



# Yale SCHOOL OF MANAGEMENT

April 15, 2019  
Americas/NYSE  
Company Report

**Analysts:**  
**Michele Bruno**  
[michele.bruno@yale.edu](mailto:michele.bruno@yale.edu)  
**Jason Liu**  
[jason.js.liu@yale.edu](mailto:jason.js.liu@yale.edu)

## Royal Caribbean Cruises Ltd. (NYSE: RCL)

### COMPANY REPORT

### Solidifying their position in the industry

- **Projected valuation meets market's current expectations.** As of close of business on April 15, 2019 RCL was trading at \$122.46. Our team's valuation of \$114.47 confirms that our forecasted cashflows align with the market's expectations of the future value of the company. Therefore, our recommendation at this time is a **HOLD** rating for Royal Caribbean.
- **RCL is the second most dynamic player in the industry.** Following Norwegian Cruise Line's net yield growth, RCL has shown steady growth increases in the past three years. Based on projected future capacity and historical trends, we assume a peak of 5% in the net yield growth in 2020 progressively tapering down to historical long-term average of 3%.
- **RCL to imitate Norwegian's long-run pricing strategies.** As visible from historical trends, RCL has been progressively adjusting the revenue split between ticket and "onboard and other", gradually increasing the proportion of onboard. In our forecast we assume that RCL will aim at a 70-30 split that has already proven profitable for Norwegian.
- **Technological innovations in the onboard revenue system will improve RCL's cost management.** Recent data confirms that the integration of mobile IT in the booking and customer check-in systems will continue to generate cost reductions for RCL.

### RECOMMENDATION

**HOLD**

### SUMMARY STATS.

#### LAST TRADING PRICE

\$122.46 (04/15/2019)

#### 52 WEEK RANGE

\$89.48 – \$133.60

#### MARKET CAP

\$25,620 (04/15/2019)

#### SHARES OUTSTANDING

209.2M

#### TARGET PRICE

\$114.47 (04/15/2019)

## Free Cash Flow Calculation

Given the nature of the cruise line industry, our team decided to analyze the free cash flows of RCL over a 10-year time horizon for which we estimate to be able to reliably provide forecasts. Figure 1 below summarizes our assumptions for each component of the free cash flow projections. For each line item, the numbers in blue correspond to our line item forecast below based on the specific driver listed in the left column.

**Figure 1: Free Cash Flows Projections**

Carnival Corporation (MM USD)	2019E	2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E
Free Cash Flow Calculation	1Y	1Y	1Y	1Y	1Y	1Y	1Y	1Y	1Y	1Y
Revenue Growth (yoy)	16.18%	11.23%	11.13%	6.57%	10.76%	4.80%	6.66%	7.09%	6.42%	6.42%
<b>Total Revenues</b>	<b>11,030</b>	<b>12,269</b>	<b>13,634</b>	<b>14,530</b>	<b>16,092</b>	<b>16,864</b>	<b>17,987</b>	<b>19,262</b>	<b>20,498</b>	<b>21,814</b>
COGS as % of Revenues	55.15%	54.87%	54.60%	54.33%	54.06%	53.79%	53.52%	53.25%	52.98%	52.72%
<b>COGS</b>	<b>6,083</b>	<b>6,733</b>	<b>7,444</b>	<b>7,894</b>	<b>8,699</b>	<b>9,070</b>	<b>9,626</b>	<b>10,257</b>	<b>10,860</b>	<b>11,500</b>
SG&A as % of Revenues	13.00%	13.00%	13.00%	13.00%	13.00%	13.00%	13.00%	13.00%	13.00%	13.00%
<b>SG&amp;A as % of Revenues</b>	<b>1,434</b>	<b>1,595</b>	<b>1,772</b>	<b>1,889</b>	<b>2,092</b>	<b>2,192</b>	<b>2,338</b>	<b>2,504</b>	<b>2,665</b>	<b>2,836</b>
D&A as % of Revenues	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%
<b>D&amp;A</b>	<b>1,103</b>	<b>1,227</b>	<b>1,363</b>	<b>1,453</b>	<b>1,609</b>	<b>1,686</b>	<b>1,799</b>	<b>1,926</b>	<b>2,050</b>	<b>2,181</b>
<b>Operating Income (EBIT)</b>	<b>2,410</b>	<b>2,715</b>	<b>3,054</b>	<b>3,294</b>	<b>3,692</b>	<b>3,915</b>	<b>4,224</b>	<b>4,575</b>	<b>4,923</b>	<b>5,297</b>
Effective Tax Rate	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%
<b>NOPAT</b>	<b>2,386</b>	<b>2,687</b>	<b>3,023</b>	<b>3,261</b>	<b>3,655</b>	<b>3,876</b>	<b>4,182</b>	<b>4,529</b>	<b>4,874</b>	<b>5,244</b>
D&A as % of Revenues	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%
<b>+ D&amp;A</b>	<b>1,103</b>	<b>1,227</b>	<b>1,363</b>	<b>1,453</b>	<b>1,609</b>	<b>1,686</b>	<b>1,799</b>	<b>1,926</b>	<b>2,050</b>	<b>2,181</b>
Capex as % of Revenues	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%
<b>- Capex</b>	<b>2,206</b>	<b>2,454</b>	<b>2,727</b>	<b>2,906</b>	<b>3,218</b>	<b>3,373</b>	<b>3,597</b>	<b>3,852</b>	<b>4,100</b>	<b>4,363</b>
Change in NWC as % of Revenues	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
<b>- Change in NWC</b>	<b>331</b>	<b>368</b>	<b>409</b>	<b>436</b>	<b>483</b>	<b>506</b>	<b>540</b>	<b>578</b>	<b>615</b>	<b>654</b>
<b>Free Cash Flow</b>	<b>952</b>	<b>1,092</b>	<b>1,251</b>	<b>1,372</b>	<b>1,563</b>	<b>1,683</b>	<b>1,843</b>	<b>2,025</b>	<b>2,209</b>	<b>2,408</b>

Source: Company 10K, Yale SOM Team Estimates

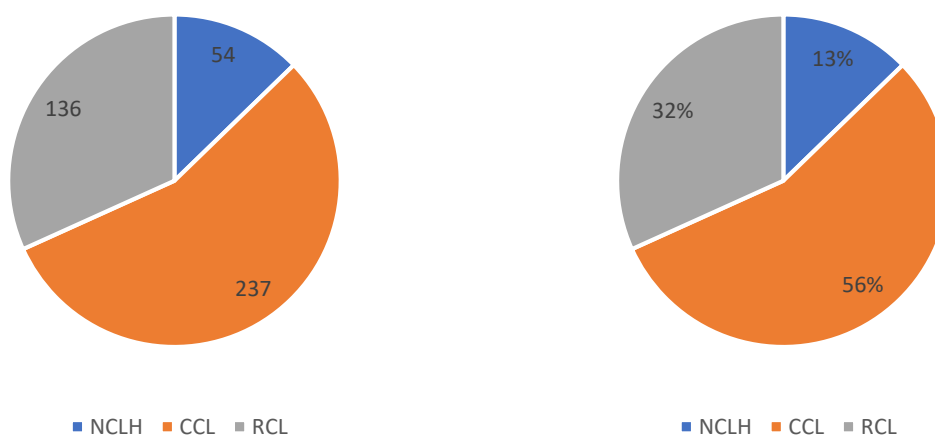
The following sections explain in detail each of the forecasts in the figure above. Our team heavily relied on RCL's financial statements and earnings call. The team's hypothesis on future projections are benchmarked to trends in the cruise line industry as a whole.

## Revenue Forecast

### Historical Analysis

While looking at forecasting revenue for RCL, our team took a different approach than what we had done previously for CCL. As noted in Figure 2, CCL represented over 56% of maximum berth capacity out of the three players, and therefore made sense that the industry forecasts be more applicable to CCL. When looking at smaller players in the market, specifically RCL with 32% of maximum berth capacity, we had to look at other metrics for our team to forecast future growth.

**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 is their 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.

**Figure 3: Expected Dates for new ships (2019-2026)**

Ship	Expected to Enter Service	Approximate Berths
Royal Caribbean International —		
Oasis-class:		
<i>Unnamed</i>	2nd Quarter 2021	5,500
Quantum-class:		
<i>Spectrum of the Seas</i>	2nd Quarter 2019	4,250
<i>Odyssey of the Seas</i>	4th Quarter 2020	4,250
Icon-class:		
<i>Unnamed</i>	2nd Quarter 2022	5,650
<i>Unnamed</i>	2nd Quarter 2024	5,650
Celebrity Cruises —		
Edge-class:		
<i>Celebrity Apex</i>	2nd Quarter 2020	2,900
<i>Unnamed</i>	4th Quarter 2021	3,200
<i>Unnamed</i>	4th Quarter 2022	3,200
<i>Celebrity Flora</i>	2nd Quarter 2019	100
Silversea Cruises —		
<i>Silver Origin</i>	1st Quarter 2020	100
<i>Silver Moon</i>	3rd Quarter 2020	550
<i>Silver Dawn</i>	3rd Quarter 2021	550
TUI Cruises (50% joint venture)—		
<i>Mein Schiff 2<sup>(1)</sup></i>	1st Quarter 2019	2,850
<i>Mein Schiff 7</i>	2nd Quarter 2023	2,850
<i>Unnamed</i>	3rd Quarter 2024	4,100
<i>Unnamed</i>	1st Quarter 2026	4,100
Total Berths		49,800

Source: Company 10K

As shown above in Figure 3, 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 RCL.

**Figure 4: Industry Metrics for RCL (2007-2018)**

Royal Caribbean Cruises Ltd.												
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Fleet Size	38	38	40	39	41	41	43	44	49	49	60	63
Berths ('000s)	79	84	92	93	99	99	106	111	123	124	136	143
# Passengers Carried ('000s)	3,905	4,018	3,970	4,586	4,850	4,852	4,885	5,150	5,402	5,755	5,768	6,084
APCD ('000s)	25,156	26,464	27,821	30,911	33,236	33,706	33,975	34,774	36,647	37,845	36,931	38,425

Source: Company 10K, FactSet

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 5: Industry Metrics for RCL w/ analysis (2007-18)**

Royal Caribbean Cruises Ltd.												
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Fleet Size	38	38	40	39	41	41	43	44	49	49	60	63
Berths ('000s)	79	84	92	93	99	99	106	111	123	124	136	143
# Passengers Carried/Berths (Annual Turnover)	49.66	47.80	43.01	49.50	49.16	49.13	46.19	46.44	43.82	46.38	42.57	42.63
# Passengers Carried ('000s)	3,905	4,018	3,970	4,586	4,850	4,852	4,885	5,150	5,402	5,755	5,768	6,084
Avg. nights per passenger cruise	6.441	6.587	7.007	6.740	6.853	6.947	6.955	6.752	6.784	6.576	6.402	6.316
APCD ('000s)	25,156	26,464	27,821	30,911	33,236	33,706	33,975	34,774	36,647	37,845	36,931	38,425

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

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. Number of passengers carried shows the annual volume of cruise passengers onboard RCL'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 RCL'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 RCL'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 6: Industry Metrics for RCL w/ analysis (2007-2018)**

Royal Caribbean Cruises Ltd.												
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
<b>Total Revenue/APCD</b>	<b>244.4</b>	<b>246.8</b>	<b>211.7</b>	<b>218.4</b>	<b>226.8</b>	<b>228.1</b>	<b>234.3</b>	<b>232.2</b>	<b>226.5</b>	<b>224.5</b>	<b>237.7</b>	<b>247.1</b>
Passenger ticket revenues/APCD	176	179	151	159	166	166	168	169	165	162	171	177
Onboard and other revenues/APCD	68	68	61	60	61	62	66	63	61	62	67	70
Net Yield (Actual)	184	184	158	165	172	174	179	175	173	176	187	196
Gross Yield (Actual)	244	247	212	218	227	228	234	232	226	225	238	247

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

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, "For the periods presented, Net Yields excludes initiative costs related to the sale of the Pullmantur and CDF brands." 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, which makes sense 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 7: Revenue Segment Breakdown (2009-2018)**

RCL-US	DEC '09	DEC '10	DEC '11	DEC '12	DEC '13	DEC '14	DEC '15	DEC '16	DEC '17	DEC '18
Total	5,890	6,753	7,537	7,688	7,960	8,074	8,299	8,496	8,778	9,494
Passenger Ticket	N/A	N/A	N/A	5,595	5,723	5,894	6,059	6,149	6,313	6,793
Onboard & Other Revenues	N/A	N/A	N/A	2,093	2,237	2,180	2,240	2,347	2,465	2,701
Passenger Ticket as % of Total	N/A	N/A	N/A	73%	72%	73%	73%	72%	72%	72%
Onboard & Other as % of Total	N/A	N/A	N/A	27%	28%	27%	27%	28%	28%	28%

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 8: Industry Metrics Forecast (2019-28)**

Royal Caribbean Cruises Ltd.										
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Fleet Size	67	70	72	73	75	75	76	77.8032	79.6493	81.5391
Berths ('000s)	151	160	169	171	181	181	185	191.471	197.825	204.391
# Passengers Carried/Berths (Annual Turnover)	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00
# Passengers Carried ('000s)	6,623	7,030	7,419	7,545	7,974	7,974	8,154	8,425	8,704	8,993
Avg. nights per passenger cruise	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50
APCD ('000s)	43,049	45,694	48,225	49,040	51,829	51,829	53,002	54,761	56,578	58,456

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 last three year forecasts that can be seen in yellow are calculated upon a CAGR increase from 2019 to 2025 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.

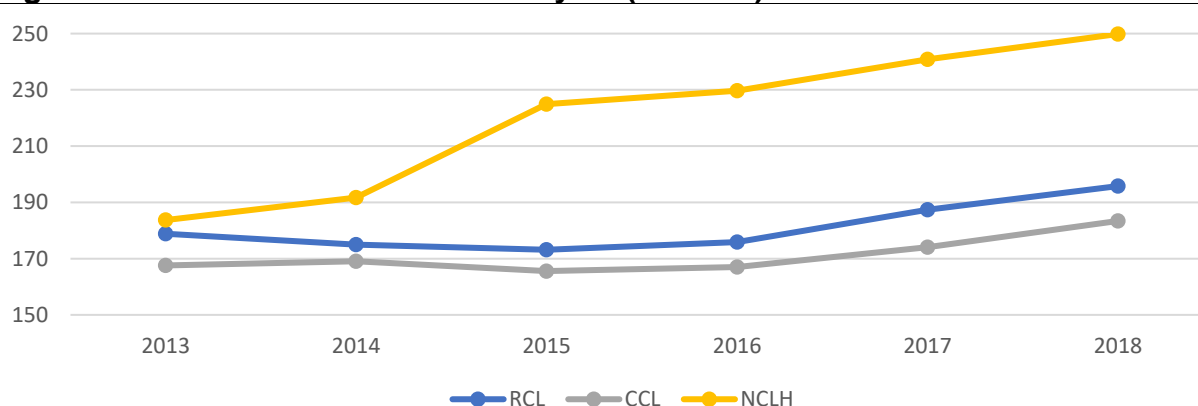
**Figure 9: Industry Metrics Forecast (2019-28)**

Royal Caribbean Cruises Ltd.	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Fleet Size	67	70	72	73	75	75	76	77.8032	79.6493	81.5391
Berths ('000s)	151	160	169	171	181	181	185	191.471	197.825	204.391
# Passengers Carried/Berths (Annual Turnover)	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00
# Passengers Carried ('000s)	6,623	7,030	7,419	7,545	7,974	7,974	8,154	8,425	8,704	8,993
Avg. nights per passenger cruise	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50
APCD ('000s)	43,049	45,694	48,225	49,040	51,829	51,829	53,002	54,761	56,578	58,456
Passenger ticket revenues/APCD	180	182	184	186	188	190	192	194	196	198
Passenger ticket revenues (M)	7,748.8	8,316.3	8,873.5	9,121.5	9,743.8	9,847.5	10,176.3	10,623.6	11,089.3	11,574.2

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 180 to 198 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 10: Cruise Line Net Yield Analysis (2013-18)**

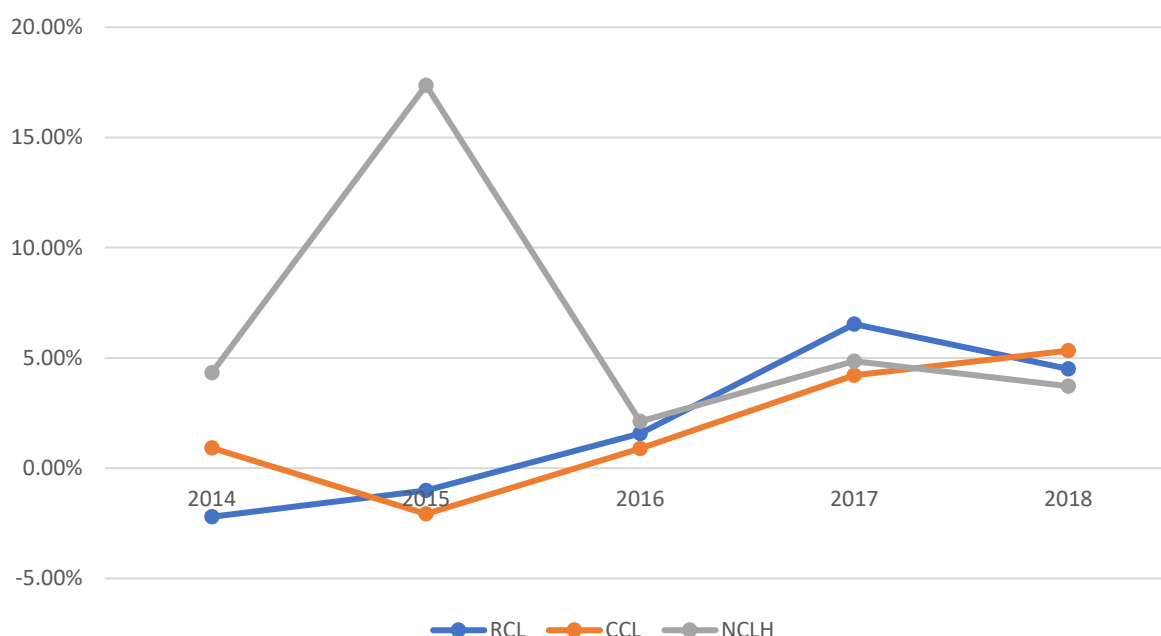


Source: Company 10K, FactSet, Yale SOM Team Estimates

From our analysis, we see that RCL's net yield has been consistently ranked second amongst the three players but the fact that NCLH has gained so much in net yield in the past few years indicates to us that there is a lot of room to grow for RCL. While it may not increase at the rate in which it will overtake NCLH, from the past few years, we see that all three players have consistently been able to raise net yields.

Moreover, if we consider the net yield growth for the three companies in the past four years, we notice a steady increase and slight convergence (see figure below). As a result, we have forecasted RCL's numbers accordingly, assuming (per the most recent earnings call) a peak of 5% net yield growth in 2020 when the exclusive waterpark "Perfect Day" will be fully operational and the new IT system "Excalibur" will be available on over 50% of the vessels. From 2020 we are conservatively tapering down growth to a long term 3%.

**Figure 11: Cruise Line Net Yield Growth Analysis (2014-18)**



Net Yield Growth	2014	2015	2016	2017	2018
RCL	-2.20%	-1.01%	1.57%	6.53%	4.50%
CCL	0.91%	-2.08%	0.89%	4.21%	5.33%
NCLH	4.33%	17.37%	2.12%	4.86%	3.72%

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 RCL to obtain in the next ten years.



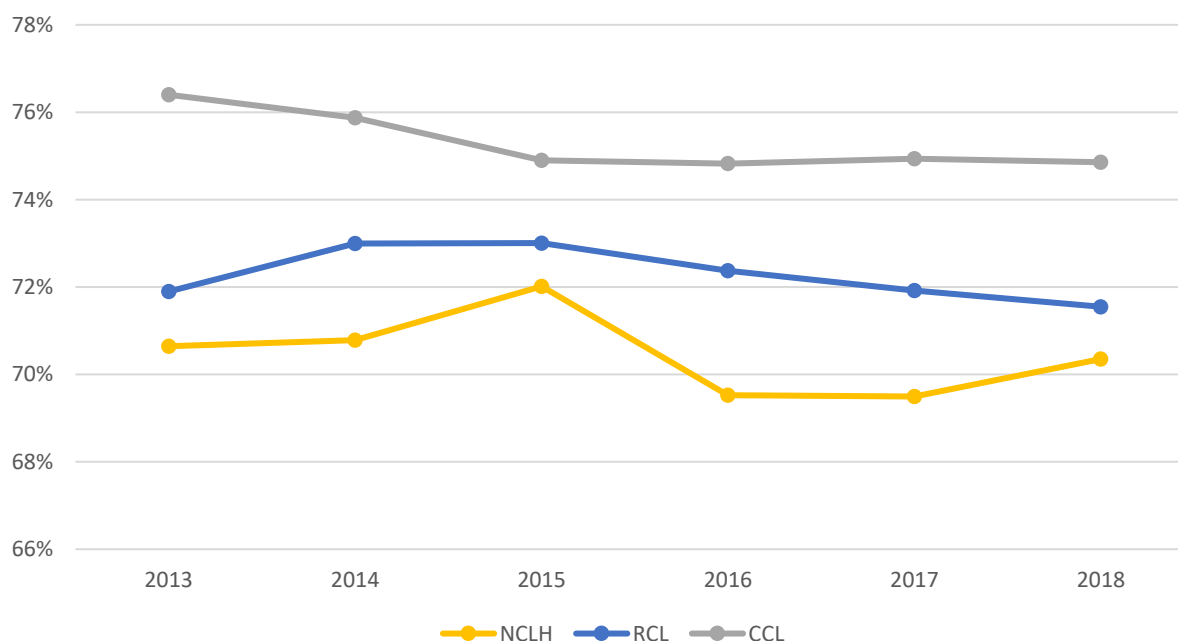
**Figure 12: Industry Metrics Forecast (2019-28)**

Royal Caribbean Cruises Ltd.	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Fleet Size	67	70	72	73	75	75	76	77.8032	79.6493	81.5391
Berths ('000s)	151	160	169	171	181	181	185	191.471	197.825	204.391
# Passengers Carried/Berths (Annual Turnover)	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00
# Passengers Carried ('000s)	6,623	7,030	7,419	7,545	7,974	7,974	8,154	8,425	8,704	8,993
Avg. nights per passenger cruise	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50
APCD ('000s)	43,049	45,694	48,225	49,040	51,829	51,829	53,002	54,761	56,578	58,456
Passenger ticket revenues/APCD	180	182	184	186	188	190	192	194	196	198
Passenger ticket revenues (M)	7,748.8	8,316.3	8,873.5	9,121.5	9,743.8	9,847.5	10,176.3	10,623.6	11,089.3	11,574.2
Passenger ticket revenues margin	71.3%	71.1%	70.9%	70.7%	70.5%	70.3%	70.1%	70.0%	70.0%	70.0%
Total revenues (M)	11,029.9	12,268.9	13,634.3	14,529.6	16,092.3	16,864.2	17,986.7	19,261.6	20,497.9	21,813.5

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

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 13: Industry Metrics Forecast For Ticket Revenues (2019-28)**



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

What we found was that RCL was again, the consistent second player in this area. NCLH derives a greater portion of its total revenues from “onboard and other revenues” but we see a strong push from RCL to also complete the same. As a result, we also forecasted that RCL would steadily push its margin for “onboard and other revenues” up and eventually match the 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 14: Industry Metrics Forecast (2019-28)**

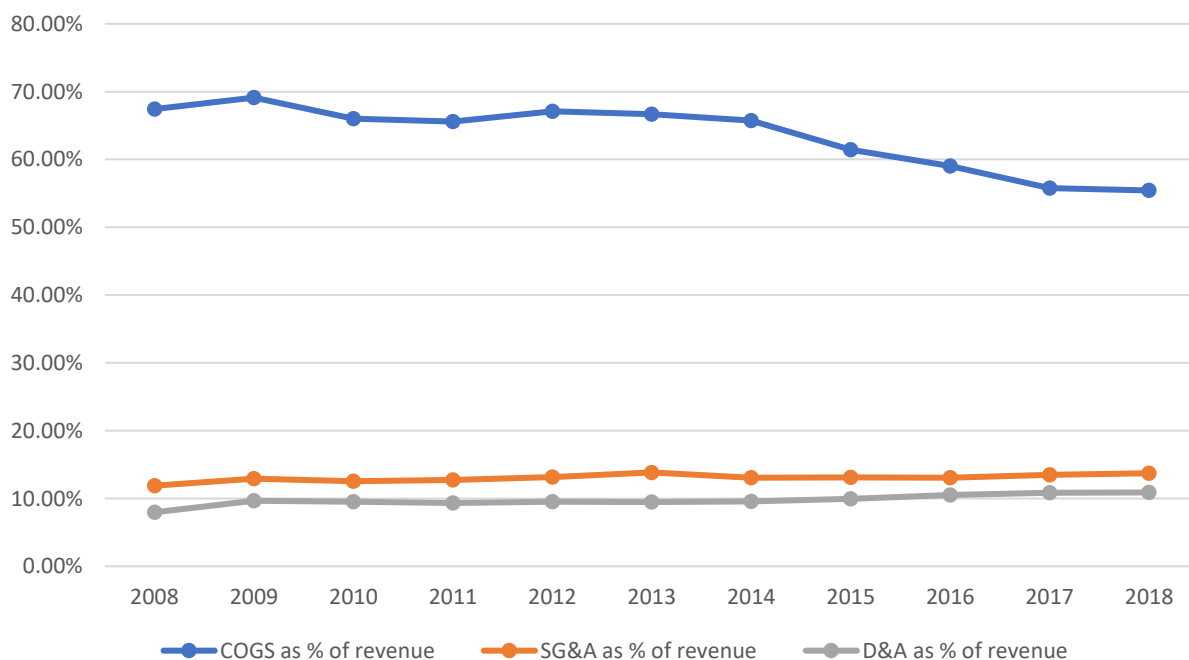
Royal Caribbean Cruises Ltd.	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Fleet Size	67	70	72	73	75	75	76	77.8032	79.6493	81.5391
Berths ('000s)	151	160	169	171	181	181	185	191.471	197.825	204.391
# Passengers Carried/Berths (Annual Turnover)	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00
# Passengers Carried ('000s)	6,623	7,030	7,419	7,545	7,974	7,974	8,154	8,425	8,704	8,993
Avg. nights per passenger cruise	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50
APCD ('000s)	43,049	45,694	48,225	49,040	51,829	51,829	53,002	54,761	56,578	58,456
Passenger ticket revenues/APCD	180	182	184	186	188	190	192	194	196	198
Passenger ticket revenues (M)	7,748.8	8,316.3	8,873.5	9,121.5	9,743.8	9,847.5	10,176.3	10,623.6	11,089.3	11,574.2
Passenger ticket revenues margin	71.3%	71.1%	70.9%	70.7%	70.5%	70.3%	70.1%	70.0%	70.0%	70.0%
Total revenues (M)	11,029.9	12,268.9	13,634.3	14,529.6	16,092.3	16,864.2	17,986.7	19,261.6	20,497.9	21,813.5
Passenger ticket revenues	7,869.6	8,729.2	9,673.3	10,279.5	11,352.9	11,863.7	12,617.4	13,492.5	14,358.5	15,280.1
Onboard and other revenues	3160.21	3539.76	3960.95	4250.11	4739.4	5000.48	5369.29	5769.11	6139.4	6533.45
Passenger ticket revenues margin	71.3%	71.1%	70.9%	70.7%	70.5%	70.3%	70.1%	70.0%	70.0%	70.0%
Onboard and other revenues margin	28.7%	28.9%	29.1%	29.3%	29.5%	29.7%	29.9%	30.0%	30.0%	30.0%
Passenger ticket revenues/APCD	182.81	191.03	200.59	209.61	219.04	228.90	238.06	246.39	253.78	261.40
Net Yield Growth	4.50%	5.00%	4.50%	4.50%	4.50%	4.00%	3.50%	3.00%	3.00%	3.00%

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

## Cost Drivers

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

**Figure 15: COGS, SG&A and D&A as % of Revenues (2007-18)**

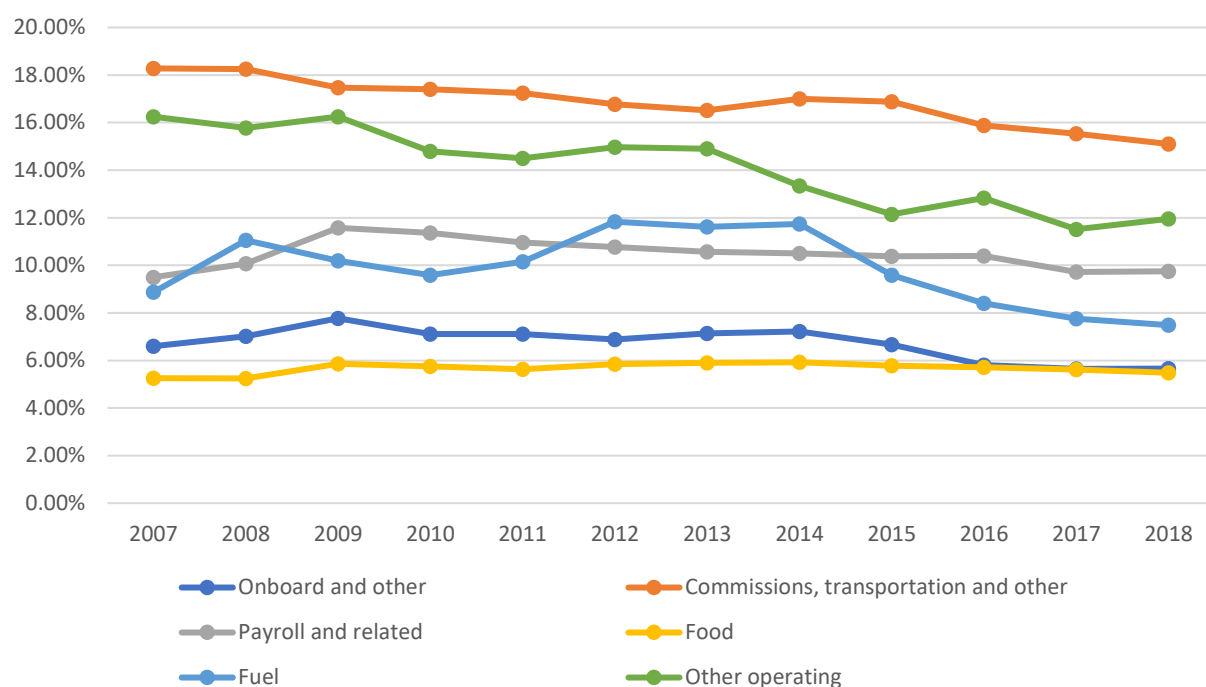


Source: Company 10K, FactSet, Yale SOM Team Estimates

## 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 RCL's financial statements as a percentage of revenues.

**Figure 16: Breakdown of COGS as % of Revenues (2007-18)**



COGS as % of revenue	5 yr CAGR
Onboard and other	-5%
Commissions, transportation and other	-2%
Payroll and related	-1%
Food	-2%
Fuel	-9%
Other Operating	-2%

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

While the greatest decline in the specific breakdown of COGS is within fuel, we maintain a conservative estimate of the effectiveness further decreases in fuel as % of revenues understanding that the greatest declines happened in the past few years, which coincides with oil prices decreasing. Going forward, we assumed steady future fuel expenses as ~10% of revenues.

Another line item that has seen significant cost improvements is Onboard and other expenses, which is consistent with our theme of the direct costs associated with onboard

and other revenues. According to the latest earning calls, the recent introduction of a new IT system named “Excalibur” appears to be the reason for significant savings in the onboard revenue collections. Excalibur is an app that customers download prior to boarding and that allows them to self-check in, pay for onboard purchases, deal with reservations etc. It is estimated that by 2020 the benefits of Excalibur will be available on 50% of the fleet. Given the planned extension of this technological improvements to the resto of the fleet, the team decided to extend the reduction of COGS in our forecast. Based on the latest y-o-y change of -0.64%, we estimated a half percentage point reduction per year for the next ten years.

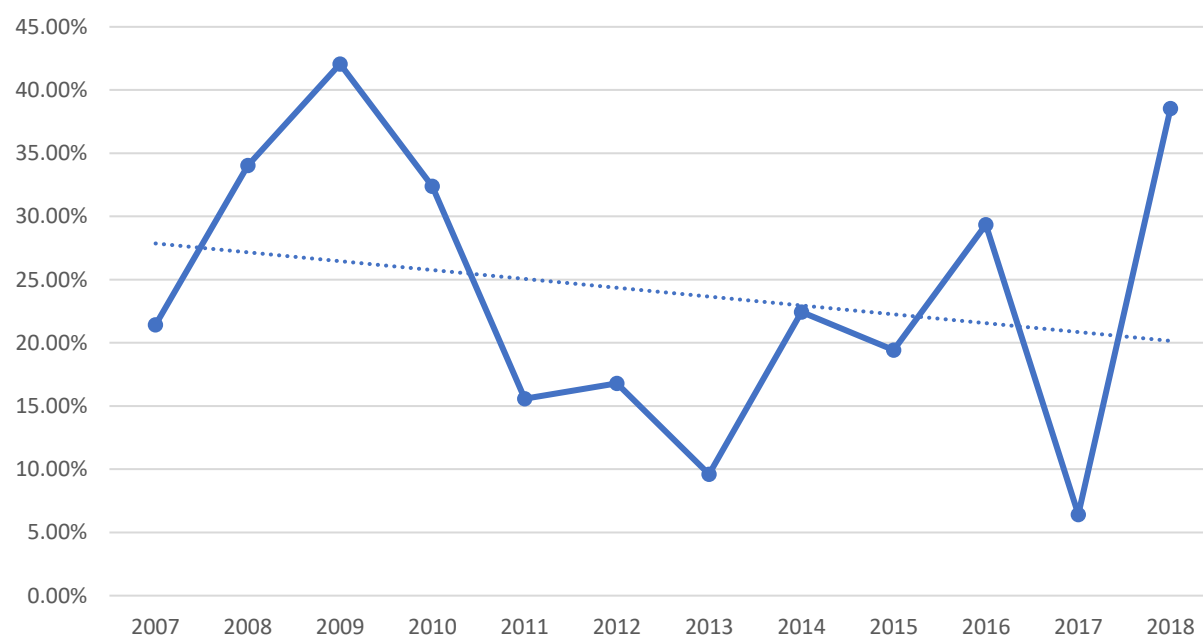
### SG&A and D&A

As seen in the historical data, there is little variance in SG&A and D&A as a % of revenues. The team adopted respectively 13% for SG&A and 10% for D&A for our forecast.

### Capital Expenditures

Despite the inherent volatility of capital expenditures in the cruise line business, historical data shows an average decline of investment in new capacity which aligns to the general increase of net yield across all industry players.

**Figure 17: Historical Capex As a % of Revenues (2007-18 )**



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

The expected increase in the supply of vessels (provided by management through 2025) also seems to point in the direction of a smoothening of the volatility of renewed capacity. Our team decided to adopt 20% as a percentage of CAPEX/Revenues and provided a sensitivity analysis of Capex to stock price.

## Changes in NWC

Changes in NWC have been quite volatile in the past due to changes in the cash holdings of the firm. For our projections we adopted the historical average of 3% of Revenues.

## Tax Rate

Consistently with the industry standard, Royal 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 particular states (Florida and Alaska are the two main ones for RCL). The team applied the 1% tax rate as per management’s directions.

## Valuation and Valuation Methodology

Given the historical stability of the debt-to-equity ratio of RCL, our team utilized the WACC methodology to determine the company’s valuation.

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 18: WACC Calculation**

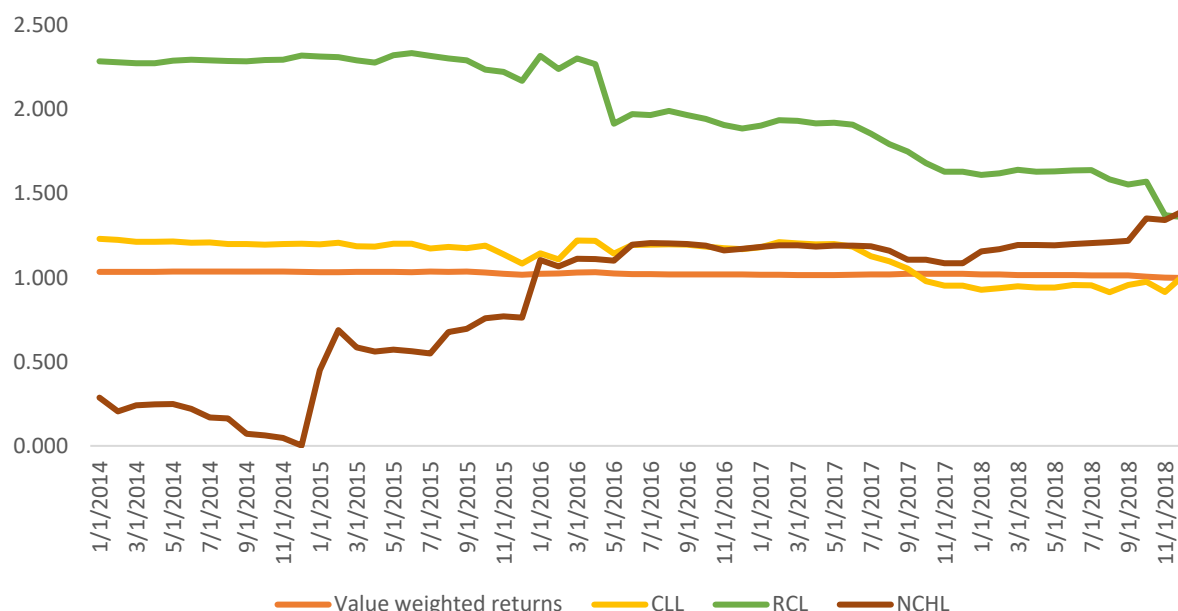
Inputs	FactSet	Yale Team
3y Adjusted Beta	1.18	1.18
* Market Risk Premium	12.76%	6.00%
+ 10y Risk Free Rate	2.51%	2.51%
<b>Cost of Equity (Re)</b>	<b>17.56680%</b>	<b>9.59000%</b>
Fully Diluted Market Cap	24,962.4	24,962.4
/ Total Capitalization	35,003.5	35,003.5
<b>Weight of Equity (E/V)</b>	<b>71.31%</b>	<b>71.31%</b>
Cost of Debt	4.02%	4.02%
* 1 - Effective Tax Rate (3y Avg)	0.99	0.99
<b>After Tax Cost of Debt (Rd)</b>	<b>3.98%</b>	<b>3.98%</b>
Total Debt net ITM Convertible Debt	10,041.1	10,041.1
/ Total Capitalization	35,003.5	35,003.5
<b>Weight of Debt (D/V)</b>	<b>28.69%</b>	<b>28.69%</b>
<b>Weighted Avg Cost of Capital (WACC)</b>	<b>13.67%</b>	<b>7.98%</b>

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 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 RCL.

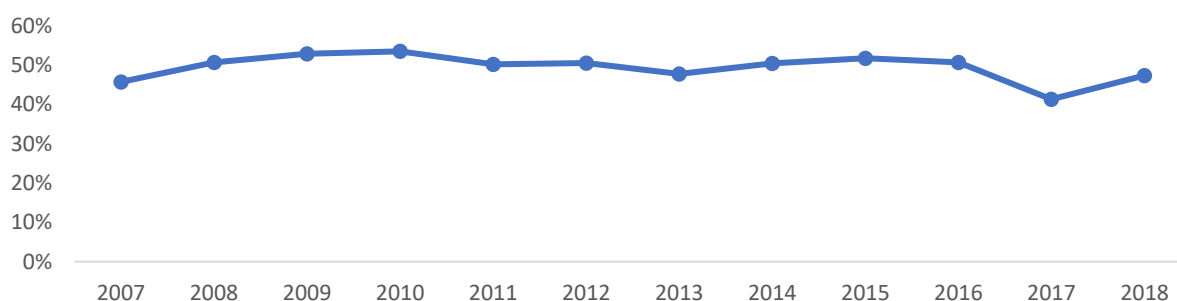
**Figure 19: CCL Industry Metrics – Rolling Beta Estimates**



Source: FactSet, Wharton Center for Research in Security Prices (CRSP)

RCL's adjusted beta (see Appendix for Beta comparisons across the industry) has been on a decline in the past few years. While looking at which beta to base our discount rate on, we conducted an additional analysis on the debt-t-book value ratio to understand if there were changes to the capital structure that would've caused such a consistent decline in its rolling beta.

**Figure 20: Debt-to-Book Value Analysis**



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

What we found was that the capital structure of the firm was stable across the years and that the equity beta should not have changed due to changes in the capital structure. As a result, we found that the FactSet provided equity beta to be appropriate.

The risk-free rate, and cost of debt calculations provided on FactSet were in line with our calculations.

**Figure 21: Share price Calculation**

Discount Rate	7.98%
PV of FCF	\$10,345.61
Terminal Growth Rate	3.00%
Terminal Value	\$49,799.47
PV of Terminal Value	\$23,108.14
<b>Enterprise Value</b>	<b>\$33,453.75</b>
- Total Debt	\$10,041.10
+ Cash	\$307.40
+ Investment in Unconsolidated Subs	\$769.90
- Non-Controlling Interest	\$542.00
<b>Equity Value</b>	<b>\$23,947.95</b>
Shares Outstanding	209.2
<b>Share Price (as of April 15, 2019)</b>	<b>\$114.47</b>

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

As of close of business on April 15, 2019 RCL was trading at \$122.46. Our team's valuation of \$114.47 confirms that our forecasted cashflows align with the market's expectations of the future value of the company. Therefore, our recommendation at this time is a **HOLD** rating for Royal Caribbean.

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**

\$114.47	7.25%	7.50%	7.75%	8.00%	8.25%	8.50%	discount rate	
17.00%	\$ 145.99	\$ 134.60	\$ 124.42	\$ 115.26	\$ 106.99	\$ 99.49		
18.00%	\$ 145.50	\$ 134.11	\$ 123.93	\$ 114.78	\$ 106.51	\$ 99.00		
19.00%	\$ 145.01	\$ 133.62	\$ 123.44	\$ 114.29	\$ 106.02	\$ 98.52		
20.00%	\$ 144.52	\$ 133.13	\$ 122.95	\$ 113.80	\$ 105.53	\$ 98.03		
21.00%	\$ 144.03	\$ 132.64	\$ 122.46	\$ 113.31	\$ 105.05	\$ 97.54		
22.00%	\$ 143.53	\$ 132.15	\$ 121.97	\$ 112.82	\$ 104.56	\$ 97.06		
Capex as % of Rev.								

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

## IMPORTANT DISCLAIMER AND POLICIES

Please read this document before reading or using any of the reports on this site.

The reports posted on this site have been written by MBA students at Yale's School of Management in partial fulfillment of their course requirements. *The reports are **student not professional***, they are intended to serve solely as examples of student work at Yale's School of Management. They are not intended as investment advice. They are based on publicly available information and may not be a complete analyses of all relevant data.

If you use these reports for any purpose, you do so at your own risk. **YALE UNIVERSITY, YALE SCHOOL OF MANAGEMENT, AND YALE UNIVERSITY'S OFFICERS, FELLOWS, FACULTY, STAFF, AND STUDENTS MAKE NO REPRESENTATIONS OR WARRANTIES, EXPRESS OR IMPLIED, ABOUT THE ACCURACY OR SUITABILITY FOR ANY USE OF THESE REPORTS, AND EXPRESSLY DISCLAIM RESPONSIBIITY FOR ANY LOSS OR DAMAGE, DIRECT OR INDIRECT, CAUSED BY USE OF OR RELIANCE ON THESE REPORTS.**

No student has received any direct monetary compensation for the work posted here, nor has any been promised. The student authors and others affiliated with the site may on occasion hold or take a position in the securities described in these reports.

All of the reports posted on this site are copyrighted. You may make fair use of limited portions of these reports so long as proper acknowledgment is given. If you wish to copy and distribute substantial portions of any report, you may do so only with written permission of the authors and the University. Please contact the faculty administering the course to obtain the necessary permissions [matthew.spiegel@yale.edu](mailto:matthew.spiegel@yale.edu).

The forums on this web site are included to stimulate debate and discussion among the financial community regarding the material posted on this site. Yale University reserves the right to remove any posts in its sole discretion. While the site is designed to encourage debate, no person has an intrinsic right to post in these forums. If you do not wish to be bound by these rules you should not post at this site.

Any questions should be addressed to the faculty administering the course.

© 2019 - Yale School of Management



## Appendix

**Figure 23: RCL Industry Metrics – Historical Data 2008-18**

Royal Caribbean Cruises Ltd.	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Fleet Size	38	38	40	39	41	41	43	44	49	49	60	63
Berths ('000s)	79	84	92	93	99	99	106	111	123	124	136	143
# Passengers Carried/Berths (Annual Turnover)	49.66	47.80	43.01	49.50	49.16	49.13	46.19	46.44	43.82	46.38	42.57	42.63
# Passengers Carried ('000s)	3,905	4,018	3,970	4,586	4,850	4,852	4,885	5,150	5,402	5,755	5,768	6,084
Avg. nights per passenger cruise	6.441	6.587	7.007	6.740	6.853	6.947	6.955	6.752	6.784	6.576	6.402	6.316
APCD ('000s)	25,156	26,464	27,821	30,911	33,236	33,706	33,975	34,774	36,647	37,845	36,931	38,425
Passenger ticket revenues/APCD												
Passenger ticket revenues (M)												
Passenger ticket revenues margin												
Total revenues (M)	6,149.1	6,532.5	5,889.8	6,752.5	7,537.3	7,688.0	7,959.9	8,073.9	8,299.1	8,496.4	8,777.8	9,493.8
Passenger ticket revenues	4,427.4	4,730.3	4,205.7	4,908.6	5,525.9	5,594.6	5,722.7	5,893.8	6,058.8	6,149.3	6,313.2	6,792.7
Onboard and other revenues	1,721.8	1,802.2	1,684.1	1,843.9	2,011.4	2,093.4	2,237.2	2,180.0	2,240.3	2,347.1	2,464.7	2,701.1
Passenger ticket revenues margin	72.0%	72.4%	71.4%	72.7%	73.3%	72.8%	71.9%	73.0%	73.0%	72.4%	71.9%	71.5%
Onboard and other revenues margin	28.0%	27.6%	28.6%	27.3%	26.7%	27.2%	28.1%	27.0%	27.0%	27.6%	28.1%	28.5%
Passenger ticket revenues/APCD	176	179	151	159	166	166	168	169	165	162	171	177
Net Yield Growth		2%	-15%	5%	5%	0%	1%	1%	-2%	-2%	5%	3%
Onboard and other revenues/APCD	68	68	61	60	61	62	66	63	61	62	67	70
Net Yield (Actual)	184	184	158	165	172	174	179	175	173	176	187	196
Gross Yield (Actual)	244	247	212	218	227	228	234	232	226	225	238	247

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