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The impact on our valuation when changing critical inputs

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Abstract

In this part I present a scenario analysis on our valuation. In fact, our valuation in highly dependent on four inputs, which we forecast a behavior for them, that we are not sure will happen. Therefore, I used our valuation as a base case scenario, which I gave a probability of 60%. Moreover, I also did a best and worst case scenario, giving 20% of probability of occurrence to which one.

5G impact
ARPU
Churn rate
Market share

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Individual Part: Scenario analysis (Catarina Anacoreta Correia)

We are aware that our model is highly dependent on our assumptions, most importantly on **ARPU decrease**, **churn rate maintenance, market share maintenance** and **estimation of the potential of 5G** that is not yet monetized or whose market potential and market players reaction is uncertain.

A scenario analysis is important to better understand the inputs and the outputs of the valuation, by changing specific relevant inputs. By doing this, it is possible to see the impact in equity value (and share value) of potential changes in inputs.

A scenario analysis is therefore based on changes in the key uncertainties that affect the company's future. In Verizon case, and as said above, four variables were identified as evolving greater uncertainty and large impact. It's seems therefore relevant to test different impacts of 5G in the market (measured by the rise or fall of new subscribers), Verizon's ability to maintain its current churn rate, the Verizon's ability in gain market share along with the investment that is being made in 5G and the Verizon's capability in maintain stable ARPU facing the bad previsions made by many analysts.

In the valuation made in this report, Rita and I assumed a continuous growth in 2020, 2021, 2022 and 2023 for USA total wireless carrier subscribers with an YoY positive impact of 0.25% driven by 5G, continuous decrease in company's ARPU wireless service, churn rate maintenance at 1%, and Verizon' market share stable on 34.91%. This is our base scenario. The results of these assumptions are a share price of YE 2020 of **$66.90** dollars, an upside of 8% from its current price, and an **equity value of $276,699** million.

At this point, is relevant to test those assumptions, and that is what I'm proposing to do in this individual part of the report. As the base scenario is, logically, the most probable one but with a material probability of non-occurrence, I weighted it with a 60% probability of happening. The remaining probability of 40% was considered equally for the best case and the worst case scenarios. So the **best-case scenario was weighted in 20% and the worst-case scenario was, equally, weighted in 20% of probability of happening**.

A scenario analysis informs about strategic actions in alternative situations and I considered it as very important to complete the model. Moreover, I believe that the analysis will also show the different impacts on share value of each of the four drivers.

Best case scenario – 20% probability of occurrence

5G

As said, 5G and its development is impacting the market, and will have a higher impact in the future. In the base model we assume that the impact in new subscribers of USA market will be 0,25% in 2020, 2021, 2022 and 2023. However, as some analysts expects, and I agree, the impact can be even higher. GSMA 5G report from 2018 says that the forecasted 5G costumer adoption in the USA will grow until 2025, driving up the total number of subscribers in the market.

Consequently I forecasted as a best case scenario an increase of 0,5% from 5G impact in the market above the base scenario, and I reached a share price of $77.94, when comparing with the share price base scenario of $66.90 (Exhibit 4).

Churn rate

Another important variable is the churn rate. Verizon's churn rate is the rate at which service to connections is terminated on a monthly basis. **Verizon is trying to mitigate its churn rate** (as in Verizon Investor meeting presentation, 2019), and past data shows that this churn rate has been stable at 1% since 2014.

As we can see from Exhibit 1, *telcos* companies have been maintaining more or less stable its churn rate. We can also see that Verizon is the company that shows the lower values.

Telecom Churn Rate							
	Verizon Wireless	AT&T	Sprint	T-Mobile USA	U.S. Cellular	Ntelos	Shentel
2013	1.26	1.43	2.52	1.65	2.46	-	-
2014	1.36	1.59	2.89	3.12	2.01	3.57	-
2015	1.23	1.5	3.36	2.44	1.7	4.2	2.64
2016	1.31	1.71	2.81	2.39	1.84	-	1.21
2017	1.23	1.38	2.42	2.29	1.66	-	2.68
2018	1.22	1.7	2.43	2.19	1.69	-	2.52

Exhibit 1: Telecom wireless churn rate in %
Source: Fierce Wireless. Statista, 2019

Verizon expects to manage churn by providing a consistent and reliable experience on its wireless network and focusing on improving the customer experience through simplified pricing and better execution (Verizon Annual Report, 2019). Therefore, I forecasted a best case scenario where Verizon decreased this churn rate to 0.5%, reaching a share price of from $66.90 to $69.96 (Exhibit 4). The effect of reducing the churn rate from 1% to 0,5% is only 0.06$ on the share price so I can conclude that Verizon do not need to do much effort on managing a decrease in churn.

Market share

Verizon's **market share** is also a relevant input in the base valuation model. Verizon will face an opportunity to increase its market share if one of its peers do

not follow the necessary investment in 5G. With 5G, people want new devices and new services plans and companies should capture the new opportunities that come along with this new network. Verizon is currently a 5G leader, being the first in the world lo launch 5G home. In 2019 investors meeting, Verizon reinforces the forward looking objective of getting the "leadership in deployment 5G of all capabilities". So I believe that is plausible to expect that the company is going to gain market share (coming from the loss of market share of other relevant companies).

	Market share			
USA Telecom companies	2018	2017	2016	2015
Verizon	34.91%	35.46%	34.98%	35.42%
AT&T	34.06%	33.37%	32.37%	32.52%
T-Mobile	17.51%	17.11%	17.15%	16.00%
Sprint	12.13%	12.64%	14.06%	14.64%
U.S cellular	1.14%	1.20%	1.21%	1.23%
Others	0.24%	0.23%	0.23%	0.12%

Exhibit 2: Market share of USA Telecom players
Source: FierceWireless. Statista 2019

As we can see in Exhibit 2, Sprint Corporations is losing market share throughout the years. This suggests that it is being difficult to Sprint to win the 5G impact on market. If this company cannot follow the 5G trend, which evolved relevant CAPEX to maintain its clients, the other players on the market will win new clients. In this context it seems relevant to test the impact of Verizon in gaining 1 percentage point in market share, assuming that Verizon would capture new clients following the fall of Sprint. In this case, Verizon share price would jump from $66.90 to $67.21.

ARPU

As said, ARPU is a common value driver in telecom companies. As it can be seen from Exhibit 3, the wireless ARPU from telecom companies is decreasing,

	Verizon	AT&T	Sprint	T-Mobile USA	U.S. Cellular	Leap Wireless	Ntelos	Cincinnati Bell	Shentel
2013	55.46	47.58	50.94	44.5	57.05	45.3	-	-	-
2014	54.15	42.04	48.03	43.5	60.1	-	52.35	50.98	-
2015	48.95	38.78	44.1	43.3	55.31	-	46.8	-	47.87
2016	45.54	51.12	43.49	43.14	43.47	-	-	-	46.6
2017	43.82	50.26	42.57	42.66	43.68	-	-	-	46.42
2018	42.43	48.78	41.87	41.69	42.98	-	-	-	41.83

Exhibit 3: Wireless ARPU for USA telecom players
Source: FierceWireless. Statista 2019

and it is expected to still decrease in the following years[1]

In the base model it was already assumed a decreasing tendency in the ARPU. However, there are also some analysts assuming that the ARPU can maintain its current value, with the monetization of 5G. Indeed, I can expect that Verizon strategy will be strong enough to maintain ARPU. Therefore, I assumed a best

[1] Telecommunications Industry Outlook, Deloitte, 2019

scenario where the ARPU maintains its value from 2019 without any decrease, reaching a share price of 68,30$ (Exhibit 4).

Looking at Exhibit 4, we can see the impact on share value of one change in each input, and the impact of share value if all these four cases for the best scenario happen, which would result in a share price of $80,41, an 23% upside from current price. **It is possible to conclude that the input with the strong impact is the 5G**, where 0.5 percentage point increase in market impact increases the share price value in 21%. On the other hand, and as mention, a decreasing churn from 1% to 0.5% will have no material impact.

Driver	Change	Share price
5G impact	0,5 percentage point increase in market impact in 2020,2021, 2022 and 2023	$ 77.94
Market share	1 percentage point increase in market share	$ 67.21
Churn rate	0.5 percentage point decrease in the churn rate	$ 66.96
ARPU	Mantaince since 2019	$ 68.30
Equity Value with all scenario	$332,143.00	
Share Price with all scneario	$80.41	

Exhibit 4: - Best case scenario when changing critical inputs

Worst case scenario - 20% probability of occurrence

5G

In a worst-case scenario I assumed no growth impact with 5G, forecasting only the tendency of increasing in total USA wireless subscribers. This could happen in a failed strategy followed by Verizon facing new opportunities of 5G. In this scenario, the share price will drop from $66.90 to $63.09 (Exhibit 5).

Churn rate

As the company is entering in new markets by offering opportunities never explored before, Verizon does not know how clients will react, and it is not sure that it will be successfully in maintaining current churn. It is therefore plausible to assume that Verizon will face an increase in its churn rate. Therefore, I believe that an increase of 0,5 percentage point in churn rate is a fit value for a worst-case scenario. In this case, the share price will be $66.85 (Exhibit 5)

Market share

In a worst scenario, Verizon does not monetize the investment in 5G, and if its peers do it, Verizon can start losing its presence in the market. In this case, I assumed a decrease of 1 percentage point in Verizon's market share in a worst case scenario.

ARPU

It is also possible that the drop in the company's ARPU will be even higher than the one assumed in the base scenario. Assuming a worst case scenario I did not deaccelerate the decrease YoY, as was assumed in the base scenario. Companies are now offering more services with lower prices, and that's one valid reason for decreasing in ARPU. Within this scenario the share price will be $61.40 vs $ 66.90.

Driver	Change	Share price
5G impact	Zero 5G market impact in 2020 and 2021	$ 63.09
Market share	1 percentage point decrease in market share	$ 66.61
Churn rate	0.5 percentage point increase in the churn rate	$ 66.85
ARPU	Maintainence of the decreasing tendency	$ 61.40
Equity Value with all scenario	$241,816.40	
Share Price with all scneario	$58.37	

Exhibit 5: Worst case scenario when changing critical inputs

From Exhibit 5, we can see the impact in share price of each value driver, and the impact on share price if all happen at the same time, where the share value price would decrease until $**58.37,** compared to our base case scenario of $66,90. Here, we can see that the most important drivers are the zero impact of 5G and the continuous decrease until 2028 of the wireless ARPU. In the worst-case scenario, the equity value decreases to **$241,816 millions, which means a share price decrease of 5%**. Summing up, we have that:

Scenario	Probability	Share Price
Worst Case	20%	$ 58.37
Base Case	60%	$ 66.90
Best Case	20%	$ 80.41
Average		$ 67.90

Exhibit 6: *Share price in the different scenarios*

Final remarks on scenario analysis

Verizon target price is deeply dependent on four variables which are not only under Verizon's control. In fact, the behavior of the firm in the near future will, for sure, depend on its strategy and the successful on implementing it, but also on the behavior of the market and the relevant role of its competitors. I compute a best case scenario and a worst case scenario in order to be sensible to the most critical inputs, concluding that the share price could range between $58.37 and $80.41 as seen in Exhibit 6.

Computing the probabilities of each scenario to its resulting share price, a target price YE 2020 of $**67.90 per share is reached, and not much relevant difference when comparing to the base model share price of $66.90. This result suggests robustness on the base model.**