



## Forecasting for the Love Boat: Royal Caribbean Cruises in 2010\*

Much like Captain Ahab's tragic pursuit of Moby Dick across the seven seas, the cruise industry risks pursuing passenger growth to the point of financial ruin. The industry's voyage has been smooth sailing so far. The number of cruise passengers from North America has grown from 3,496,000 in 1990 to 10,781,000 in 2010. In the same period, the European cruise market has grown from almost nothing to over 5,000,000 passengers. Combining the two markets, growth has annualized growth is approximately 7.6 percent. But there are bad omens accumulating. Growth in North America has been less than one percent a year for the past five years. And, based on the number of new ships that have already been ordered by major operators, the number of available berths in the North American and European markets is expected to increase more than 10% in the next three years. Will the growing demand for cruise vacations continue at a rate sufficient to fill all the cabins on these new ships? Given the large fixed costs of operating a cruise vessel and the debt necessary to fund this capacity expansion, could the cruise industry be capsized by a great white whale? Or, in Starbuck's words, "Shall we keep chasing this murderous fish till he swamps the last man?"

This case focuses on Royal Caribbean Cruises in 2010. The first part of the case asks you to conduct a detailed analysis of Royal Caribbean's past financial statements and to compare them with their rival, Carnival Cruises. The second part of the case asks you to forecast the financial performance of Royal Caribbean for the next three years.

The case material that follows will provide you with a comprehensive picture of the North American and European cruise industry as it stood in 2010 along with specific financial and operating details of Royal Caribbean Cruises and Carnival Cruises. There is a wealth of information available and no single correct way to put it all together in your financial analysis and forecasts. Please limit your analysis to the information available in the case. The data supporting the graphs in this case are included with the case's Excel files, along with files containing input data for eVal.

### **The Cruise Industry in 2010**

Cruise ships travel the world. Royal Caribbean Cruises, for instance, offers 420 destinations on all seven continents.

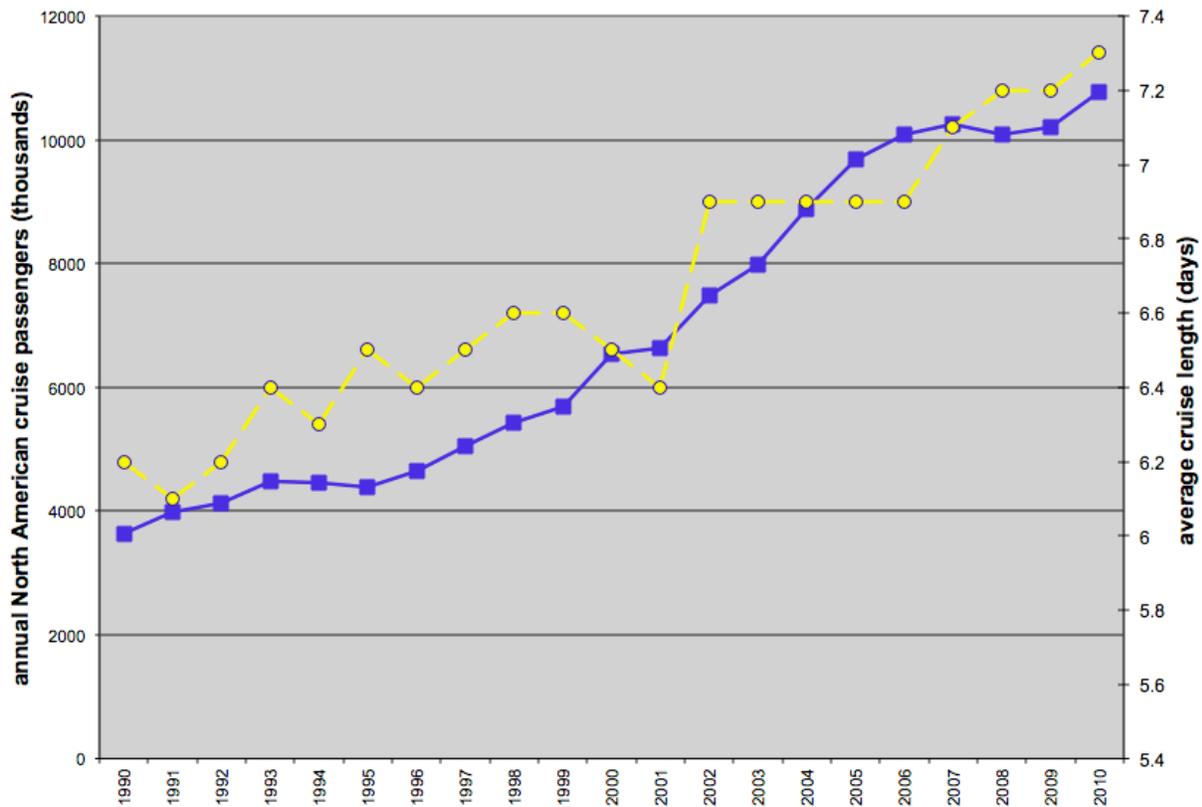
What defines the North American market is not the destination but the point of sale. Hence, North Americans purchase their trips in North America, but may fly to any part of the world to embark on a "North American" cruise. Similarly, the European cruise market is composed of passengers from Europe. While all major cruise lines offer "Air and Sea" options, this is really

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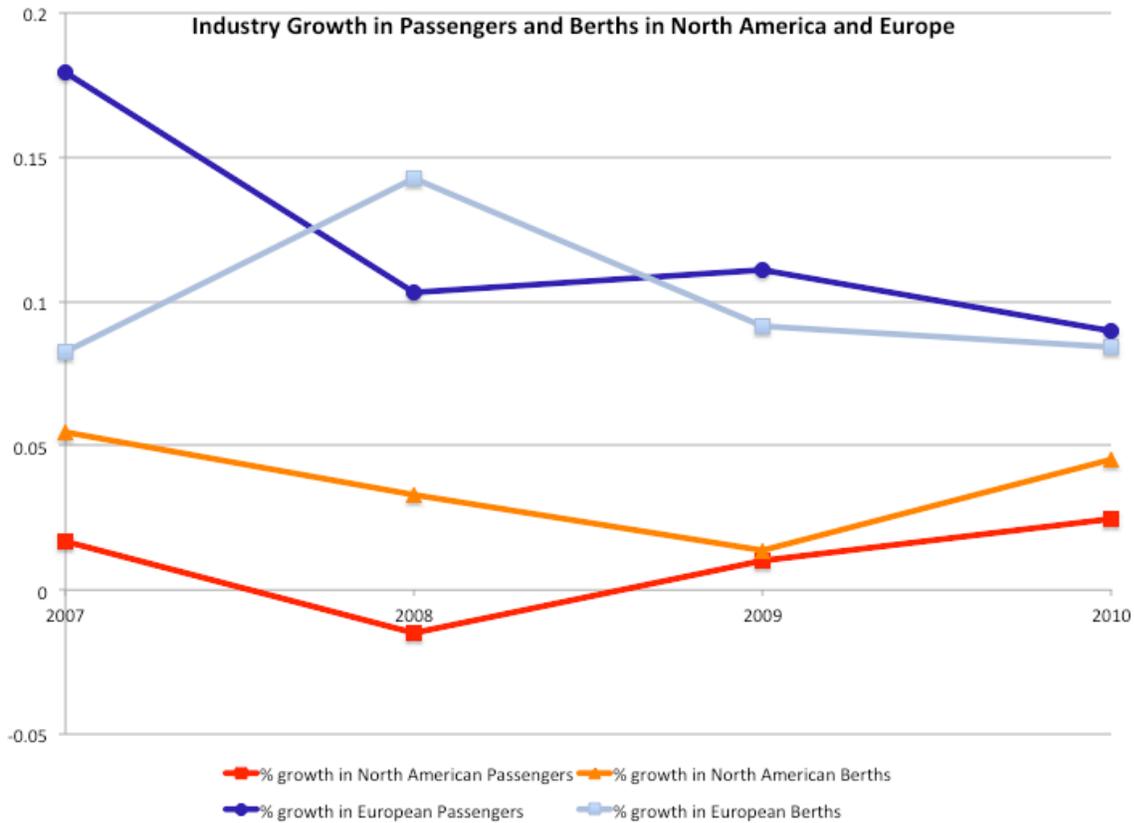
\* This case is an updated version of a case prepared by Professor Russell Lundholm about Royal Caribbean in 1998. Special thanks go to Maddy Thompson for her help in the update. Sources for this case include the Cruise Line International Association Market Overview, Cruise Industry News, the Tourism Industry Association of America, Royal Caribbean Cruises. 2010 10-K filing, Carnival Cruises 2010 10-K filing, and the Bureau of Economic Analysis.

just a convenience for their customers. The air portion is priced at cost, and this portion of the trip is handled completely by the airline. Virtually all cruise purchases take place through a local travel agent.

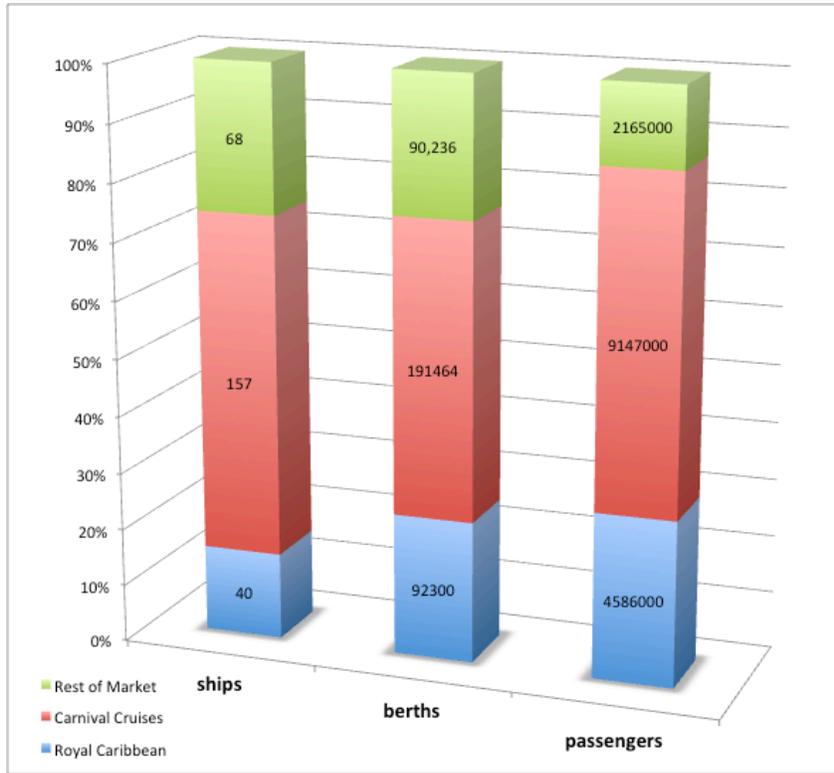
Demand for North American cruise vacations has grown rapidly over the past two decades as the figure below illustrates, with the only decreases in demand occurring in 1994-1995 and again in 2008. Further, the average length of a cruise trip has grown to approximately 7.3 days, reaching levels not experienced before in the industry. Because of the fixed/variable cost structure in the cruise industry, longer trips are typically more profitable than short trips, so the industry has welcomed this trend.



In addition, the market for cruise vacations has grown rapidly in Europe. The figure below compares the North American and European markets. Between 2006 and 2010 the North American market has remained essentially flat, growing the number of passengers by only 3% over the entire period. In contrast, the number of European cruise passengers has grown by 57% over the same period. The growth rates in berths in the two markets are similar to the rates of passenger growth. However, the berths in the North American markets have grown faster than the growth in passengers over the period, while the opposite is true in the European market, where the number of berths has grown somewhat slower than the number of passengers. (Note that the industry standard is to report two berths per cabin, even though some cabins accommodate more than two passengers.)



The cruise industry is composed of two very large companies and many small ones. Carnival Cruise Lines is by far the largest firm with 157 ships carrying 9,147,000 passengers in 2010, or 57% of the combined North American and European cruise markets. Royal Caribbean Cruises is the second largest company with 40 ships carrying 4,586,000 passengers in 2010, a total of 29% of the combined North American and European markets. A host of smaller cruise lines make up the rest of the industry, dividing 2,165,000 passengers between 68 vessels. The relative market shares as of 2010 are illustrated in the figure below.



### Supply of Available Berths

As illustrated in the market share figure above, at the end of 2010 Royal Caribbean has 40 ships holding 92,300 berths and Carnival Cruises has 157 ships holding 191,464 berths. Further, because the lead-time necessary to design and build a cruise ship is approximately three years, a reasonably accurate forecast of future supply is available for the next three years, as seen in the figure below (more detailed information about Royal Caribbean’s new ships is available in their 10-K). It is more difficult to estimate the amount of capacity that will be retired in the future. The majority of ships moved out of the North American market in the last two decades occurred because of a 1997 deadline to meet the heightened safety requirements. From 1994 through 1996, retirements exceeded 7000 berths per year but have slowed considerably since then. The deletions for 2010 were only 990 berths, none from Royal or Carnival. In the next three years, the only significant reduction for the two cruise lines will be for Carnival, who is retiring one ship that holds 1,850 berths.

Existing Fleet	2010 existing	2010 existing
	ships	berths
Carnival Cruises	157	191464
Royal Caribbean Cruises	40	92300
Entire North American Cruise Market	151	241000
Entire European Cruise Market	114	144000

NEW Construction	2011		2012		2013		total new	
	ships	berths	ships	berths	ships	berths	ships	berths
Carnival Cruises	4	11000	2	5500	2	5500	2	22000
Royal Caribbean Cruises	1	2850	1	3000	0	0	2	5850
Entire North American Cruise Market	4	9312	4	9262	2	7600	10	26174
Entire European Cruise Market	2	4400	2	4400	2	4400	6	13200

### The Cruise Experience

The cruise industry offers a wide variety of ship sizes, luxury levels and itineraries. From small, quasi-research vessels that probe Arctic passages to massive “mega-ships” that resemble floating Malls of America, the cruise industry offers something for everyone. The Caribbean is the most common destination for cruises sold in North America, as seen in the table below, with approximately 35% of all passenger-days devoted to this destination. However, the table also shows that there has been a significant increase in demand for trips to locations such as Alaska and the Bahamas. The latest trend is for huge ships that carry more than 3000 guests, and offer a wide variety of entertainment alternatives. Such vessels feature rock-climbing, ice-skating, miniature golf, cinemas, discos, spa facilities, libraries, casinos, extensive live entertainment, and entire shopping malls, all onboard the ship. The focus of these cruise alternatives is on the vessel, rather than the destination. Bob Dickinson, the president of Carnival Cruises, remarked “Now, the cruise itself is the destination – magnificent floating resorts. To me, the itinerary is a little Green Stamp, a little extra thing.”

DESTINATION (total bed-days)	2009	2009	2010	2010
CARIBBEAN	30,940,000	32.1%	36,272,000	34.8%
MEDITERRANEAN	17,536,000	18.2%	18,538,000	17.8%
ALASKA	6,864,000	7.1%	5,959,000	5.7%
BAHAMAS	4,699,000	4.9%	6,795,000	6.5%
TRANSCANAL	3,458,000	3.6%	3,140,000	3.0%
MEXICO WEST	5,529,000	5.7%	4,947,000	4.8%
EUROPE	8,739,000	9.1%	9,029,000	8.7%
BERMUDA	1,263,000	1.3%	1,502,000	1.4%
SOUTH AMERICA	3,370,000	3.5%	2,348,000	2.3%
TRANSATLANTIC	2,560,000	2.7%	2,691,000	2.6%
HAWAII	1,858,000	1.9%	1,770,000	1.7%
ALL OTHER (15 other locations)	9,458,000	9.1%	11,118,000	10.7%
TOTAL PASSENGERS	96,274,000	100.0%	104,109,000	100%

### Who’s Onboard

Obviously different types of cruises attract different types of customers. Nonetheless, certain demographic profiles are most likely to take a cruise. The table below compares the

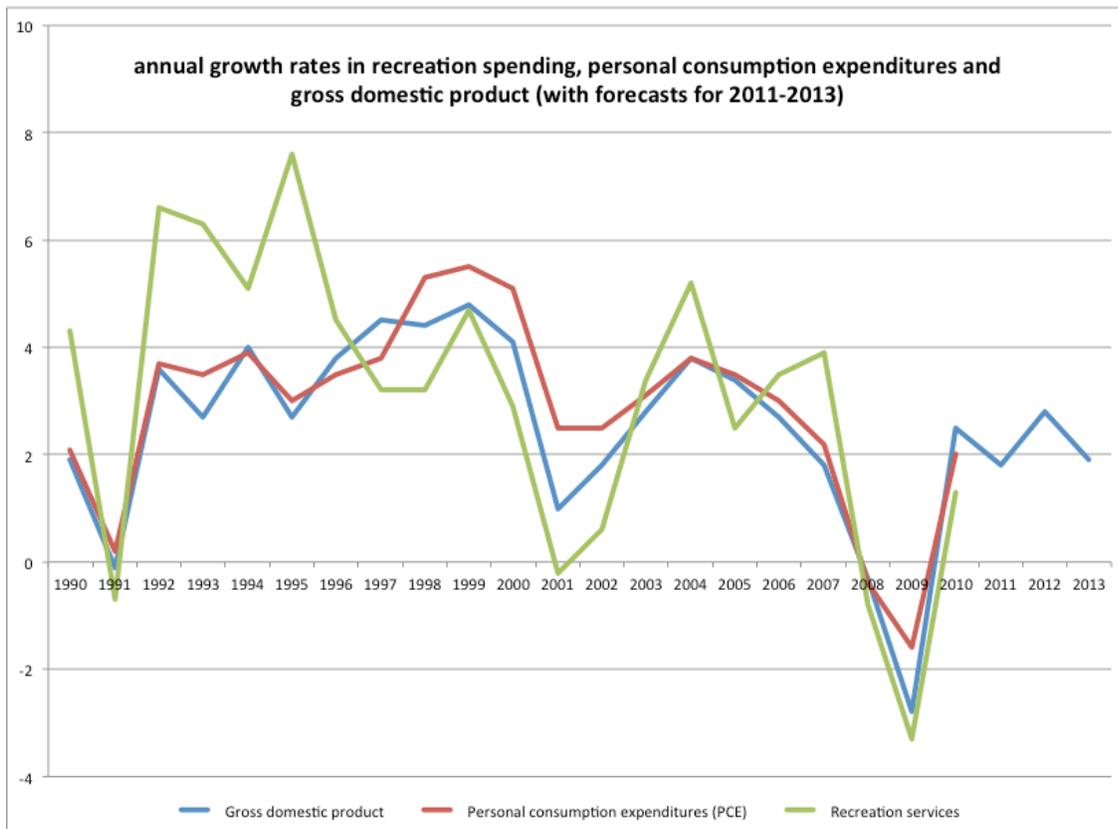
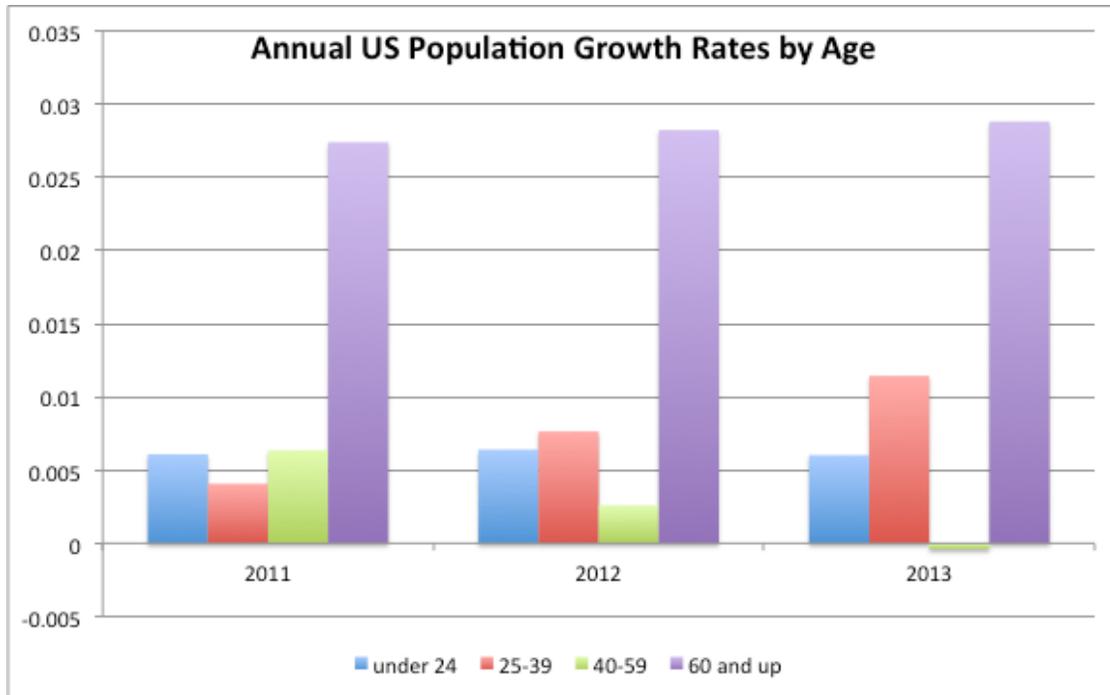
demographic profile of those who have taken a cruise with the entire U.S. population over the age of 24. Generally, the population of past cruisers is slightly older and better educated than the entire population over the age of 24, and considerably wealthier. The average annual income of a past cruiser is roughly \$10,000 more than population average.

	<b>Demographic Profile</b>	<b>Cruiser</b>	<b>Population over Age 24</b>
<b>Gender:</b>	Male	48%	49%
	Female	52%	51%
<b>Age:</b>	25-under 40 years	28%	31%
	40-59 years	45%	46%
	60 years or older	27%	23%
	Average	49.9 yrs.	48.3 yrs.
<b>Marital Status:</b>	Married	79%	79%
	Not Married	21%	21%
<b>Education:</b>	Some College or less	24%	29%
	College Graduate or more	76%	71%
<b>Household Income:</b>	\$30,000-\$49,999	10%	13%
	\$50,000-\$74,999	24%	29%
	\$75,000-\$99,999	19%	23%
	\$100,000 or more	47%	35%
	Average	\$109,300	\$99,550

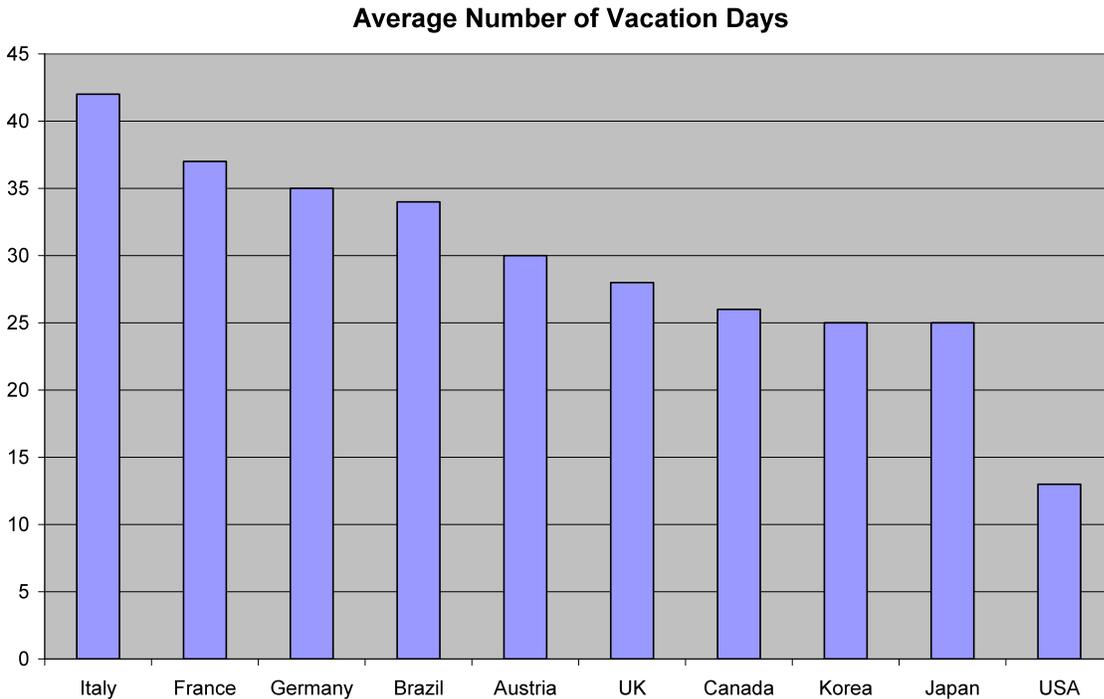
### **Demand for a Cruise Vacation**

To date 38% of the U.S. population has taken a cruise. However, a recent cruise industry survey of people over the age of 24 found that 65% are interesting in cruising sometime in the future and 29% responded that they will definitely take a cruise in the next five years. Demographic trends also favor the cruise industry. As the demographic profile showed, 72% of recent cruise passengers are over the age of 40. As the baby boomers age, the over 60 population is now expected to grow at more than three times the national population growth rate over the next three years, as seen in the figure below.

Along with growth in the US population, it is possible that the amount of vacation time per individual will increase over time. Numerous studies have shown that the baby boomer generation values recreation more highly than previous generations. In addition, recreation spending is hyper-sensitive to the state of the economy, as the next figure illustrates. When personal consumption expenditures go up, recreation spending goes up even more; when personal consumption expenditures go down, recreation spending goes down even more. The figure below shows annual growth rates in recreation spending, personal consumption expenditures, and gross domestic product. Note that forecasts for gross domestic product are given for 2011-2013.



Another potentially relevant fact is that U.S. residents vacation far less than the citizens of all other developed countries, averaging just 13 days per year. As the figure below illustrates, even the hard-working Japanese and Koreans vacation almost twice as much as Americans. Italians, living the good life, vacation more than three times as much. It is certainly possible that Americans will increase their vacation expenditures even more in the future.



The final evidence about the future demand for a cruise vacation comes from a survey of 1354 US residents commissioned by the Cruise Lines International Association at the end of 2010. Based on evidence from this survey, the association predicted 36,161,000 cruise passengers in the next three years. They arrived at this figure through the following calculation. There are 132,947,000 US residents in the target market (age 25 or over and income exceeding \$40,000). From this population, there are 73,121,000 people who have taken a cruise sometime in the past and 59,826,000 people who have not. They assumed that 38% of former cruisers and 14% of non-cruisers are likely to take a cruise in the next three years. That is

$$.38 * 73,121,000 + .14 * 59,826,000 = 36,161,000.$$

There were 10,450,000 passengers in the North American market in 2010. Of course, many different combinations of passenger growth rates would imply a total of roughly 36 million passengers over the next three years; one is simple: 7% annual growth for three years.

How the association arrives at the two key rates of participation is not described, but two key sets of statistics seem particularly relevant. First, of those who have cruised in the past, the survey found that the total number of cruises they have taken is distributed as shown below. The second statistic that is relevant for the association's prediction is the time between cruises. For

those who have taken two or more cruises, the survey found that the time between cruises is distributed as shown below.

<u>those who have taken at least one cruise</u>		<u>those who have taken two or more cruises</u>	
<b>number of cruises</b>	<b>frequency</b>	<b>number of years between cruises</b>	<b>frequency</b>
1	0.42	1	0.27
2	0.17	2	0.16
3	0.11	3	0.13
4-5	0.12	4	0.13
6+	0.18	5+	0.31

## PART A. COMPREHENSIVE FINANCIAL ANALYSIS

Your task for this part of the case is to conduct a comprehensive financial analysis of Royal Caribbean Cruises and to compare their performance with Carnival Cruises. Excerpts from Royal Caribbean's and Carnival's 2010 10-K filings are included as online exhibits in the Royal Caribbean 2010 folder at <http://www.lundholmandsloan.com/new%20cases.html>.

You will need to import the case data into *eVal*. (Note: find the files RCL 2010 Data.xls and CCL 2010 Data.xls at <http://www.lundholmandsloan.com/new%20cases.html>. Copy the yellow block of data for the company, and then paste this block of data into the yellow cells at the bottom of the Financial Statements sheet using Paste Special - Values from the Edit menu.) You should compare the financial statements in *eVal* with the ones in the 10-K filings so that you can see exactly what data are used to compute each ratio and make any necessary adjustments. The definitions of each ratio are given in the textbook.

1. Compare the size and growth rates of Royal Caribbean and Carnival Cruises. What are the advantages to being large in this industry?
2. Compute the 2010 net operating income, net financing expense, average net operating assets, and average net financial obligations from the financial statements in Royal Caribbean's 10-K filing.
3. Using your answers to the previous question, compute return on equity (ROE) and then decompose ROE using the advanced Dupont decomposition:

$$\text{ROE} = \text{RNOA} + \text{Leverage} \times \text{Spread}$$

How does your decomposition compare to the one provided by *eVal*?

4. Using the financial ratios provided by *eVal*, evaluate any trends in Royal Caribbean's return on equity, compare it with Carnival Cruise's return on equity, and discuss the main causes of any differences.
5. Now consider each of the main drivers of return on equity: margins, turnovers, and leverage. Using *eVal*'s output as a starting point, evaluate any trends and compare Royal Caribbean with Carnival Cruises in each of these areas. Only note what is exceptional—do not discuss every possible ratio.
6. Does a dollar of revenue increase bring about a constant increase in expenses for Royal Caribbean, or do they enjoy economies of scale? Estimate any economies of scale that might be present.
7. Suppose that 35 percent of Carnival Cruise's passengers also book their air travel through the cruise company (as an "air and sea" package) while only 25 percent of Royal Caribbean's passengers include the air portion in their booking. Conceptually, how will this affect your ratio comparison of the two companies and discuss how you might adjust the data to remove this distortion?

## PART B. FINANCIAL FORECASTS

This part of the case asks you to forecast the financial performance of Royal Caribbean for the next three years. This is where you should bring together the industry facts given in the beginning of the case, the results of your financial analysis, and your understanding of Royal Caribbean's unique attributes gleaned from a careful reading of their SEC filings.

Your answers will not be evaluated on their accuracy but, rather, on the logic you give to support them. Use *eVal* to derive the forecasted financial data. Although your answers should be

in the format given in *eVal*, your analysis should be *far more detailed* than a simple extrapolation from Royal Caribbean's past performance (as the *eVal* defaults will do). (Note: find the files RCL 2010 Data.xls and CCL 2010 Data.xls at <http://www.lundholmandsloan.com/new%20cases.html>. Copy the yellow block of data for the company, and then paste this block of data into the yellow cells at the bottom of the Financial Statements sheet using Paste Special - Values from the Edit menu.) Excerpts from Royal Caribbean's and Carnival's 10-K filings, and the data that support the figures in the case introduction, are included as online exhibits at <http://www.lundholmandsloan.com/new%20cases.html>.

1. The case materials are quite specific about the increase in the supply of available berths across the industry in the next three years. However, forecasting the demand for future cruise vacations is considerably more uncertain. Estimate the growth rates in berths and passengers over the next three years for the combined North American and European markets. What does your answer imply about future price of a cruise vacation?
2. Based on all the information provided in the case, forecast Royal Caribbean's gross revenue for 2011, 2012, and 2013. Please explain your reasoning.
3. Forecast the remaining portions of the income statement for 2011, 2012, and 2013. Comment only on the forecast components that differ significantly from past trends or ratios—do not discuss each line item if you don't have anything substantive to say.
4. Forecast complete balance sheets for the end of 2011, 2012, and 2013. Comment only on the forecast components that differ significantly from past trends or ratios—do not discuss each line item if you don't have anything substantive to say.
5. Can Royal Caribbean afford to purchase the ships that it has on order in the next three years? How do you anticipate that these acquisitions will be financed?
6. For this question, do not use *eVal* (because it is easier not to). Suppose your analysis indicated that Royal Caribbean would spend \$1 billion on additions to property and equipment in 2011. Given this, estimate the ending balance of property and equipment for 2011.
7. For this question, do not use *eVal* (because it is easier not to). Suppose your analysis indicated that Royal Caribbean's 2011 ending balance of customer deposits was \$1,500 million. Estimate the amount of cash collected from customers in 2011.