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Norwegian Cruise Line Holdings. (NYSE: NCLH)

COMPANY REPORT

Cruising to a promising future

- **Projected valuation exceeds market's current expectations.** As of close of business on April 26, 2019 NCLH was trading at $57.27. Our team's valuation of $70.87 shows that our forecasted cashflows exceed the market's expectations of the future value of the company. Therefore, our recommendation currently is a **BUY** rating for Norwegian Cruise Line.

- **NCLH is the most dynamic player in the industry.** Norwegian Cruise Line sets the ceiling of net yield growth. After going public in 2013, NCLH has shown steady growth increases up to 5% in 2019. Based on projected future capacity (from management disclosures), we assume that the company will maintain the peak of 5% in the net yield growth until 2020 and will progressively realign to the historical long-term average of 3%.

- **NCLH is transitioning from a growth company to a mature one.** Based on the projected increase in fleet size, we estimate that Capex will continue to decrease from the current 26% of revenues to the industry average of 20%. APCD growth in 2014 was approximately 20% and it slowed to 9% in 2018. We expect this trend to continue and taper in the long-run to 4%.

- **Norwegian as the industry leader in long-run pricing strategies.** NCLH has invested in differentiation in their product line compared to the competitors, offering high-end experiences on smaller boats. This is reflected in their net yield which we estimate will remain higher than the other players and allow them to enjoy this leadership position in revenue per APCD.

RECOMMENDATION

BUY

SUMMARY STATS.

LAST TRADING PRICE
$57.27 (04/26/2019)

52 WEEK RANGE
$39.36 – $59.71

MARKET CAP
$12,342M (04/26/2019)

SHARES OUTSTANDING
215.4M

TARGET PRICE
$70.87

UPSIDE
23.75% (04/26/2019)

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Free Cash Flow Calculation

Given the information available on NCLH, our team decided to analyze the free cash flows of NCLH over a 10-year horizon for which we estimate to be able to reliably provide forecasts. The Figure below summarizes our assumptions for each component of the free cash flows. For each line item, the numbers in blue represent our forecast assumption based on the specific driver listed in the left column.

Figure 1: Free Cash Flows Projections

| Norwegian Cruise Line Holdings (MM USD) Free Cash Flow Calculation	2019E 1Y	2020E 1Y	2021E 1Y	2022E 1Y	2023E 1Y	2024E 1Y	2025E 1Y	2026E 1Y	2027E 1Y	2028E 1Y
Revenue Growth (yoy)										
Total Revenues	**6,650**	**7,092**	**7,447**	**8,374**	**9,307**	**10,151**	**11,227**	**12,127**	**13,078**	**14,036**
COGS as % of Revenues	*55.00%*	*54.50%*	*54.00%*	*53.50%*	*53.00%*	*52.50%*	*52.00%*	*52.00%*	*52.00%*	*52.00%*
COGS	3,657	3,865	4,021	4,480	4,933	5,330	5,838	6,306	6,800	7,299
SG&A as % of Revenues	*14.00%*	*14.00%*	*14.00%*	*14.00%*	*14.00%*	*14.00%*	*14.00%*	*14.00%*	*14.00%*	*14.00%*
SG&A as % of Revenues	931	993	1,043	1,172	1,303	1,421	1,572	1,698	1,831	1,965
D&A as % of Revenues	*9.50%*	*9.50%*	*9.50%*	*9.50%*	*9.50%*	*9.50%*	*9.50%*	*9.50%*	*9.50%*	*9.50%*
D&A	632	674	707	796	884	964	1,067	1,152	1,242	1,333
Operating Income (EBIT)	**1,430**	**1,560**	**1,675**	**1,926**	**2,187**	**2,436**	**2,751**	**2,971**	**3,204**	**3,439**
Effective Tax Rate	*1.00%*	*1.00%*	*1.00%*	*1.00%*	*1.00%*	*1.00%*	*1.00%*	*1.00%*	*1.00%*	*1.00%*
NOPAT	**1,415**	**1,545**	**1,659**	**1,907**	**2,165**	**2,412**	**2,723**	**2,942**	**3,172**	**3,404**
D&A as % of Revenues	*9.50%*	*9.50%*	*9.50%*	*9.50%*	*9.50%*	*9.50%*	*9.50%*	*9.50%*	*9.50%*	*9.50%*
+ D&A	632	674	707	796	884	964	1,067	1,152	1,242	1,333
Capex as % of Revenues	*25.19%*	*23.93%*	*22.79%*	*21.81%*	*20.87%*	*20.00%*	*20.00%*	*20.00%*	*20.00%*	*20.00%*
- Capex	1,675	1,697	1,697	1,826	1,942	2,030	2,245	2,425	2,616	2,807
Change in NWC as % of Revenues	*2.50%*	*2.50%*	*2.50%*	*2.50%*	*2.50%*	*2.50%*	*2.50%*	*2.50%*	*2.50%*	*2.50%*
- Change in NWC	166	177	186	209	233	254	281	303	327	351
Free Cash Flow	**206**	**344**	**483**	**667**	**875**	**1,092**	**1,264**	**1,365**	**1,472**	**1,580**

Source: Company 10k, Yale SOM Team Estimates

The following sections explain in detail each of the forecasts in the figure above. Our team's results are based on NCLH's financial statements and earnings call. The team's hypothesis on future projections are benchmarked to trends in the cruise line industry as a whole.

Revenue Forecast

Historical Analysis

While looking at forecasting revenue for NCLH, our team took a similar approach as the way we projected the revenue forecasts for RCL. In terms of market size, NCLH represents 13% of maximum berth capacity, showing to be the smallest player out of the three major global cruise line industry players.

Figure 2: Industry Comparison by Berth ('000s) (Left) and Berth % (Right) - 2018
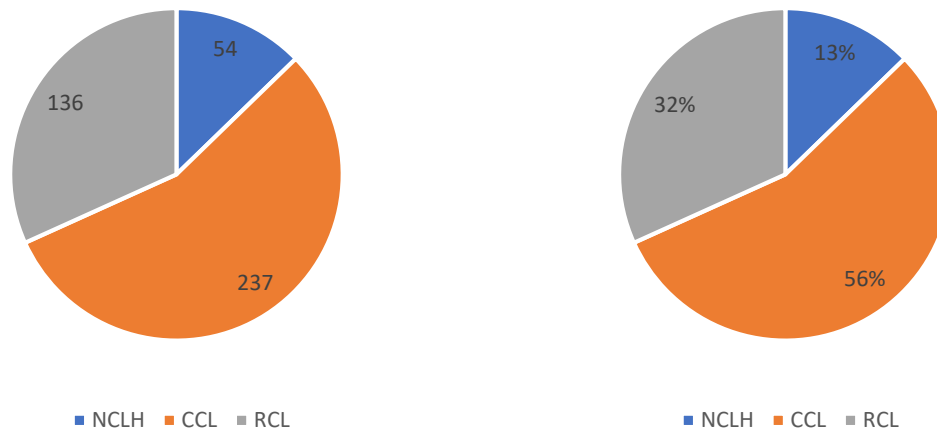
Source: Company 10K

One of the things that each cruise line company presents as a part of their 10Ks in ongoing commitment of new ships that will be added to its overall fleet that will be coming online in the coming few years. CCL provides new ships up until 2025, RCL provides new ships up until 2026, and NCLH provides new ships up until 2027. In addition to the announcement of the new ship, it additionally provides the berth capacity of each ship that is coming online.

This publicly available and company endorsed table provides our team with a solid starting point that we started with to begin looking at how to project revenue forecasts for NCLH.

Figure 3: Industry Metrics for NCLH (2013-2018)

Norwegian Cruise Line Holdings	2013	2014	2015	2016	2017	2018
Fleet Size	12	21	22	24	25	26
Berths ('000s)	31	40	45	47	50	54
Berths growth	31.1%	12.5%	3.3%	8.4%	7.9%	7.4%

Source: Company 10K, FactSet

In addition, while looking through FactSet at industry specific metrics that have consistently been aggregated from cruise line company 10Ks, we found that in addition

to fleet size and berths, number of passengers carried and APCD (available passenger cruise days) are also provided. After conducting some analysis, we have found a reliable method that allows us to use maximum berths per given year as a proxy to total revenue, allowing us to base our revenue forecast on substantiated investments made by the company.

Figure 4: Industry Metrics for NCLH w/ analysis (2013-18)

Norwegian Cruise Line Holdings	2013	2014	2015	2016	2017	2018
Fleet Size	12	21	22	24	25	26
Berths ('000s)	31	40	45	47	50	54
Berths growth	31.1%	12.5%	3.3%	8.4%	7.9%	7.4%
# Passengers Carried/Berths (Annual Turnover)	*53.37*	*53.35*	*48.10*	*50.26*	*49.99*	*51.38*
# Passengers Carried ('000s)	1,628	2,134	2,164	2,337	2,519	2,795
Avg. nights per passenger cruise	*6.415*	*5.863*	*6.792*	*7.006*	*6.892*	*6.741*
APCD ('000s)	**10,446**	**12,512**	**14,701**	**16,376**	**17,363**	**18,842**

Source: Company 10K, FactSet, Yale SOM Team analysis

As noted in the figure above, while looking for the relationship between Berths and APCDs, we used the number of passengers carried as a go-between to understand the relationship. Number of passengers carried shows the annual volume of cruise passengers onboard NCLH's full fleet and by finding the quotient between the two, we obtained a stable multiple between the two. This multiple we have understood to be a measure of annual turnover, showing on average if accounted for maximum berth capacity, how many times the company would have to "turnover" its fleet to cater to its annual passenger carried amount.

After looking at this number, we moved onto establishing a relationship between number of passengers carried with APCD. As APCD is defined as the "measurement of capacity and represents double occupancy per cabin multiplied by the number of cruise days for the period", within NCLH's 10K, the resulting quotient from these two figures provides us with the average number of cruise days. Looking across the historical period at this figure, we also see that this number remains fairly steady across the past years.

To make the leap between APCD and Revenues, we took another cruise line industry metric, Net Yield and Gross Yield, and looked at its relationship with these figures. "Gross Yields represent total revenues per APCD" as stated in NCLH's 10K and when we completed a calculation ourselves to validate this as well as to look at the relationship to understand net yield, we found the following:

Figure 5: Industry Metrics for NCLH w/ analysis (2013-2018)

Norwegian Cruise Line Holdings	2013	2014	2015	2016	2017	2018
Total Revenue/APCD	**246.1**	**249.8**	**295.6**	**297.7**	**310.8**	**321.4**
Passenger ticket revenues/APCD	174	177	213	207	216	226
Net Yield Growth		1.72%	20.37%	-2.77%	4.36%	4.68%
Onboard and other revenues/APCD	72	73	83	91	95	95
Net Yield (Actual)	184	192	225	230	241	250
Net Yield Growth (Actual)		4.33%	17.37%	2.12%	4.86%	3.72%
Gross Yield (Actual)	246	250	296	298	311	321

Source: Company 10K, FactSet, Yale SOM Team analysis

Our calculation for Total Revenue/APCD matches the reported Gross Yield. Our calculation for Passenger ticket revenues/APCD compared to reported Net Yield varied but this is most likely due to other items within Net Yield that is not accounted for as stated by the 10K. Within the APCD vs. Yield analysis, what we found to be most promising from this set of data was the passenger ticket revenues/APCD. This was most stable across historical periods, as passenger ticket revenues is a direct result of an increase of capacity.

The last relationship we wanted to explore was the revenue breakdown in the industry as it was standard that total revenues was comprised of passenger ticket revenues and onboard and other revenues.

Figure 6: Revenue Segment Breakdown (2013-2018)

Norwegian Cruise Line Holdings	2013	2014	2015	2016	2017	2018
Total revenues (M)	**2,570.3**	**3,125.9**	**4,345.0**	**4,874.3**	**5,396.2**	**6,055.1**
Passenger ticket revenues	1,815.9	2,212.5	3,129.1	3,389.0	3,750.0	4,259.8
Onboard and other revenues	754.4	913.3	1,216.0	1,485.4	1,646.1	1,795.3
Passenger ticket revenues margin	70.6%	70.8%	72.0%	69.5%	69.5%	70.4%
Onboard and other revenues margin	29.4%	29.2%	28.0%	30.5%	30.5%	29.6%

Source: Company 10K, FactSet

What we found is that the % of total revenues that was attributed to passenger ticket revenues was fairly stable across historical years. As a result, based on our analysis, we have found that we had a decent way of getting to total revenues from forecasted berth up to 2027.

Forecasts
Based on the analysis conducted, we looked to building our total revenues forecast for our projected cash flows.

Figure 7: Industry Metrics Forecast (2019-28)

Norwegian Cruise Line Holdings	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Fleet Size	27	28	28	30	32	33	35	35.875	36.875	38.2047
Berths ('000s)	58	59	59	64	68	71	76	78.8	82.1	85.5495
Berths growth	1.3%	0.0%	7.6%	6.4%	4.9%	6.3%	4.4%	4.2%	4.2%	
# Passengers Carried/Berths (Annual Turnover)	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00
# Passengers Carried ('000s)	2,920	2,958	2,958	3,183	3,385	3,550	3,775	3,940	4,105	4,277
Avg. nights per passenger cruise	6.75	6.75	6.75	6.75	6.75	6.75	6.75	6.75	6.75	6.75
APCD ('000s)	19,710	19,963	19,963	21,482	22,849	23,963	25,481	26,595	27,709	28,873

Source: Company 10K, FactSet, Yale SOM Team Estimates

As seen in the figure above, all cells that are denoted in yellow are forecasted cells and all cells that are denoted in white are provided from management. This is how our team started from fleet size to get to APCD:

1. For the fleet size and berths rows, the 2028 forecast that can be seen in yellow are calculated upon a CAGR increase from 2019 to 2027 of the existing data populated by the row.
2. For number of passengers carried/berths, a term we have denoted as "annual turnover", we used the average annual turnover ratio from the past 4 years.
3. Number of passengers carried is the direct product between berths and the annual turnover.
4. For Average nights per passenger cruise, we used the average from the past 4 years.
5. APCD is the direct product from number of passengers carried and the average nights per passenger cruise.
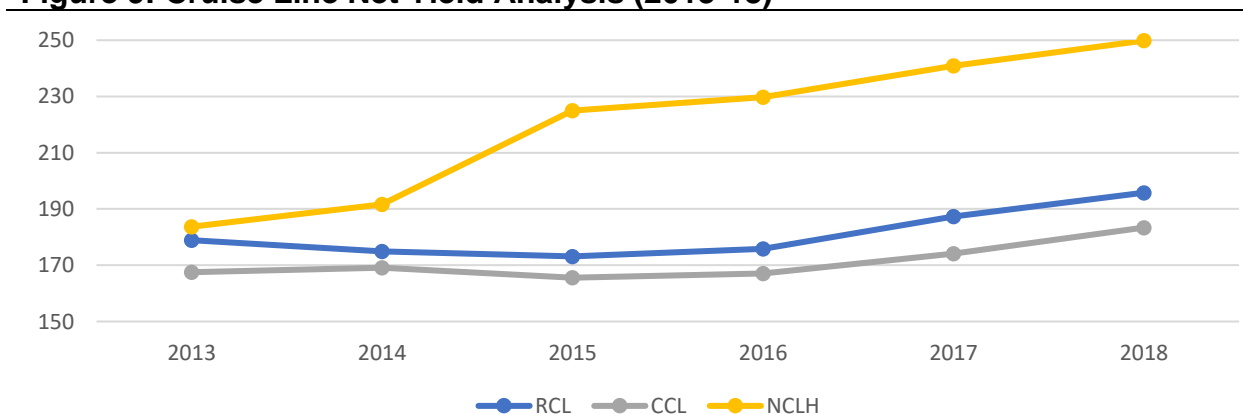
Figure 8: Industry Metrics Forecast (2019-28)

Norwegian Cruise Line Holdings	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Fleet Size	27	28	28	30	32	33	35	35.875	36.875	38.2047
Berths ('000s)	58	59	59	64	68	71	76	78.8	82.1	85.5495
Berths growth	1.3%	0.0%	7.6%	6.4%	4.9%	6.3%	4.4%	4.2%	4.2%	
# Passengers Carried/Berths (Annual Turnover)	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00
# Passengers Carried ('000s)	2,920	2,958	2,958	3,183	3,385	3,550	3,775	3,940	4,105	4,277
Avg. nights per passenger cruise	6.75	6.75	6.75	6.75	6.75	6.75	6.75	6.75	6.75	6.75
APCD ('000s)	19,710	19,963	19,963	21,482	22,849	23,963	25,481	26,595	27,709	28,873
Passenger ticket revenues/APCD	236.67	248.50	260.93	272.67	284.94	296.34	308.19	318.98	330.14	340.05
Net Yield Growth	5.00%	5.00%	4.50%	4.50%	4.00%	4.00%	3.50%	3.50%	3.00%	3.00%
Passenger ticket revenues (M)	4,665	4,961	5,209	5,857	6,511	7,101	7,853	8,483	9,148	9,818

Source: Company 10K, FactSet, Yale SOM Team Estimates

From APCD to passenger ticket revenues, we used our proxy of net yield, which was passenger ticket revenues/APCD. We have calculated that this figure will rise from 240 to 340 over the next ten years because it has been rising historically and in addition, we have conducted an analysis of net yield across the three cruise line players to understand where net yield can get to.

Figure 9: Cruise Line Net Yield Analysis (2013-18)

Source: Company 10K, FactSet, Yale SOM Team Estimates

From our analysis, we see that NCLH's net yield has been consistently the highest amongst the three players and we see that in the past few years, NCLH has gained a huge lead in net yield. In the most recent earnings call, NCLH management has stated that it expects net yield to continue growing at a rate of 3-5% and we have forecasted net yield growth in a similar fashion.

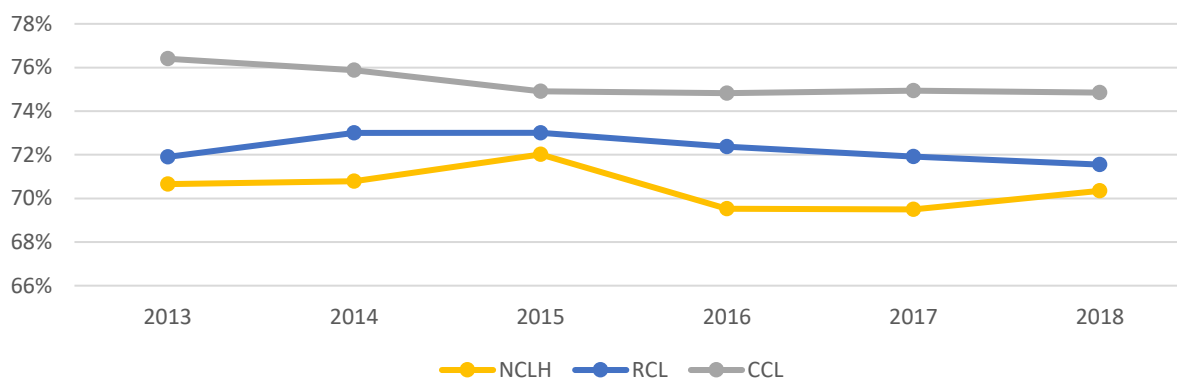**Figure 10: Industry Metrics Forecast (2019-28)**

Norwegian Cruise Line Holdings	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Fleet Size	27	28	28	30	32	33	35	35.875	36.875	38.2047
Berths ('000s)	58	59	59	64	68	71	76	78.8	82.1	85.5495
Berths growth	1.3%	0.0%	7.6%	6.4%	4.9%	6.3%	4.4%	4.2%	4.2%	
# Passengers Carried/Berths (Annual Turnover)	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00
# Passengers Carried ('000s)	2,920	2,958	2,958	3,183	3,385	3,550	3,775	3,940	4,105	4,277
Avg. nights per passenger cruise	6.75	6.75	6.75	6.75	6.75	6.75	6.75	6.75	6.75	6.75
APCD ('000s)	19,710	19,963	19,963	21,482	22,849	23,963	25,481	26,595	27,709	28,873
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Net Yield Growth	5.00%	5.00%	4.50%	4.50%	4.00%	4.00%	3.50%	3.50%	3.00%	3.00%
Passenger ticket revenues (M)	4,665	4,961	5,209	5,857	6,511	7,101	7,853	8,483	9,148	9,818

Source: Company 10K, FactSet, Yale SOM Team Estimates

The last assumption our team had to make in order to arrive at our revenue forecast was to look at the passenger ticket revenues margin we expect NCLH to obtain in the next ten years.

Similar to the analysis done with net yield, our team looked at the three cruise line players to better understand industry trends for passenger ticket revenue margins.

Figure 11: Industry Historical Revenue Analysis (2013-18)

Source: Company 10K, FactSet, Yale SOM Team Estimates

What we found was that NCLH was again, the company with the greatest proportion of its total revenues derived from "onboard and other revenues". We maintained that NCLH will continue to push out the steady 70-30 split between passenger ticket revenue and "onboard and other revenue".

As a result, this is how we obtained our final total revenues forecast.

Figure 12: Industry Metrics Forecast (2019-28)

Norwegian Cruise Line Holdings	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Fleet Size	27	28	28	30	32	33	35	35.875	36.875	38.2047
Berths ('000s)	58	59	59	64	68	71	76	78.8	82.1	85.5495
Berths growth	1.3%	0.0%	7.6%	6.4%	4.9%	6.3%	4.4%	4.2%	4.2%	
# Passengers Carried/Berths (Annual Turnover)	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00
# Passengers Carried ('000s)	2,920	2,958	2,958	3,183	3,385	3,550	3,775	3,940	4,105	4,277
Avg. nights per passenger cruise	6.75	6.75	6.75	6.75	6.75	6.75	6.75	6.75	6.75	6.75
APCD ('000s)	19,710	19,963	19,963	21,482	22,849	23,963	25,481	26,595	27,709	28,873
Passenger ticket revenues/APCD	236.67	248.50	260.93	272.67	284.94	296.34	308.19	318.98	330.14	340.05
Net Yield Growth	5.00%	5.00%	4.50%	4.50%	4.00%	4.00%	3.50%	3.50%	3.00%	3.00%
Passenger ticket revenues (M)	4,665	4,961	5,209	5,857	6,511	7,101	7,853	8,483	9,148	9,818
Total revenues (M)	6,649.6	7,092.0	7,446.6	8,373.7	9,307.3	10,151.5	11,226.7	12,127.5	13,077.6	14,035.9
Passenger ticket revenues	4,664.8	4,960.9	5,208.9	5,857.5	6,510.5	7,101.0	7,853.1	8,483.2	9,147.8	9,818.2
Onboard and other revenues	1984.88	2131.11	2237.67	2516.26	2796.8	3050.46	3373.55	3644.23	3929.74	4217.7
Passenger ticket revenues margin	70.2%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%
Onboard and other revenues margin	29.8%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%

Source: Company 10K, FactSet, Yale SOM Team Estimates

Cost Drivers

We forecasted costs as a percentage of revenues basing our assumptions of future performance on historical data and NCLH's disclosures in the recent earning calls. The figure below summarizes historical trends for COGS, SG&A and D&A.

Figure 13: COGS, SG&A and D&A % of Revenues (2013-18)
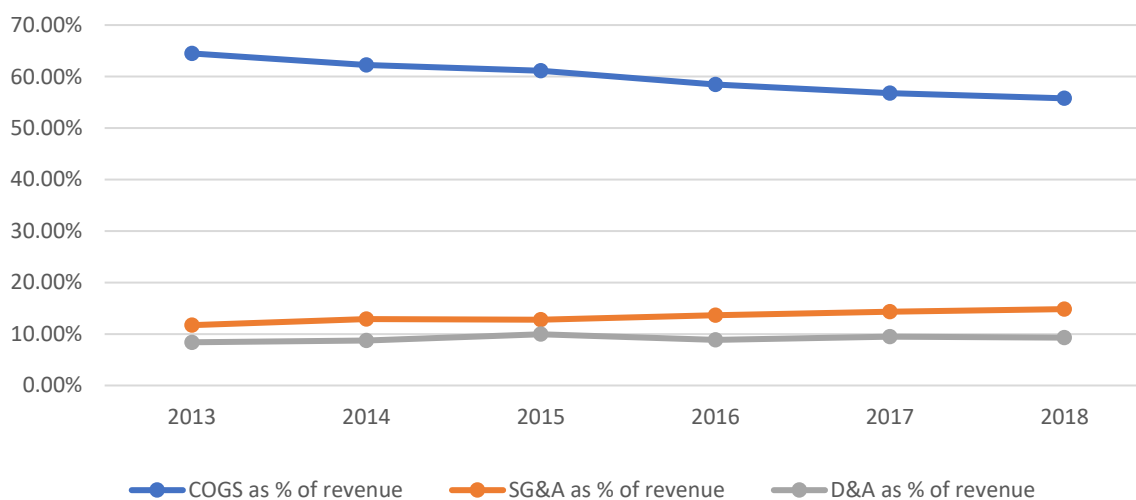
Source: Company 10K, FactSet, Yale SOM Team Estimates

COGS
Operating expenses have historically seen a steady decline with a flattening of the downward trend in the last couple of years. To provide a more informed assumption about future projections the team analyzed the breakdown of operating expenses as reported in NCLH's financial statements.

Figure 14: Breakdown of COGS as % of Revenues (2013-18)
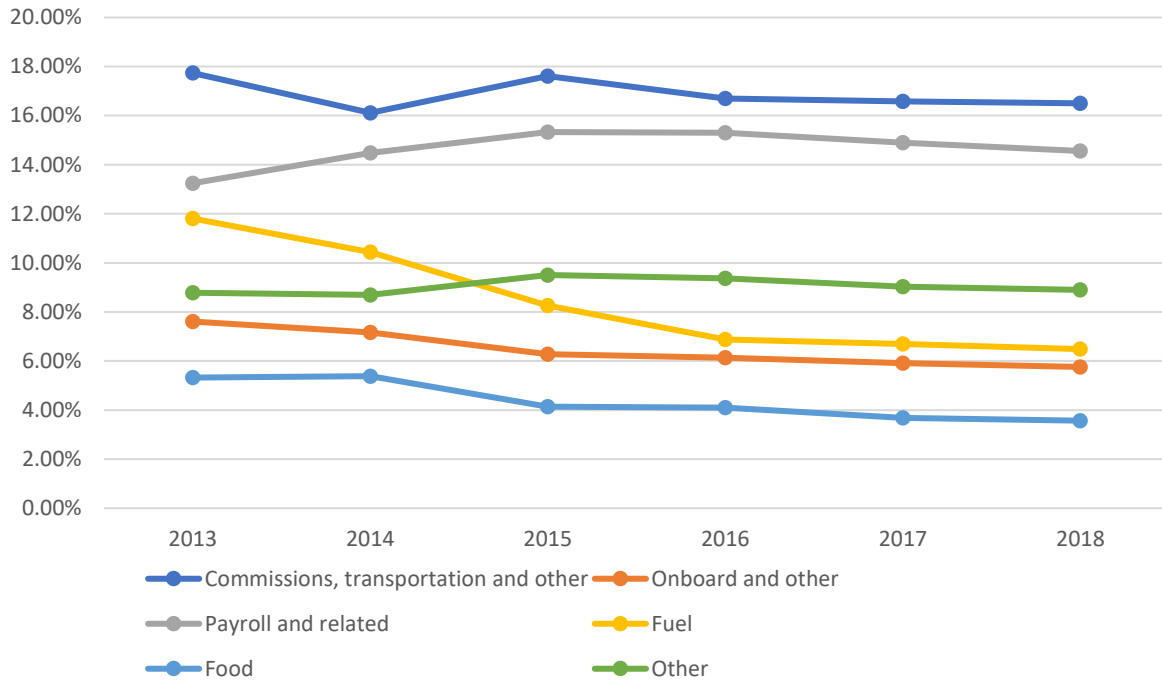
COGS as % of revenue	5 Yr. CAGR
Commissions, transportation and other	0.47%
Onboard and other	-4.28%
Payroll and related	0.11%
Fuel	-9.08%
Food	-7.89%
Other	0.48%

Source: Company 10K, FactSet, Yale SOM Team Estimates

We assumed steady future fuel expenses as ~9% of revenues. Significant cost improvements are otherwise visible in the Onboard and other expenses as well as Food, which consist of the direct costs associated with onboard and other revenues.

A relatively new fleet compared to the competitors seems to be the reason for efficiency gains and for the significant savings in the onboard revenue collections. Smaller and more boutique boats require lower management overhead and cater a public that is prone to a higher on-board spend.

SG&A and D&A

As seen in the historical data, there is little variance in SG&A and D&A as a % of revenues. The team adopted respectively 14% for SG&A and 9.50% for D&A for our forecast.

Capital Expenditures

As a younger company than the other cruise line players, capex spending of NCLH was one of the cost drivers we did a further analysis where we are basing most of the captured growth of the company to be coming from.

As a starting point, we looked at capex as % of revenue for NCLH compared to the largest cruise line player, CCL, and found an interesting difference.

**Figure 15: Historical Capex As a % of Revenue (2013-18)**
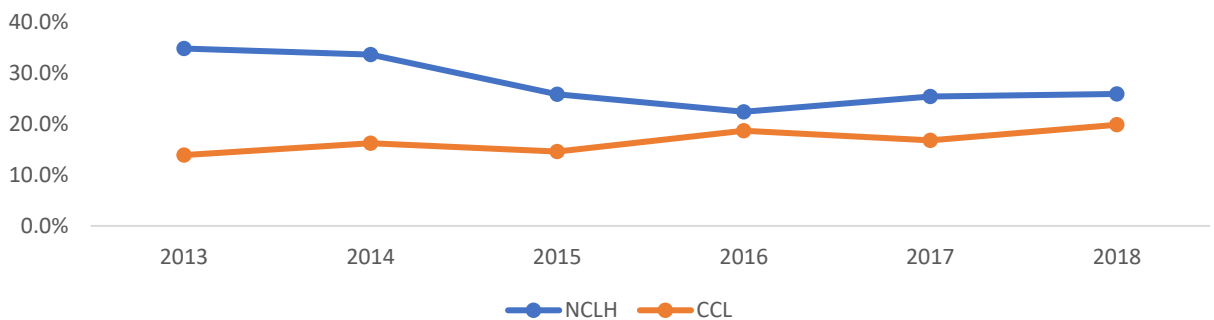
Source: Company 10K, FactSet, Yale SOM Team Estimates

NCLH has had a much higher capex as a % of revenue compared with "industry" (using CCL as a proxy) and in the most recent years, we have seen that capex has continued to fall.

Noting that capex spend is closely tied to purchasing of new ships and knowing that we have the projected investments that NCLH will have in the future, we wanted to see if this trend should continue to fall so that capex will continue to decrease as the company matures to the point where it more closely matches industry spend on capex.

**Figure 16: Historical and Projected Berth Growth (2013-27)**
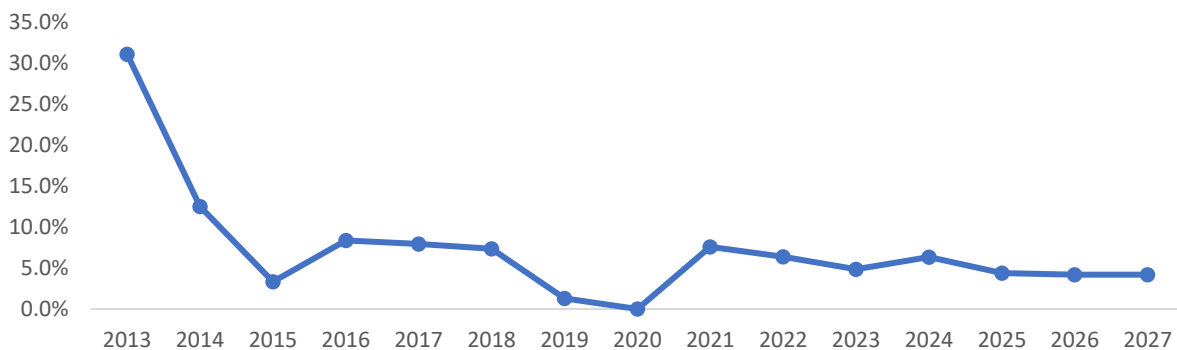
Source: Company 10K, FactSet, Yale SOM Team Estimates

What we see is that since 2013 to 2018, the company has made continued investments in new ships, which corresponds to a higher capex as % of revenue but as we look into the future, we see that the number of new ships that are coming online that have been announced by NCLH has decreased substantially and what we posit is capex as % of revenue will decrease as well.

To forecast capex more robustly, our team examined alternative drivers to drive capex than revenues. Linking capex to capacity forecasts is an obvious choice and allows us to relate more steadily expenditures to investments. The team chose APCD as the underlying driver of capacity since this is also what the industry uses to measure capacity.

Figure 17: Historical Capex As a % of APCD (2013-18)
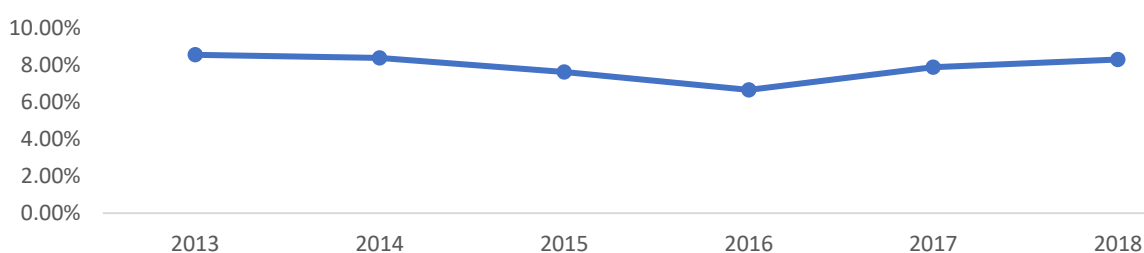
Source: Company 10K, FactSet, Yale SOM Team Estimates

What we found was that quite consistently, historical capex as a % of APCD averaged about 8.3% in the past 5 years. Knowing this, we used APCD going forward in our DCF to forecast capex and found that when then converting back to capex as % of revenues, the most recent year's data, 2019, matches historical very well and when projected going forward, we see that capex as % of revenues spend decreases smoothly.

Figure 18: Historical Capex As a % of APCD (2013-28)

Norwegian Cruise Line Holdings (MM USD) Free Cash Flow Calculation	2019E 1Y	2020E 1Y	2021E 1Y	2022E 1Y	2023E 1Y	2024E 1Y	2025E 1Y	2026E 1Y	2027E 1Y	2028E 1Y
Total Revenues	4,665	4,961	5,209	5,857	6,511	7,101	7,853	8,483	9,148	9,818
Capex	1,175	1,187	1,187	1,277	1,359	1,420	1,571	1,697	1,830	1,964
Capex as % of Revenues	*25.19%*	*23.93%*	*22.79%*	*21.81%*	*20.87%*	*20.00%*	*20.00%*	*20.00%*	*20.00%*	*20.00%*

Source: Company 10K, FactSet, Yale SOM Team Estimates

In the figure above, we see capex as % of revenue when capex is forecasted by using a constant 8.30% capex as a % of APCD proportion. You'll notice that by 2024E, the ratio is consistent at 20.00%. While we believe that NCLH will have the ability to decrease capex as % of revenue from its current figure, we do not believe it'll do better than the industry average of 20.00% hence why we have limited the lower bound of this projection fixed to 20%. The long-run conservative approach is due to the team's assumption that NCLH won't be able to outperform CCL in reducing capex further than 20% of revenues.

Note that most of the "value" that we think this company has yet to capture that the market has not priced in already comes from this better management of capex spend. When our team built the DCF model with the historical capex as % of revenue figures, we found that we had come to a stock price that was in line with market's expectations of this company.

Changes in NWC
Changes in NWC have been quite volatile in the past due to changes in the cash holdings of the firm (including advance ticket sales). For our projections we adopted the historical average of 2.5% of Revenues.

Tax Rate

Consistently with the industry standard, NCLH classifies as a ship-operating company and therefore according to section 883 of the Internal Revenue Code it is a "disregarded Entity for U.S. federal income tax purposes that may earn U.S. source income". State taxation applies to the component of revenues generated by subsidiaries in the individual states. The team applied the 1% tax rate as per management's directions.

Valuation and Valuation Methodology

Given the historical relative stability of the debt-to-equity ratio of NCLH, our team utilized the WACC methodology to determine the company's valuation. As shown in the figure below, after the initial increase in leverage needed to establish their fleet and acquire Prestige and Regents Cruise (NCLH's top-tier) in 2014, debt levels have been realigning to a steady~110% D/E ratio.

Figure 19: D/E ratio
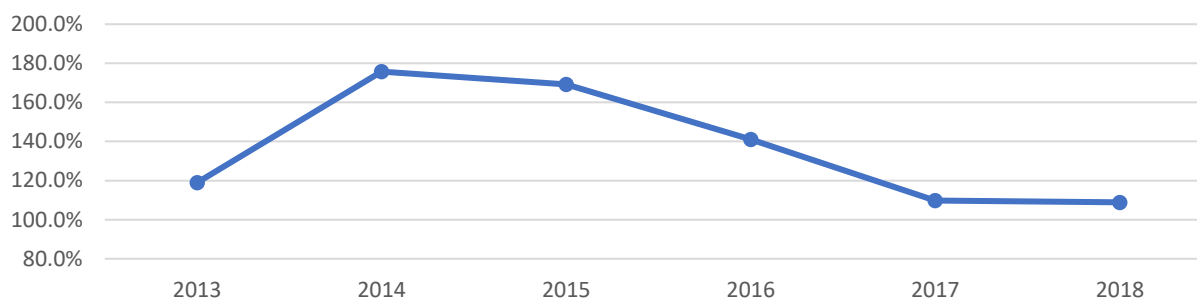
Source: Company 10K, FactSet, Yale SOM Team Estimates

Given the Free Cashflows calculated in in Figure 1 based on the forecast assumptions discussed in the sections above, our team proceeded to calculate the discount rate.

Figure 20: WACC Calculation

Inputs	FactSet	Yale Team
3y Adjusted Beta	1.25	1.2
* Market Risk Premium	12.99%	6.00%
+ 10y Risk Free Rate	2.57%	2.57%
Cost of Equity (Re)	**18.80750%**	**9.77000%**
Fully Diluted Market Cap	12,673.6	12,673.6
/ Total Capitalization	19,608	19,608
Weight of Equity (E/V)	**64.63%**	**64.63%**
Cost of Debt	4.03%	4.03%
* 1 - Effective Tax Rate (3y Avg)	99.%	99.%
After Tax Cost of Debt (Rd)	**3.99%**	**3.99%**
Total Debt net ITM Convertible Debt	6,934.4	6,934.4
/ Total Capitalization	19,608	19,608
Weight of Debt (D/V)	**35.37%**	**35.37%**
Weighted Avg Cost of Capital (WACC)	**13.57%**	**7.73%**

Source: Company 10K, FactSet, Yale SOM Team Estimates

As noted in the figure above, there are two sets of calculations that were done to obtain the final discount rate used by our team, where the first column's data were inputs pulled from FactSet and the second column's data are the Yale SOM's team's adjustments made accordingly. The only significant adjustment our team made to FactSet's dataset was the market risk premium where we used a 6.00% estimate, more aligned with what other analyst reports have used in the valuation of NCLH. NCLH's adjusted beta (see Appendix for Beta comparisons across the industry) is conservatively assumed equal to the average beta of the past three years which matches almost exactly FactSet's choice. The risk-free rate, and cost of debt calculations provided on FactSet were also in line with our calculations.

Figure 21: Share price Calculation

Discount Rate	7.73%
PV of FCF	$5,677.90
Terminal Growth Rate	3.00%
Terminal Value	$34,430.82
PV of Terminal Value	$16,358.77
Enterprise Value	**$22,036.67**
- Total Debt	$6,934.40
+ Cash	$163.90
Equity Value	**$15,266.17**
Shares Outstanding	215.4
Share Price (as of April 15, 2019)	**$70.87**

Source: Company 10K, FactSet, Yale SOM Team Estimates

As of close of business on April 26, 2019 NCLH was trading at $57.27. Our team's valuation of $70.87 shows that our forecasted cashflows exceed the market's expectations of the future value of the company. Therefore, our recommendation currently is a **BUY** rating for Norwegian Cruise Line.

Additionally, our team performed a sensitivity analysis on the share price based on 100bp increments in Capex as % of revenues and 25bp increments of the discount rate. The area shaded in green represents stock prices above the current share price.

Figure 22: Stock Price Sensitivity Analysis

$70.87	7.00%	7.5000%	7.75%	8.00%	8.25%	8.50%	WACC
22.00%	$ 93.03	$ 77.65	$ 71.19	$ 65.39	$ 60.15	$ 55.39	
23.00%	$ 92.74	$ 77.37	$ 70.91	$ 65.11	$ 59.86	$ 55.11	
24.00%	$ 92.45	$ 77.08	$ 70.62	$ 64.82	$ 59.58	$ 54.83	
25.00%	$ 92.17	$ 76.79	$ 70.33	$ 64.53	$ 59.29	$ 54.54	
26.00%	$ 91.88	$ 76.50	$ 70.05	$ 64.25	$ 59.01	$ 54.26	
27.00%	$ 91.59	$ 76.22	$ 69.76	$ 63.96	$ 58.72	$ 53.97	
Capex as % of Rev.							

Source: Company 10K, FactSet, Yale SOM Team Estimates

Appendix

Figure 23: Cruise Line Industry Metrics – Rolling Beta Estimates
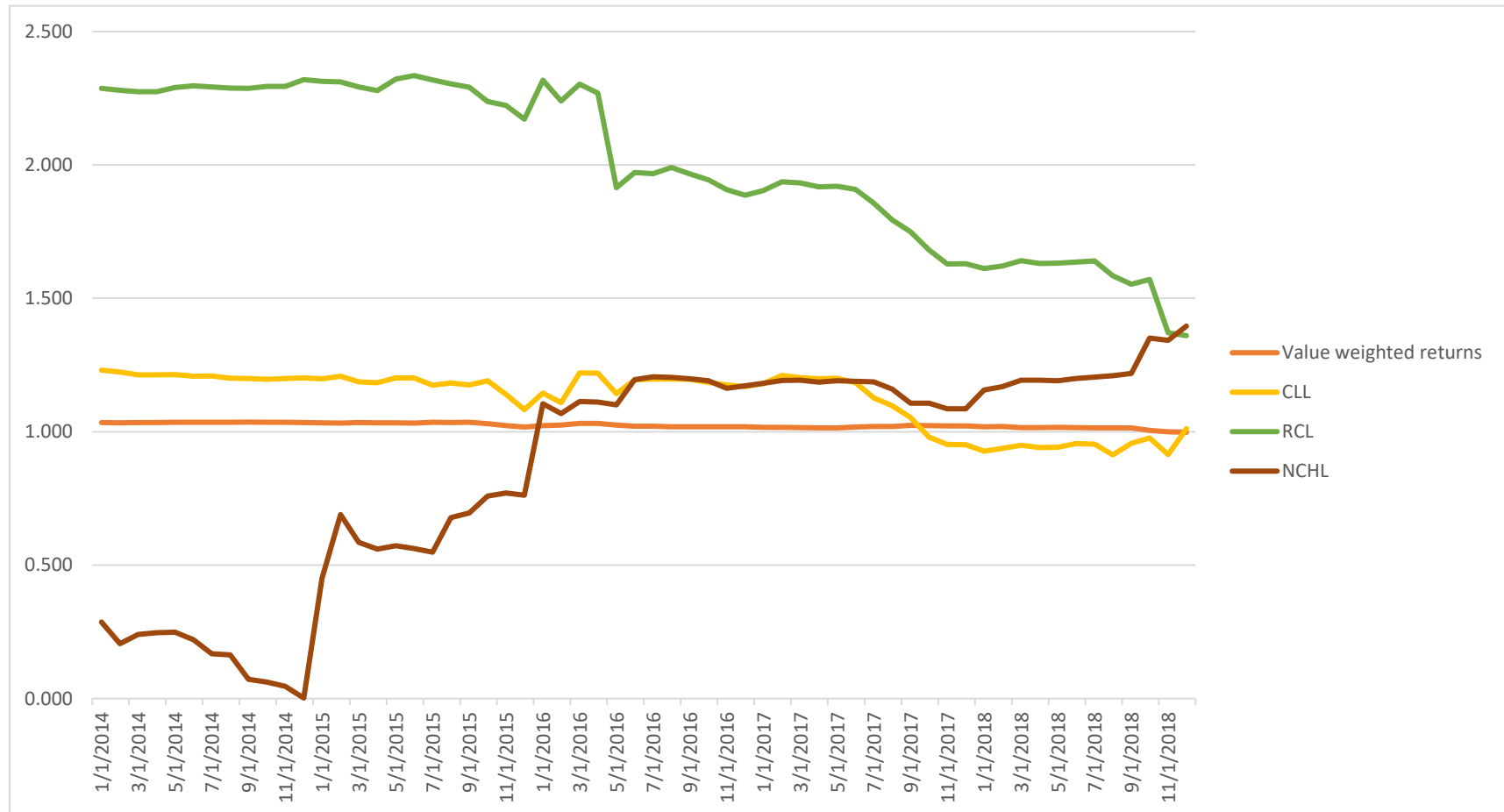
Source: FactSet, Wharton Center for Research in Security Prices (CRSP)