

Airlines

Stress testing airlines for a corporate travel shutdown

Industry Overview

Stress tests show the quality at DAL and LUV

[With US corporate travel activity coming to a halt](#), we have stress-tested our airline models for a near term shut down in business travel and have presented three scenarios of trough revenue declines (-25%, -50%, -75%). While this type of shock is meaningfully disruptive to near term earnings and 45% of the US airlines generate negative EPS in 1H20 in the middle scenario, the pace of the recovery off trough will be key and we assume a gradual recovery in travel patterns through year end. Our analysis shows that high quality names like Neutral-rated DAL and LUV have less downside earnings risk than peers given the margin profiles and balance sheets. In addition, we do not see Underperform-rated AAL breaking its \$2B liquidity covenant in our down -75% scenario.

Difficult to parse out corporate vs leisure

We originally set out on this exercise to sensitize the impact of losing the corporate travel customer. In the US airline industry, the general rule of thumb is that the airplane is typically evenly split between corporate and leisure customers with corporate about two-thirds of revenues given the higher price points. However, in a scenario where corporate travel deteriorates, airlines will look to steal leisure customers, which typically hold in much better in downturns. As such, our stress tests assume a total revenue hit across the entire domestic network as opposed to just sensitizing to corporate travel.

Scenario assumptions; fuel now a meaningful tailwind

We outline three scenarios that assume domestic revenues trough at -25%/-50%/-75% (see inside for full details on our scenario analysis). This analysis is meant to be a guide post given the rapidly changing demand environment, and we note that fuel, which is about 25% of total operating costs, has become a meaningful tailwind to our airline earnings sensitivities. So far, LUV, JBLU and ALK have already discussed expectations for March, and the airlines anticipate a mid-teens sequential unit revenue slowdown from February trend. As such, our Scenario 1 is most similar to what the airlines are currently seeing. If the environment deteriorates, Scenarios 2 and 3 become more feasible.

Negative 1H20 earnings for many airlines; none for 2020

In Scenario 1, EPS actually come in ahead of our current estimates given the recent move in fuel. While Scenarios 2 and 3 would result in EPS 25% and 36% below our current models. In our worst case scenario, most airlines generate negative EPS in 1H20 with the exception of DAL, LUV and ALGT, but all airlines still make money on the year.

Industry leverage not as big of a risk as expected

We currently estimate just 2.0x net leverage across our US airlines coverage in 2020. In Scenarios 2 and 3, we estimate industry net leverage would only increase about a half a turn with AAL and SAVE the most at risk. This is not as much as we expected and is still well below the 8.0x net leverage in 2008. For AAL, we currently estimate year end net leverage of 5.0x and estimate this could go to 6.0x in Scenario 3. However, even in this scenario, we do not see AAL breaking its \$2B liquidity covenant. For SAVE, we estimate net leverage going from 2.9x in our current model to 4.1x in our worst case scenario.

BofA Securities does and seeks to do business with issuers covered in its research reports. As a result, investors should be aware that the firm may have a conflict of interest that could affect the objectivity of this report. Investors should consider this report as only a single factor in making their investment decision. Refer to important disclosures on page 8 to 10. Analyst Certification on page 7. Price Objective Basis/Risk on page 5.

12107376

Timestamp: 10 March 2020 05:30AM EDT

10 March 2020

Equity
United States
Airlines

Andrew G. Didora, CFA
Research Analyst
BofAS
+1 646 855 2924
andrew.didora@bofa.com

Emma Young, CFA
Research Analyst
BofAS
+1 646 855 1122
emma.young@bofa.com

Analyzing a corporate travel shutdown

[With US corporate travel activity coming to a halt](#), we have stress-tested our airline models for a near term shut down in business travel and have presented three scenarios of trough revenue declines (-25%, -50%, -75%). While this type of shock is meaningfully disruptive to near term earnings and 45% of the US airlines generate negative EPS in 1H20 in the middle scenario, the pace of the recovery off trough will be key and we assume a gradual recovery in travel patterns through year end. Our analysis shows that high quality names like Neutral-rated DAL and LUV have less downside earnings risk than peers given the margin profiles and balance sheets. In addition, we do not see Underperform-rated AAL breaking its \$2B liquidity covenant in our down -75% scenario.

Difficult to parse out corporate vs leisure

We originally set out on this exercise to sensitize the impact of losing the corporate travel customer. In the US airline industry, the general rule of thumb is that the airplane is typically evenly split between corporate and leisure customers with corporate about two-thirds of revenues given the higher price points. However, in a scenario where corporate travel deteriorates, airlines will look to steal leisure customers, which typically hold in much better in downturns. As such, our stress tests assume a total revenue hit across the entire domestic network as opposed to just sensitizing to corporate travel.

Models currently factor in some impact from COVID-19

As earnings estimates remain a moving target given continued uncertainties from COVID-19, we are leaving our 2020 forecasts unchanged from [our update last week](#). Our models currently assume a modest impact to domestic revenues (we cut domestic revenues by 10% for four months of 1H20), but with the corporate travel restrictions and the growing list of cancelled conferences and events, we note this could prove conservative. We do not assume any capacity cuts outside of what has already been announced. Internationally, our DAL, AAL, and UAL models contemplate a 50% reduction to Pacific revenues and a 20% reduction to Atlantic revenues for four months of 1H20 with a gradual recovery through year end. The fuel curve in our models is the forward curve as of March 3, 2020, which implied an average Brent crude price of \$56/barrel compared to today's much lower levels of \$43/barrel.

Table 1: BofA current 2020 estimates by airline

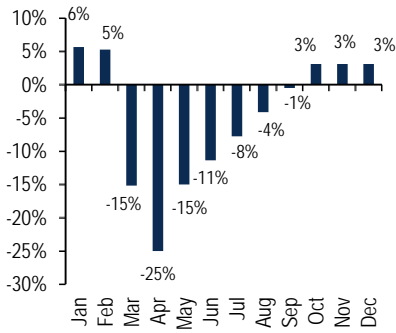
	Capacity					RASM					CASM-ex					Fuel Price / Gallon					EPS					2020 Net Leverage
	1Q20	2Q20	3Q20	4Q20	2020	1Q20	2Q20	3Q20	4Q20	2020	1Q20	2Q20	3Q20	4Q20	2020	1Q20	2Q20	3Q20	4Q20	2020	1Q20	2Q20	3Q20	4Q20	2020	
DAL	4.5%	2.4%	4.1%	2.9%	3.5%	-1.6%	-8.8%	-5.4%	-2.2%	-4.7%	3.0%	2.5%	2.1%	2.6%	2.5%	\$1.87	\$1.67	\$1.67	\$1.94	\$1.78	\$0.95	\$1.76	\$2.11	\$1.44	\$6.25	1.7x
AAL	1.3%	2.0%	3.3%	5.4%	3.0%	-1.2%	-8.9%	-5.8%	-2.0%	-4.6%	3.4%	2.1%	2.1%	0.0%	1.9%	\$1.89	\$1.71	\$1.71	\$1.99	\$1.82	\$0.23	\$0.75	\$0.85	\$1.14	\$2.96	5.0x
UAL	1.1%	-1.2%	2.2%	4.1%	1.5%	-2.8%	-9.1%	-7.4%	-3.0%	-5.7%	2.2%	3.8%	1.4%	-1.1%	1.5%	\$1.88	\$1.70	\$1.69	\$1.97	\$1.81	\$0.52	\$2.10	\$2.75	\$2.60	\$7.98	2.7x
LUV	-2.0%	-1.5%	-1.5%	7.0%	0.5%	2.4%	-6.5%	-1.8%	-2.8%	-2.3%	6.9%	7.1%	7.9%	-3.4%	4.4%	\$1.92	\$1.72	\$1.71	\$1.99	\$1.84	\$0.65	\$0.89	\$0.96	\$1.36	\$3.84	-0.1x
ALK	4.0%	2.6%	2.5%	2.9%	3.0%	0.7%	-7.3%	-2.0%	-0.3%	-2.4%	3.0%	0.3%	1.8%	2.6%	1.9%	\$2.01	\$1.82	\$1.82	\$2.11	\$1.94	\$0.28	\$1.91	\$2.74	\$1.53	\$6.44	0.8x
JBLU	2.5%	2.0%	9.0%	10.0%	5.9%	0.2%	-8.0%	-5.1%	-4.6%	-4.5%	2.5%	0.3%	-3.9%	-3.9%	-1.4%	\$1.95	\$1.79	\$1.73	\$2.02	\$1.87	\$0.16	\$0.41	\$0.78	\$0.61	\$1.95	1.5x
SAVE	15.0%	15.0%	20.0%	19.0%	17.3%	-5.6%	-7.4%	-5.3%	-3.5%	-5.4%	4.1%	1.1%	-0.6%	1.4%	1.5%	\$1.92	\$1.74	\$1.73	\$2.01	\$1.85	\$0.31	\$1.56	\$1.49	\$1.09	\$4.46	2.9x
HA	9.0%	5.0%	6.0%	6.0%	6.5%	-8.1%	-10.4%	-5.4%	-3.5%	-6.8%	-3.0%	0.8%	0.4%	1.6%	0.0%	\$1.90	\$1.69	\$1.69	\$1.97	\$1.81	\$0.29	\$0.62	\$1.64	\$0.67	\$3.21	1.5x
ALGT	16.0%	7.0%	15.0%	8.5%	11.5%	-2.6%	-7.9%	-4.0%	-1.8%	-4.1%	-1.2%	-0.7%	-1.7%	-1.0%	-1.1%	\$1.97	\$1.79	\$1.79	\$2.07	\$1.90	\$4.54	\$4.33	\$3.63	\$4.23	\$16.72	1.8x

Source: BofA Global Research estimates

Scenario analysis: flex domestic revs -25%, -50%, -75%

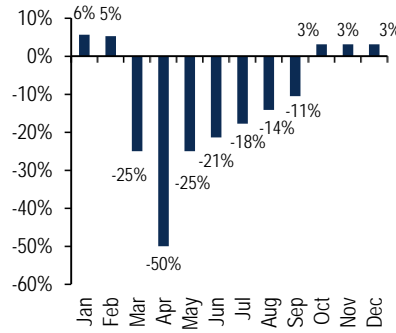
To help gauge the impact of a corporate slowdown in the domestic US market, we created three scenarios that assume domestic revenues bottom in April at -25%, -50%, and -75% with a gradual recovery through the end of 3Q20 and keeping our current 4Q20 assumptions. As a comparison, LUV, JBLU and ALK have already discussed expectations for March, and the airlines anticipate a mid-teens sequential unit revenue slowdown from February trend. As such, our Scenario 1 is most similar to what the airlines are currently seeing. If the environment deteriorates, Scenarios 2 and 3 become more feasible.

Chart 1: Scenario 1: domestic total revenue trajectory



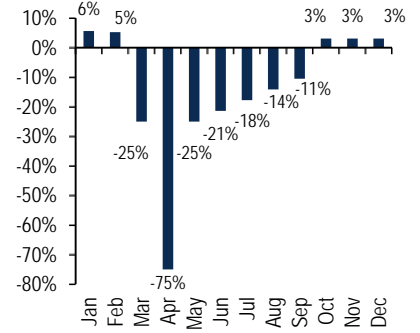
Source: BofA Global Research estimates

Chart 2: Scenario 2: domestic total revenue trajectory



Source: BofA Global Research estimates

Chart 3: Scenario 3: domestic total revenue trajectory



Source: BofA Global Research estimates

Scenario 1: trough revenues -25%; EPS ahead of our current forecasts

In our first scenario, we assume domestic revenues decline 15% in March, bottom in April at -25%, and recover through the end of 3Q20 (we leave our 4Q20 revenue assumptions unchanged). We estimate the airlines trim capacity in 1Q with more meaningful cuts taking effect in 2Q and 3Q. For international revenues, we leave our current assumptions unchanged (a 50% reduction in Pacific revenues and 20% reduction in Atlantic revenues for four months of 1H20).

On the cost side, we assume the airlines are largely able to lower costs with the lower capacity through hiring freezes, retiring older aircraft rather than performing costly maintenance events, etc. The one area where we assume less flexibility is salaries & wages. We assume 1Q salaries & wages are completely fixed at this point and estimate the airlines can capture 50% of the savings from lower capacity in 2Q and 66% of the expected savings in 3Q. Finally, we flow through the current fuel curve for the full year (implies Brent crude prices of \$43/barrel).

The fuel savings from incorporating the current curve helps offset some of the revenue weakness in 1H20, and actually results in full year 2020E EPS above our current estimates across the US airlines.

Table 2: Scenario 1 model assumptions with implied EPS and net leverage

	Capacity					RASM					CASM-ex					Fuel Price / Gallon					EPS					2020 Net Leverage
	1Q20	2Q20	3Q20	4Q20	2020	1Q20	2Q20	3Q20	4Q20	2020	1Q20	2Q20	3Q20	4Q20	2020	1Q20	2Q20	3Q20	4Q20	2020	1Q20	2Q20	3Q20	4Q20	2020	
DAL	1.9%	-5.6%	-0.8%	2.9%	-0.6%	-2.6%	-9.7%	-4.3%	-2.2%	-4.8%	4.2%	5.3%	3.5%	2.6%	4.0%	\$1.87	\$1.28	\$1.33	\$1.37	\$1.46	\$0.73	\$1.69	\$2.40	\$2.01	\$6.80	1.6x
AAL	-0.1%	-5.2%	-0.1%	5.4%	0.0%	-2.5%	-8.8%	-3.3%	-2.1%	-4.2%	3.9%	4.6%	3.4%	0.5%	3.1%	\$1.89	\$1.33	\$1.37	\$1.41	\$1.50	(\$0.09)	\$1.08	\$1.85	\$2.26	\$5.08	4.0x
UAL	-2.0%	-5.7%	-0.1%	4.1%	-0.9%	-2.9%	-10.6%	-5.5%	-3.0%	-5.6%	3.8%	5.1%	2.0%	-1.1%	2.4%	\$1.88	\$1.31	\$1.36	\$1.40	\$1.48	\$0.15	\$2.35	\$4.14	\$4.24	\$10.88	2.3x
LUV	-1.0%	-5.0%	-2.0%	7.0%	-0.3%	-1.7%	-12.1%	-1.6%	-3.0%	-4.7%	6.0%	8.5%	8.1%	-3.4%	4.6%	\$1.93	\$1.35	\$1.40	\$1.44	\$1.54	\$0.43	\$0.63	\$1.17	\$1.74	\$3.94	0.0x
ALK	4.0%	-8.0%	-2.5%	2.9%	-1.0%	-5.3%	-9.2%	-1.9%	-0.2%	-4.1%	2.5%	3.5%	3.1%	2.5%	3.1%	\$2.01	\$1.42	\$1.47	\$1.51	\$1.60	(\$0.39)	\$1.70	\$2.95	\$2.34	\$6.56	0.9x
JBLU	1.5%	-8.0%	-2.0%	5.0%	-0.9%	-3.8%	-9.0%	-1.1%	-0.1%	-3.5%	2.8%	4.0%	-0.5%	-3.0%	0.7%	\$1.95	\$1.47	\$1.38	\$1.42	\$1.56	(\$0.05)	\$0.37	\$1.00	\$1.18	\$2.46	1.3x
SAVE	14.0%	-5.0%	5.0%	12.0%	6.3%	-11.3%	-11.8%	-6.2%	-4.0%	-8.3%	4.3%	8.2%	3.5%	2.4%	4.5%	\$1.92	\$1.35	\$1.40	\$1.44	\$1.54	(\$0.32)	\$0.82	\$1.35	\$1.70	\$3.56	3.2x
HA	6.0%	-9.0%	-3.0%	2.9%	-0.9%	-9.7%	-8.2%	-1.6%	-0.6%	-4.9%	-1.7%	7.8%	4.1%	2.2%	3.0%	\$1.90	\$1.32	\$1.36	\$1.40	\$1.50	(\$0.01)	\$0.63	\$2.02	\$1.62	\$4.23	1.3x
ALGT	12.0%	-9.0%	-1.5%	2.9%	0.8%	-7.7%	-7.9%	-0.8%	3.3%	-3.2%	0.6%	6.1%	3.7%	0.3%	2.9%	\$1.97	\$1.41	\$1.45	\$1.49	\$1.59	\$2.86	\$3.67	\$3.75	\$6.27	\$16.56	1.8x

Source: BofA Global Research estimates

Scenario 2: trough revenues -50%; EPS 25% below our current forecasts

In this scenario, we assume domestic revenues decline 25% in March, bottom in April at -50%, and recover through the end of 3Q20 (again leaving our 4Q20 revenue estimates unchanged). We estimate that just over half of the revenue decline is driven by capacity cuts with the remainder from lower unit revenues. For DAL, UAL, and AAL, we assume a similar impact to total international revenues with just over half of the revenue decline from capacity cuts. Finally, we factor in a similar cost dynamic as in Scenario 1.

This scenario would result in 2020 EPS 25% below our current estimates on average, with the largest cuts at SAVE and HA. We note that under this scenario, while no airline



would generate negative earnings for the year given the fuel savings, AAL, JBLU, SAVE, and HA would all generate negative earnings in 1H20.

Table 3: Scenario 2 model assumptions with implied EPS and net leverage

	Capacity					RASM					CASM-ex					Fuel Price / Gallon					EPS					2020 Net Leverage
	1Q20	2Q20	3Q20	4Q20	2020	1Q20	2Q20	3Q20	4Q20	2020	1Q20	2Q20	3Q20	4Q20	2020	1Q20	2Q20	3Q20	4Q20	2020	1Q20	2Q20	3Q20	4Q20	2020	
DAL	1.3%	-15.9%	-8.0%	2.9%	-5.4%	-4.1%	-14.2%	-6.3%	-2.2%	-6.6%	4.5%	9.3%	5.6%	2.6%	5.7%	\$1.87	\$1.28	\$1.33	\$1.37	\$1.46	\$0.56	\$0.80	\$1.88	\$2.04	\$5.25	2.0x
AAL	-1.0%	-16.7%	-7.6%	5.4%	-5.1%	-4.5%	-14.4%	-5.8%	-2.1%	-6.5%	4.0%	8.0%	4.9%	0.4%	4.3%	\$1.89	\$1.33	\$1.37	\$1.41	\$1.50	(\$0.49)	(\$0.51)	\$0.98	\$2.26	\$2.21	5.5x
UAL	-2.2%	-17.0%	-8.0%	4.1%	-6.0%	-4.6%	-14.2%	-6.0%	-3.1%	-6.8%	3.8%	9.3%	4.1%	-1.1%	3.9%	\$1.88	\$1.31	\$1.36	\$1.40	\$1.48	(\$0.33)	\$0.38	\$3.25	\$4.23	\$7.54	2.9x
LUV	-1.0%	-18.0%	-7.0%	7.0%	-4.8%	-5.0%	-14.1%	-6.6%	-3.0%	-7.0%	6.0%	14.6%	9.6%	-3.4%	6.1%	\$1.93	\$1.35	\$1.40	\$1.44	\$1.54	\$0.21	\$0.19	\$0.71	\$1.74	\$2.83	0.2x
ALK	2.0%	-17.0%	-8.0%	2.9%	-5.2%	-5.7%	-15.2%	-6.4%	-0.2%	-6.7%	3.6%	5.7%	3.3%	2.5%	4.0%	\$2.01	\$1.42	\$1.47	\$1.51	\$1.60	(\$0.52)	\$0.68	\$2.18	\$2.34	\$4.64	1.2x
JBLU	0.0%	-17.0%	-7.0%	5.0%	-4.8%	-5.7%	-15.0%	-6.1%	-0.1%	-6.5%	3.6%	7.8%	0.6%	-3.0%	2.0%	\$1.95	\$1.47	\$1.38	\$1.42	\$1.56	(\$0.17)	(\$0.07)	\$0.64	\$1.18	\$1.54	1.8x
SAVE	10.0%	-15.0%	-5.0%	12.0%	0.2%	-10.7%	-16.8%	-6.2%	-4.0%	-9.2%	6.5%	13.1%	6.9%	2.4%	6.9%	\$1.92	\$1.35	\$1.40	\$1.44	\$1.54	(\$0.39)	(\$0.03)	\$0.98	\$1.70	\$2.27	3.8x
HA	4.0%	-17.0%	-8.0%	2.9%	-4.6%	-11.0%	-15.2%	-6.6%	-0.6%	-8.1%	-0.8%	11.0%	5.4%	2.2%	4.2%	\$1.90	\$1.32	\$1.36	\$1.40	\$1.50	(\$0.22)	(\$0.32)	\$1.23	\$1.62	\$2.27	2.0x
ALGT	8.0%	-17.0%	-7.0%	2.9%	-3.7%	-7.0%	-14.9%	-5.3%	3.3%	-5.5%	3.1%	10.0%	5.6%	0.3%	4.9%	\$1.97	\$1.41	\$1.45	\$1.49	\$1.59	\$2.58	\$1.48	\$2.41	\$6.27	\$12.75	2.3x

Source: BofA Global Research estimates

Scenario 3: trough revenues -75%, EPS -36% lower than current forecasts

In our third scenario, we assume domestic revenues again decline -25% in March, but we forecast a more significant drop-off in revenues in April at -75%. We assume a -25% decline in May with a recovery through the end of 3Q20 (and leave our 4Q20 revenue estimates unchanged). Again, we estimate that just over half of the revenue decline is driven by capacity cuts with the remainder from lower unit revenues. For DAL, UAL, and AAL, we assume a similar impact to total international revenues with just over half of the revenue decline from capacity cuts. Finally, this scenario also contemplates a similar cost dynamic as in Scenarios 1 and 2.

This scenario implies 36% downside on average to our current 2020 EPS estimates. SAVE, HA, and AAL have the most downside risk under this scenario, while DAL and UAL have the least downside risk. We note that all the US airlines except DAL, LUV, and ALGT would generate negative earnings in 1H20 in this scenario, although no airlines would have negative earnings for the full year.

Table 4: Scenario 3 model assumptions with implied EPS and net leverage

	Capacity					RASM					CASM-ex					Fuel Price / Gallon					EPS					2020 Net Leverage
	1Q20	2Q20	3Q20	4Q20	2020	1Q20	2Q20	3Q20	4Q20	2020	1Q20	2Q20	3Q20	4Q20	2020	1Q20	2Q20	3Q20	4Q20	2020	1Q20	2Q20	3Q20	4Q20	2020	
DAL	1.3%	-20.9%	-8.0%	2.9%	-6.7%	-4.1%	-17.0%	-6.3%	-2.2%	-7.1%	4.5%	11.6%	5.6%	2.6%	6.2%	\$1.87	\$1.28	\$1.33	\$1.37	\$1.46	\$0.56	\$0.34	\$1.89	\$2.05	\$4.81	2.2x
AAL	-1.0%	-21.6%	-7.6%	5.4%	-6.4%	-4.5%	-17.4%	-5.8%	-2.1%	-7.1%	4.0%	9.9%	4.9%	0.4%	4.6%	\$1.89	\$1.33	\$1.37	\$1.41	\$1.50	(\$0.49)	(\$1.20)	\$0.98	\$2.26	\$1.52	6.0x
UAL	-2.2%	-21.6%	-8.0%	4.1%	-7.2%	-4.6%	-17.5%	-6.0%	-3.1%	-7.5%	3.8%	11.2%	4.1%	-1.1%	4.3%	\$1.88	\$1.31	\$1.36	\$1.40	\$1.48	(\$0.33)	(\$0.88)	\$3.25	\$4.23	\$6.28	3.2x
LUV	-1.0%	-22.0%	-8.0%	7.0%	-6.1%	-5.0%	-18.4%	-5.6%	-3.0%	-7.7%	6.0%	16.9%	9.9%	-3.4%	6.6%	\$1.93	\$1.35	\$1.40	\$1.44	\$1.54	\$0.21	(\$0.16)	\$0.76	\$1.74	\$2.53	0.3x
ALK	2.0%	-22.0%	-8.0%	2.9%	-6.5%	-5.7%	-18.5%	-6.4%	-0.2%	-7.4%	3.6%	7.3%	3.3%	2.5%	4.4%	\$2.01	\$1.42	\$1.47	\$1.51	\$1.60	(\$0.52)	\$0.18	\$2.18	\$2.34	\$4.13	1.4x
JBLU	0.0%	-21.0%	-7.0%	5.0%	-5.8%	-5.7%	-19.3%	-6.1%	-0.1%	-7.9%	3.6%	9.7%	0.6%	-3.0%	2.3%	\$1.95	\$1.47	\$1.38	\$1.42	\$1.56	(\$0.17)	(\$0.32)	\$0.64	\$1.18	\$1.29	2.0x
SAVE	10.0%	-20.0%	-5.0%	12.0%	-1.1%	-10.7%	-20.1%	-6.2%	-4.0%	-9.9%	6.5%	16.0%	6.9%	2.4%	7.5%	\$1.92	\$1.35	\$1.40	\$1.44	\$1.54	(\$0.39)	(\$0.48)	\$0.98	\$1.70	\$1.81	4.1x
HA	4.0%	-22.0%	-8.0%	2.9%	-5.9%	-11.0%	-18.5%	-6.6%	-0.6%	-8.7%	-0.8%	13.5%	5.4%	2.2%	4.7%	\$1.90	\$1.32	\$1.36	\$1.40	\$1.50	(\$0.22)	(\$0.75)	\$1.23	\$1.62	\$1.83	2.2x
ALGT	8.0%	-22.0%	-7.0%	2.9%	-5.1%	-7.0%	-18.3%	-5.3%	3.3%	-6.1%	3.1%	12.8%	5.6%	0.3%	5.5%	\$1.97	\$1.41	\$1.45	\$1.49	\$1.59	\$2.58	\$0.44	\$2.41	\$6.27	\$11.71	2.4x

Source: BofA Global Research estimates

Table 5: Stocks mentioned

BofA Ticker	Bloomberg ticker	Company name	Price	Rating
ALK	ALK US	Alaska Air Group	US\$ 43.19	B-2-7
ALGT	ALGT US	Allegiant	US\$ 118.4	B-1-7
AAL	AAL US	American	US\$ 14.75	B-3-7
DAL	DAL US	Delta Air	US\$ 43.52	B-2-7
HA	HA US	Hawaiian	US\$ 16.85	C-3-7
JBLU	JBLU US	JetBlue	US\$ 13.4	B-3-9
LUV	LUV US	Southwest	US\$ 43.62	B-2-7
SAVE	SAVE US	Spirit Airlines	US\$ 21.41	B-3-9
UAL	UAL US	United Airlines	US\$ 46.78	B-1-9

Source: BofA Global Research

Price objective basis & risk

Alaska Air Group (ALK)

Our \$51 price objective for ALK is based on approximately 8x 2020E EPS. Our target multiple is at a discount to ALK's recent historical average (10.5x), which we believe is reasonable given where we are in the cycle and ongoing coronavirus concerns.

Upside risks to our price objective are a better pricing environment from a faster than expected economic recovery or lower competitive supply or a significant drop in fuel prices. Downside risks to our price objective are higher fuel prices, general economic weakness, unfavorable government regulation/taxes, safety concerns, integration issues, and terrorism/geopolitical events.

Allegiant Travel Company (ALGT)

For ALGT, our \$167 PO is based on approximately 10x 2020E P/E. This is a discount to ALGT's long-term average (15x), which we believe is reasonable given where we are in the cycle, ongoing coronavirus concerns, and risks around ALGT's Sunseeker project.

Downside risks to our price objective are higher fuel prices, general economic weakness, government regulation/taxes, safety concerns and terrorism/geopolitical events.

American Airlines Group (AAL)

Our \$18 PO is based on approximately 6x our 2020E EPS. This target multiple is below the target multiples of the other legacy airlines (8x) and below AAL's recent historical average multiple (7x), which we believe this is appropriate given its higher leverage vs peers and given where we are in the cycle.

Upside risks to our price objective are better than expected pricing, a faster than expected resolution of labor contracts, and a stronger macro backdrop. Downside risks to our price objective are significant moves in fuel, general economic weakness, government regulation/taxes, safety concerns and terrorism/geopolitical events.

Delta Air Lines (DAL)

Our \$50 PO is based on approximately 8x 2020E EPS. This is a slight discount to DAL's average multiple over the past 10 years (8.5x), which we believe is appropriate given where we are in the cycle and ongoing coronavirus concerns.

Upside risks to our price objective are better than expected pricing and a stronger macro backdrop. Downside risks to our price objective are higher fuel prices, general economic weakness, government regulation/taxes, safety concerns, a prolonged government shutdown and terrorism/geopolitical events.

Hawaiian Holdings (HA)



Our \$19 PO is based on approximately 6x 2020E EPS, which is below HA's recent historical average P/E multiple (8x) given the headwinds we expect from 1) increased competition on HA's West Coast to Hawaii routes (50% of its revenues) and HA's interisland routes (25% of its revenues), and 2) its Asia Pacific exposure given coronavirus concerns.

Downside risks to our price objective are higher fuel prices, general economic weakness, government regulation/taxes, safety concerns and terrorism/geopolitical events.

Upside risks to our price objective are a better pricing environment from a faster-than-expected economic recovery or lower competitive supply, a significant drop in fuel prices, and better cost controls.

JetBlue Airways (JBLU)

Our \$15 PO is based on approximately 7.5x 2020E EPS. This is below its recent historical average multiple (10x), which we believe is appropriate given where we are in the cycle, ongoing coronavirus concerns, and given JBLU's lack of upcoming earnings catalysts.

Upside risks to our price objective are lower fuel prices, better than expected pricing, lower competitive supply, and general economic strength.

Downside risks to our price objective are higher fuel prices, general economic weakness, government regulation/taxes, safety concerns and terrorism/geopolitical events.

Southwest (LUV)

Our \$48 PO is based on approximately 12.5x 2020E EPS, 2x turns below LUV's recent historical average multiple given where we are in the cycle and ongoing coronavirus concerns. We believe investors should put a higher multiple on LUV shares relative to the rest of the group given its leverage, high level of unencumbered aircraft, and fuel hedges position it well for later cycle.

Downside risks to our price objective are higher fuel prices, general economic weakness, government regulation/taxes, safety concerns and terrorism/geopolitical events.

Spirit Airlines (SAVE)

Our \$30 price objective is based on approximately 7x 2020E EPS. This is below SAVE's recent historical average multiple (11x), which we believe is appropriate considering where we are in the cycle, our expectations for revenue pressure in 2020, recent cost inflation, and ongoing coronavirus concerns.

Upside risks to our price objective are lower fuel prices, better than expected pricing, lower competitive supply, and general economic strength. Downside risks are economic weakness, government regulation and taxation, increased competition including the threat of new entrants, labor issues, safety concerns, terrorism and geopolitical events, changes in equity risk premiums, and overall stock market valuations.

United Airlines Holdings (UAL)

Our \$66 PO is based on 8x our 2020E EPS. This is in line with the target multiples of the other legacy airlines and at a slight discount to UAL's historical average multiple (8.5x), which we believe is appropriate given where we are in the cycle and ongoing coronavirus concerns.

Downside risks to our price objective are higher fuel prices, general economic weakness, government regulation/taxes, safety concerns, and terrorism/geopolitical events.

Analyst Certification

I, Andrew G. Didora, CFA, hereby certify that the views expressed in this research report accurately reflect my personal views about the subject securities and issuers. I also certify that no part of my compensation was, is, or will be, directly or indirectly, related to the specific recommendations or view expressed in this research report.

Special Disclosures

BofA Securities is currently acting as financial advisor to Avianca Holdings SA in connection with its proposed joint business agreement with United Airlines and Copa Airlines, which was announced on November 30, 2018.



US - Airlines and Cruise Coverage Cluster

Investment rating	Company	BofA Ticker	Bloomberg symbol	Analyst
BUY				
	Air Canada	YAC	AC CN	Andrew G. Didora, CFA
	Allegiant Travel Company	ALGT	ALGT US	Andrew G. Didora, CFA
	Mesa Air Group	MESA	MESA US	Andrew G. Didora, CFA
	Norwegian Cruise Line Holdings	NCLH	NCLH US	Andrew G. Didora, CFA
	United Airlines Holdings	UAL	UAL US	Andrew G. Didora, CFA
NEUTRAL				
	Alaska Air Group	ALK	ALK US	Andrew G. Didora, CFA
	Delta Air Lines	DAL	DAL US	Andrew G. Didora, CFA
	Royal Caribbean Cruises	RCL	RCL US	Andrew G. Didora, CFA
	Southwest	LUV	LUV US	Andrew G. Didora, CFA
UNDERPERFORM				
	American Airlines Group	AAL	AAL US	Andrew G. Didora, CFA
	Hawaiian Holdings	HA	HA US	Andrew G. Didora, CFA
	JetBlue Airways	JBLU	JBLU US	Andrew G. Didora, CFA
	Spirit Airlines	SAVE	SAVE US	Andrew G. Didora, CFA

Disclosures

Important Disclosures

Equity Investment Rating Distribution: Transport/Infrastructure Group (as of 31 Dec 2019)

Coverage Universe	Count	Percent	Inv. Banking Relationships*	Count	Percent
Buy	60	53.57%	Buy	35	58.33%
Hold	23	20.54%	Hold	19	82.61%
Sell	29	25.89%	Sell	13	44.83%

Equity Investment Rating Distribution: Global Group (as of 31 Dec 2019)

Coverage Universe	Count	Percent	Inv. Banking Relationships*	Count	Percent
Buy	1560	50.49%	Buy	991	63.53%
Hold	717	23.20%	Hold	461	64.30%
Sell	813	26.31%	Sell	415	51.05%

* Issuers that were investment banking clients of BofA Securities or one of its affiliates within the past 12 months. For purposes of this Investment Rating Distribution, the coverage universe includes only stocks. A stock rated Neutral is included as a Hold, and a stock rated Underperform is included as a Sell.

FUNDAMENTAL EQUITY OPINION KEY: Opinions include a **Volatility Risk Rating**, an **Investment Rating** and an **Income Rating**. **VOLATILITY RISK RATINGS**, indicators of potential price fluctuation, are: **A - Low**, **B - Medium** and **C - High**. **INVESTMENT RATINGS** reflect the analyst's assessment of a stock's: (i) absolute total return potential and (ii) attractiveness for investment relative to other stocks within its **Coverage Cluster** (defined below). There are three investment ratings: **1 - Buy** stocks are expected to have a total return of at least 10% and are the most attractive stocks in the coverage cluster; **2 - Neutral** stocks are expected to remain flat or increase in value and are less attractive than Buy rated stocks and **3 - Underperform** stocks are the least attractive stocks in a coverage cluster. Analysts assign investment ratings considering, among other things, the 0-12 month total return expectation for a stock and the firm's guidelines for ratings dispersions (shown in the table below). The current price objective for a stock should be referenced to better understand the total return expectation at any given time. The price objective reflects the analyst's view of the potential price appreciation (depreciation).

Investment rating	Total return expectation (within 12-month period of date of initial rating)	Ratings dispersion guidelines for coverage cluster*
Buy	≥ 10%	≤ 70%
Neutral	≥ 0%	≤ 30%
Underperform	N/A	≥ 20%

* Ratings dispersions may vary from time to time where BofA Global Research believes it better reflects the investment prospects of stocks in a Coverage Cluster.

INCOME RATINGS, indicators of potential cash dividends, are: **7 - same/higher** (dividend considered to be secure), **8 - same/lower** (dividend not considered to be secure) and **9 - pays no cash dividend**. **Coverage Cluster** is comprised of stocks covered by a single analyst or two or more analysts sharing a common industry, sector, region or other classification(s). A stock's coverage cluster is included in the most recent BofA Global Research report referencing the stock.

Price charts for the securities referenced in this research report are available at <https://pricecharts.baml.com>, or call 1-800-MERRILL to have them mailed.

BofAS or one of its affiliates acts as a market maker for the equity securities recommended in the report: Alaska Air Group, Allegiant, American, Delta Air, Hawaiian, JetBlue, Southwest, Spirit Airlines, United Airlines.

BofAS or an affiliate was a manager of a public offering of securities of this issuer within the last 12 months: American Airlines Gr, Delta Air Lines, JetBlue.

The issuer is or was, within the last 12 months, an investment banking client of BofAS and/or one or more of its affiliates: American Airlines Gr, Delta Air Lines, JetBlue, Southwest, United Airlines.

BofAS or an affiliate has received compensation from the issuer for non-investment banking services or products within the past 12 months: Alaska Air Group, Allegiant, American Airlines Gr, Delta Air Lines, Hawaiian, JetBlue, Southwest, United Airlines.

The issuer is or was, within the last 12 months, a non-securities business client of BofAS and/or one or more of its affiliates: Alaska Air Group, Allegiant, American Airlines Gr, Delta Air Lines, Hawaiian, JetBlue, Southwest, Spirit Airlines, United Airlines.

BofAS or an affiliate has received compensation for investment banking services from this issuer within the past 12 months: American Airlines Gr, Delta Air Lines, JetBlue, Southwest, United Airlines.

BofAS or an affiliate expects to receive or intends to seek compensation for investment banking services from this issuer or an affiliate of the issuer within the next three months: American Airlines Gr, Delta Air Lines, JetBlue, Southwest, United Airlines.

BofAS together with its affiliates beneficially owns one percent or more of the common stock of this issuer. If this report was issued on or after the 9th day of the month, it reflects the ownership position on the last day of the previous month. Reports issued before the 9th day of a month reflect the ownership position at the end of the second month preceding the date of the report: Delta Air Lines, JetBlue.

BofAS or one of its affiliates is willing to sell to, or buy from, clients the common equity of the issuer on a principal basis: Alaska Air Group, Allegiant, American, Delta Air, Hawaiian, JetBlue, Southwest, Spirit Airlines, United Airlines.

The issuer is or was, within the last 12 months, a securities business client (non-investment banking) of BofAS and/or one or more of its affiliates: Alaska Air Group, American Airlines Gr, Delta Air Lines, Hawaiian, JetBlue, Southwest, United Airlines.

BofA Global Research personnel (including the analyst(s) responsible for this report) receive compensation based upon, among other factors, the overall profitability of Bank of America Corporation, including profits derived from investment banking. The analyst(s) responsible for this report may also receive compensation based upon, among other factors, the overall profitability of the Bank's sales and trading businesses relating to the class of securities or financial instruments for which such analyst is responsible.

Other Important Disclosures

BofAS together with its affiliates beneficially owns a net short position of 0.5% or more of the total issued share capital of this issuer. Ownership positions speak as of a date no more than three trading days prior to the date of this report: JetBlue.

From time to time research analysts conduct site visits of covered issuers. BofA Global Research policies prohibit research analysts from accepting payment or reimbursement for travel expenses from the issuer for such visits.

Prices are indicative and for information purposes only. Except as otherwise stated in the report, for the purpose of any recommendation in relation to: (i) an equity security, the price referenced is the publicly traded price of the security as of close of business on the day prior to the date of the report or, if the report is published during intraday trading, the price referenced is indicative of the traded price as of the date and time of the report; or (ii) a debt security (including equity preferred and CDS), prices are indicative as of the date and time of the report and are from various sources including BofA Securities trading desks.

The date and time of completion of the production of any recommendation in this report shall be the date and time of dissemination of this report as recorded in the report timestamp.

Recipients who are not institutional investors or market professionals should seek the advice of their independent financial advisor before considering information in this report in connection with any investment decision, or for a necessary explanation of its contents.

Officers of BofAS or one or more of its affiliates (other than research analysts) may have a financial interest in securities of the issuer(s) or in related investments.

BofA Global Research policies relating to conflicts of interest are described at <https://rsch.baml.com/coi>

'BofA Securities' includes BofA Securities, Inc. ('BofAS') and its affiliates. Investors should contact their BofA Securities representative or Merrill Global Wealth Management financial advisor if they have questions concerning this report or concerning the appropriateness of any investment idea described herein for such investor. 'BofA Securities' is a global brand for BofA Global Research.

Information relating to Non-US affiliates of BofA Securities and Distribution of Affiliate Research Reports:

BofAS and/or Merrill Lynch, Pierce, Fenner & Smith ("MLPF&S") may in the future distribute, information of the following non-US affiliates in the US (short name: legal name, regulator): Merrill Lynch (South Africa): Merrill Lynch South Africa (Pty) Ltd., regulated by The Financial Service Board; MLI (UK): Merrill Lynch International, regulated by the Financial Conduct Authority (FCA) and the Prudential Regulation Authority (PRA); BofASE (France): BofA Securities Europe SA is authorized by the Autorité de Contrôle Prudentiel et de Résolution (ACPR) and regulated by the ACPR and the Autorité des Marchés Financiers (AMF); BAML DAC (Milan): Bank of America Merrill Lynch International DAC, Milan Branch, regulated by the Bank of Italy, the European Central Bank (ECB) and the Central Bank of Ireland (CBI); BAML DAC (Frankfurt): Bank of America Merrill Lynch International DAC, Frankfurt Branch regulated by BaFin, the ECB and the CBI; Merrill Lynch (Australia): Merrill Lynch Equities (Australia) Limited, regulated by the Australian Securities and Investments Commission; Merrill Lynch (Hong Kong): Merrill Lynch (Asia Pacific) Limited, regulated by the Hong Kong Securities and Futures Commission (HKSF); Merrill Lynch (Singapore): Merrill Lynch (Singapore) Pte Ltd, regulated by the Monetary Authority of Singapore (MAS); Merrill Lynch (Canada): Merrill Lynch Canada Inc, regulated by the Investment Industry Regulatory Organization of Canada; Merrill Lynch (Mexico): Merrill Lynch Mexico, SA de CV, Casa de Bolsa, regulated by the Comisión Nacional Bancaria y de Valores; Merrill Lynch (Argentina): Merrill Lynch Argentina SA, regulated by Comisión Nacional de Valores; Merrill Lynch (Japan): Merrill Lynch Japan Securities Co., Ltd., regulated by the Financial Services Agency; Merrill Lynch (Seoul): Merrill Lynch International, LLC Seoul Branch, regulated by the Financial Supervisory Service; Merrill Lynch (Taiwan): Merrill Lynch Securities (Taiwan) Ltd., regulated by the Securities and Futures Bureau; DSP Merrill Lynch (India): DSP Merrill Lynch Limited, regulated by the Securities and Exchange Board of India; Merrill Lynch (Indonesia): PT Merrill Lynch Sekuritas Indonesia, regulated by Otoritas Jasa Keuangan (OJK); Merrill Lynch (Israel): Merrill Lynch Israel Limited, regulated by Israel Securities Authority; Merrill Lynch (Russia): OOO Merrill Lynch Securities, Moscow, regulated by the Central Bank of the Russian Federation; Merrill Lynch (DIFC): Merrill Lynch International (DIFC Branch), regulated by the Dubai Financial Services Authority (DFSA); Merrill Lynch (Spain): Merrill Lynch Capital Markets Espana, S.A.S.V., regulated by Comisión Nacional del Mercado De Valores; Merrill Lynch (Brazil): Merrill Lynch S.A. Corretora de Títulos e Valores Mobiliários, regulated by Comissão de Valores Mobiliários; Merrill Lynch KSA Company: Merrill Lynch Kingdom of Saudi Arabia Company, regulated by the Capital Market Authority.

This information: has been approved for publication and is distributed in the United Kingdom (UK) to professional clients and eligible counterparties (as each is defined in the rules of the FCA and the PRA) by MLI (UK), which is authorized by the PRA and regulated by the FCA and the PRA - details about the extent of our regulation by the FCA and PRA are available from us on request; has been approved for publication and is distributed in the European Economic Area (EEA) by BofASE (France), which is authorized by the ACPR and regulated by the ACPR and the AMF; has been considered and distributed in Japan by Merrill Lynch (Japan), a registered securities dealer under the Financial Instruments and Exchange Act in Japan, or its permitted affiliates; is issued and distributed in Hong Kong by Merrill Lynch (Hong Kong) which is regulated by HKSF; is issued and distributed in Taiwan by Merrill Lynch (Taiwan); is issued and distributed in India by DSP Merrill Lynch (India); and is issued and distributed in Singapore to institutional investors and/or accredited investors (each as defined under the Financial Advisers Regulations) by Merrill Lynch (Singapore) (Company Registration No 198602883D). Merrill Lynch (Singapore) is regulated by MAS. Bank of America N.A., Australian Branch (ARBN 064 874 531), AFS License 412901 (BANA Australia) and Merrill Lynch Equities (Australia) Limited (ABN 65 006 276 795), AFS License 235132 (MLEA) distribute this information in Australia only to 'Wholesale' clients as defined by s.761G of the Corporations Act 2001. With the exception of BANA Australia, neither MLEA nor any of its affiliates involved in preparing this information is an Authorised Deposit-Taking Institution under the Banking Act 1959 nor regulated by the Australian Prudential Regulation Authority. No approval is required for publication or distribution of this information in Brazil and its local distribution is by Merrill Lynch (Brazil) in accordance with applicable regulations. Merrill Lynch (DIFC) is authorized and regulated by the DFSA. Information prepared and issued by Merrill Lynch (DIFC) is done so in accordance with the requirements of the DFSA conduct of business rules. BAML DAC (Frankfurt) distributes this information in Germany and is regulated by BaFin, the ECB and the CBI. BofA Securities entities, including BAML DAC and BofASE (France), may outsource/delegate the marketing and/or provision of certain research services or aspects of research services to other branches or members of the BofA Securities group. You may be contacted by a different BofA Securities entity acting for and on behalf of your service provider where permitted by applicable law. This does not change your service provider. Please use this link <http://www.bankofamerica.com/emaildisclaimer> for further information

This information has been prepared and issued by BofAS and/or one or more of its non-US affiliates. The author(s) of this information may not be licensed to carry on regulated activities in your jurisdiction and, if not licensed, do not hold themselves out as being able to do so. BofAS and/or MLPF&S is the distributor of this information in the US and accepts full responsibility for information distributed to BofAS and/or MLPF&S clients in the US by its non-US affiliates. Any US person receiving this information and wishing to effect any transaction in any security discussed herein should do so through BofAS and/or MLPF&S and not such foreign affiliates. Hong Kong recipients of this information should contact Merrill Lynch (Asia Pacific) Limited in respect of any matters relating to dealing in securities or provision of specific advice on securities or any other matters arising from, or in connection with, this information. Singapore recipients of this information should contact Merrill Lynch (Singapore) Pte Ltd in respect of any matters arising from, or in connection with, this information.

General Investment Related Disclosures:

Taiwan Readers: Neither the information nor any opinion expressed herein constitutes an offer or a solicitation of an offer to transact in any securities or other financial instrument. No part of this report may be used or reproduced or quoted in any manner whatsoever in Taiwan by the press or any other person without the express written consent of BofA Securities. This document provides general information only, and has been prepared for, and is intended for general distribution to, BofA Securities clients. Neither the information nor any opinion expressed constitutes an offer or an invitation to make an offer, to buy or sell any securities or other financial instrument or any derivative related to such securities or instruments (e.g., options, futures, warrants, and contracts for differences). This document is not intended to provide personal investment advice and it does not take into account the specific investment objectives, financial situation and the particular needs of, and is not directed to, any specific person(s). This document and its content do not constitute, and should not be considered to constitute,

investment advice for purposes of ERISA, the US tax code, the Investment Advisers Act or otherwise. Investors should seek financial advice regarding the appropriateness of investing in financial instruments and implementing investment strategies discussed or recommended in this document and should understand that statements regarding future prospects may not be realized. Any decision to purchase or subscribe for securities in any offering must be based solely on existing public information on such security or the information in the prospectus or other offering document issued in connection with such offering, and not on this document.

Securities and other financial instruments referred to herein, or recommended, offered or sold by BofA Securities, are not insured by the Federal Deposit Insurance Corporation and are not deposits or other obligations of any insured depository institution (including, Bank of America, N.A.). Investments in general and, derivatives, in particular, involve numerous risks, including, among others, market risk, counterparty default risk and liquidity risk. No security, financial instrument or derivative is suitable for all investors. In some cases, securities and other financial instruments may be difficult to value or sell and reliable information about the value or risks related to the security or financial instrument may be difficult to obtain. Investors should note that income from such securities and other financial instruments, if any, may fluctuate and that price or value of such securities and instruments may rise or fall and, in some cases, investors may lose their entire principal investment. Past performance is not necessarily a guide to future performance. Levels and basis for taxation may change.

This report may contain a short-term trading idea or recommendation, which highlights a specific near-term catalyst or event impacting the issuer or the market that is anticipated to have a short-term price impact on the equity securities of the issuer. Short-term trading ideas and recommendations are different from and do not affect a stock's fundamental equity rating, which reflects both a longer term total return expectation and attractiveness for investment relative to other stocks within its Coverage Cluster. Short-term trading ideas and recommendations may be more or less positive than a stock's fundamental equity rating.

BofA Securities is aware that the implementation of the ideas expressed in this report may depend upon an investor's ability to "short" securities or other financial instruments and that such action may be limited by regulations prohibiting or restricting "shortselling" in many jurisdictions. Investors are urged to seek advice regarding the applicability of such regulations prior to executing any short idea contained in this report.

Foreign currency rates of exchange may adversely affect the value, price or income of any security or financial instrument mentioned herein. Investors in such securities and instruments, including ADRs, effectively assume currency risk.

UK Readers: The protections provided by the U.K. regulatory regime, including the Financial Services Scheme, do not apply in general to business coordinated by BofA Securities entities located outside of the United Kingdom.

BofAS or one of its affiliates is a regular issuer of traded financial instruments linked to securities that may have been recommended in this report. BofAS or one of its affiliates may, at any time, hold a trading position (long or short) in the securities and financial instruments discussed in this report.

BofA Securities, through business units other than BofA Global Research, may have issued and may in the future issue trading ideas or recommendations that are inconsistent with, and reach different conclusions from, the information presented herein. Such ideas or recommendations may reflect different time frames, assumptions, views and analytical methods of the persons who prepared them, and BofA Securities is under no obligation to ensure that such other trading ideas or recommendations are brought to the attention of any recipient of this information.

In the event that the recipient received this information pursuant to a contract between the recipient and BofAS for the provision of research services for a separate fee, and in connection therewith BofAS may be deemed to be acting as an investment adviser, such status relates, if at all, solely to the person with whom BofAS has contracted directly and does not extend beyond the delivery of this report (unless otherwise agreed specifically in writing by BofAS). If such recipient uses the services of BofAS in connection with the sale or purchase of a security referred to herein, BofAS may act as principal for its own account or as agent for another person. BofAS is and continues to act solely as a broker-dealer in connection with the execution of any transactions, including transactions in any securities referred to herein.

Copyright and General Information:

Copyright 2020 Bank of America Corporation. All rights reserved. iQprofileSM, iQmethodSM are service marks of Bank of America Corporation. iQdatabase[®] is a registered service mark of Bank of America Corporation. This information is prepared for the use of BofA Securities clients and may not be redistributed, retransmitted or disclosed, in whole or in part, or in any form or manner, without the express written consent of BofA Securities. BofA Global Research information is distributed simultaneously to internal and client websites and other portals by BofA Securities and is not publicly-available material. Any unauthorized use or disclosure is prohibited. Receipt and review of this information constitutes your agreement not to redistribute, retransmit, or disclose to others the contents, opinions, conclusion, or information contained herein (including any investment recommendations, estimates or price targets) without first obtaining express permission from an authorized officer of BofA Securities.

Materials prepared by BofA Global Research personnel are based on public information. Facts and views presented in this material have not been reviewed by, and may not reflect information known to, professionals in other business areas of BofA Securities, including investment banking personnel. BofA Securities has established information barriers between BofA Global Research and certain business groups. As a result, BofA Securities does not disclose certain client relationships with, or compensation received from, such issuers. To the extent this material discusses any legal proceeding or issues, it has not been prepared as nor is it intended to express any legal conclusion, opinion or advice. Investors should consult their own legal advisers as to issues of law relating to the subject matter of this material. BofA Global Research personnel's knowledge of legal proceedings in which any BofA Securities entity and/or its directors, officers and employees may be plaintiffs, defendants, co-defendants or co-plaintiffs with or involving issuers mentioned in this material is based on public information. Facts and views presented in this material that relate to any such proceedings have not been reviewed by, discussed with, and may not reflect information known to, professionals in other business areas of BofA Securities in connection with the legal proceedings or matters relevant to such proceedings.

This information has been prepared independently of any issuer of securities mentioned herein and not in connection with any proposed offering of securities or as agent of any issuer of any securities. None of BofAS or any of its affiliates or their research analysts has any authority whatsoever to make any representation or warranty on behalf of the issuer(s). BofA Global Research policy prohibits research personnel from disclosing a recommendation, investment rating, or investment thesis for review by an issuer prior to the publication of a research report containing such rating, recommendation or investment thesis.

Any information relating to the tax status of financial instruments discussed herein is not intended to provide tax advice or to be used by anyone to provide tax advice. Investors are urged to seek tax advice based on their particular circumstances from an independent tax professional.

The information herein (other than disclosure information relating to BofA Securities and its affiliates) was obtained from various sources and we do not guarantee its accuracy. This information may contain links to third-party websites. BofA Securities is not responsible for the content of any third-party website or any linked content contained in a third-party website. Content contained on such third-party websites is not part of this information and is not incorporated by reference. The inclusion of a link does not imply any endorsement by or any affiliation with BofA Securities. Access to any third-party website is at your own risk, and you should always review the terms and privacy policies at third-party websites before submitting any personal information to them. BofA Securities is not responsible for such terms and privacy policies and expressly disclaims any liability for them.

All opinions, projections and estimates constitute the judgment of the author as of the date of publication and are subject to change without notice. Prices also are subject to change without notice. BofA Securities is under no obligation to update this information and BofA Securities ability to publish information on the subject issuer(s) in the future is subject to applicable quiet periods. You should therefore assume that BofA Securities will not update any fact, circumstance or opinion contained herein.

Subject to the quiet period applicable under laws of the various jurisdictions in which we distribute research reports and other legal and BofA Securities policy-related restrictions on the publication of research reports, fundamental equity reports are produced on a regular basis as necessary to keep the investment recommendation current.

Certain outstanding reports or investment opinions relating to securities, financial instruments and/or issuers may no longer be current. Always refer to the most recent research report relating to an issuer prior to making an investment decision.

In some cases, an issuer may be classified as Restricted or may be Under Review or Extended Review. In each case, investors should consider any investment opinion relating to such issuer (or its security and/or financial instruments) to be suspended or withdrawn and should not rely on the analyses and investment opinion(s) pertaining to such issuer (or its securities and/or financial instruments) nor should the analyses or opinion(s) be considered a solicitation of any kind. Sales persons and financial advisors affiliated with BofAS or any of its affiliates may not solicit purchases of securities or financial instruments that are Restricted or Under Review and may only solicit securities under Extended Review in accordance with firm policies.

Neither BofA Securities nor any officer or employee of BofA Securities accepts any liability whatsoever for any direct, indirect or consequential damages or losses arising from any use of this information.