,697.43	\$22,947.02	44.3%	38.1%	24.7%
Median			\$1,946.26	\$12,687.53	43.2%	37.4%	24.7%
75th Percentile			\$1,570.67	\$35,561.54	48.6%	40.4%	27.0%

Valuation

Comparable Company Analysis							
Telecommunication Industry - Valuation Multiples							
Company Name	Ticker (TSX:)	Market Data		Valuation			
		Price (\$/Share)	Market Cap (\$M)	EV (\$M)	P/Diluted EPS LTM x	EV/EBITDA LTM x	EV/EBIT LTM x
TELUS Corporation	TSX:T	\$16.31	\$21,390.65	\$34,838.38	16.4x	9.8x	15.9x
BCE Inc.	TSX:BCE	\$40.71	\$36,816.00	\$59,715.53	16.9x	8.8x	14.6x
Roger Communications	TSX: RCI.B	\$39.46	\$20,484.64	\$35,561.54	13.9x	7.9x	13.3x
Shaw Communications Inc.	TSX:SJR.B	\$16.04	\$8,414.35	\$12,687.53	15.9x	8.2x	15.1x
Quebecor Inc.	TSX:QBR.A	\$21.06	\$5,357.95	\$10,157.82	13.0x	7.8x	12.3x
Cogeco Communications Inc.	TSX:CCA	\$71.62	\$3,448.61	\$5,833.56	12.9x	7.1x	12.6x
Corus Entertainment Inc.	TSX:CJR.B	\$2.13	\$443.90	\$1,834.76	NM	4.8x	5.4x
25th Percentile			\$3,448.61	\$5,833.56	12.9x	7.1x	12.3x
Mean			\$13,765.16	\$22,947.02	14.8x	7.8x	12.7x
Median			\$8,414.35	\$12,687.53	14.9x	7.9x	13.3x
75th Percentile			\$21,390.65	\$35,561.54	16.5x	8.8x	15.1x