Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.
The global cruise industry: Financial performance evaluation

Theodore Syriopoulos*, Michael Tsatsaronis, Martha Gorila

Department of Shipping, Trade and Transport Dept., School of Business, University of the Aegean, 2A, Korai Street, 82100 Chios, Greece

ABSTRACT

The global cruise industry has experienced persistent growth dynamics over the last two decades, with an impressive rebound after the 2008 financial crisis, unlike commercial shipping. Globalization, restructurings, mergers and a diverse bundle of travel and tourism services to cater for different passenger profiles have boosted robust revenue and profitability growth. Major cruise companies deploy ambitious investment plans to expand and renew their expensive fleet with larger modern vessels of high value. The mix of funding sources to finance these capital-intensive projects is critical and exerts a direct impact on the cost of capital. The paper contributes a rigorous corporate financial performance evaluation in the cruise sector and attempts to shed light on managerial financial efficiency, capital structure options, solvency conditions and corporate value dynamics. A sample of leading cruise companies, jointly holding a dominant market position, is incorporated to empirically investigate and assess their financial, accounting and stock market performance, based on convenient financial ratios and established market metrics. The detrimental impact of the recent coronavirus pandemic on the cruise sector is also discussed. This original study attempts to bridge the relevant research gap, as past literature remains surprisingly thin on this critical topic. A set of challenging and innovative contributions is delivered for the financial performance of major cruise companies, for the first time to the authors' knowledge, in support of efficient managerial implications and recommendations.

1. Introduction

Cruise tourism business is a form of traveling for leisure purposes that involves an all-inclusive holiday on a cruise ship. According to UNWTO, cruise tourism includes ‘a wide range of activities for travelers in addition to its traditional function of providing transport and accommodation’. The cruise industry is the fastest growing sector of the travel industry, with demand estimated to grow at 7.0% per annum over the past decade, and cruise passenger surpassing the threshold of 30 mln. in 2019 (CLIA, 2020; Wondirad, 2019). At the same time, the business is seen to be extremely volatile and ever more highly capital-intensive. Newbuilt cruise vessels can cost multiples in value compared with commercial ocean ships, estimated at $1.3 bln. per vessel, accommodating up to 6000 passengers, albeit at lower operating unit costs (Dowling, 2006; Lester & Weeden, 2004; Wood, 2004). Nevertheless, in the 1990s, the cruise industry has experienced extensive restructuring, following a wave of failures and consolidations. Larger holding cruise companies acquired smaller peers that continued operating as ‘brands’ withing the new business ventures though, serving repeat customer loyalty and offering diverse quality and service levels. Financial empirical research on cruise shipping remains surprisingly thin. Few earlier studies investigate, selectively, topics such as, the translational partnership organization of the industry (Hall & Braithwaite, 1990); cruise impact on and implications for regional and local market development (Hobson, 1993); cruise market globalization trends (Wood, 2000); cruise strategic capacity investments (Byung-Wook, 2005; Wie, 2005); cruise line and passenger challenges (Veronneau, Roy, 2012); cruise line supply chains and logistics (Daly & Fernandez-Stark, 2017; Veronneau & Roy, 2009, 2011; Veronneau, Roy, & Beaulieu, 2015); fund raising approaches for newbuilding cruise ships (Kiziellewicz, 2017; OECD, 2007); and mergers, acquisitions and restructurings (Charlier, 2004; Hobson, 1994); inter alia.

This study focuses on the financial performance evaluation of the global cruise business and attempts to fill this research gap in the field by contributing a set of challenging and innovative findings, as well as managerial implications and recommendations. To the authors’ best knowledge, this appears to be the first attempt to investigate in depth the critical issues of managerial efficiency, profitability, and growth prospects, financing sources and capital structure, leverage, solvency, and value creation dynamics in the context of the global cruise industry.

* Corresponding author.
E-mail address: tsiriop@aegae.gr (T. Syriopoulos).

https://doi.org/10.1016/j.rtbm.2020.100558
Received 17 May 2020; Received in revised form 7 September 2020; Accepted 8 September 2020
Available online 26 September 2020
2210-5395/© 2020 Elsevier Ltd. All rights reserved.
Initially, a concise overview of prevailing key developments and trends in the cruise business over recent years is provided. Subsequently, critical key financial metrics and performance indicators are estimated and evaluated over time and against major peer competitors for a sample of leading cruise players.

The theoretical framework and the stream of literature that the paper is grounded on relates to critical investment and financing decisions and their financial implications for managerial performance, corporate profitability, value creation, and firm growth. To this end, in a broader context, a core set of seminal reference papers investigate key managerial decisions on funding source options (debt and/or equity), capital structure mix priorities, (weighted average) cost of capital (WACC) shifts, and share price volatility, inter alia, as well as their interrelated implications for investment decisions and overall corporate financial performance (e.g., Baker & Wurgler, 2002; Donaldson, 1961; Hovakimian, 2006; Kiggen, 2006; Modigliani & Miller, 1958, 1963; Myers, 1994, 2001; Myers & Majluf, 1984). It remains an innovative, challenging and fruitful empirical task to investigate the financial implications of these decisions and evaluate the managerial efficiency and financial performance of major global cruise companies, as depicted and reflected on the evolution of critical and widely established financial ratios and metrics. Indeed, these issues are not seen to have been investigated yet in the relevant empirical literature. Nevertheless, they remain important for a highly capital-intensive sector, such as the cruise industry, taking, indicatively, into consideration that the cost of a newbuild cruise vessel can now surpass the $1.0 bln. threshold (CLIA, 2020).

The empirical approach is based on a blended financial methodology, including preliminary data mining and collection, financial statement analysis and comparative assessment and evaluation of critical cruise financial ratios and indices. Based on that, a set of focal policy recommendations is finally provided. The information input is obtained from financial statements and annual reports, stock market datasets and company financial analysis reports, over a recent five-year horizon.

The paper is structured as follows. Section 2 provides a concise summary of recent developments in cruise demand and supply sides, identifying critical growth drivers, economic implications, and prospects ahead. Section 3 overviews major cruise company investment decisions; and Section 4 analyses the complex topic of financing decisions and fund-raising approaches, based on alternative capital structure options that eventually shape the critical cost of capital indicator. Section 5 investigates, analyses, and evaluates a set of key financial ratios, metrics, and indicators to assess cruise company financial performance and value creation dynamics. Finally, Section 6 concludes.

2. Cruise business growth drivers

2.1. Demand for cruise services and economic impact

Cruise shipping business offers a bundle of combined global shipping and tourism services to cruise passengers, as it caters for vacation services on board and ashore, with a full package of diverse recreational tourism-related services. However, a fundamental strategic shift is seen in global cruise business over time (Garin, 2005). Whereas in earlier days, cruise shipping services were mainly targeting higher net-worth luxury customers at substantial price cost, the industry has gradually seen to spend a few extra days at embarkation or debarkation ports. Cruise business is seen to develop around Caribbean, Australasia, Brazil, Europe, North America, Asia, Canada, UK, and Ireland. The worldwide income multiplier effects of the cruise industry have wider economic implications, as these disseminate to a wide spectrum of related business sectors and activities.

Over 2008–2018, the global cruise business has experienced an unprecedented 10-year average growth above 45% in sourced cruise passengers (CLIA, 2019; Florida Caribbean Cruise Association, 2019). This performance is attributable predominantly to the spectacular passenger growth from European markets (60.4%), followed by North American markets (39.4%). This figure raises up to nearly 75% if passenger growth of the rest of the world is also counted (Table 1). The number of total cruise passengers came up to 30 mln. in 2019 from 16.3 mln. in 2008 (+84%). A steady cumulative annual passenger growth rate (CAGR) at 7% is estimated over 1990–2020.

Initial estimates on the number of annualized worldwide cruise passengers carried indicate 32.0 mln. passengers for 2020 against 3.6 mln. passengers back in 1990 (+790%, 2020/1990) (Fig. 1).

Cruise passengers originate from a diversity of geographic regions and source markets (Table 2). North America remains by far the largest source region of cruise passengers, contributing more than half of global cruise passenger flows (50.2%); its share, though, has dropped compared with 2007 (66%). Europe follows at a distance (23.7%) and has also seen its share slightly on the decline. Asia, on the other hand, is a robustly upcoming cruise passenger source region (15.0% in 2019, up from 9.2% in 2018).

The breakdown of preferred destinations, as depicted by cruise line deployment by region is presented for 2018 and 2019 in Table 3. The Caribbean remains by far the prime cruise destination of high demand (32%) with the Mediterranean (17%) and Europe (excluding Mediterranean; 11%) following at a distance (Table 3).

The cruise market share distribution among major cruise players is presented below (Table 4). Three leading players are seen to dominate the global cruise market. Carnival Corporation holds a dominant position with passenger and revenue market shares at 47.4% and 39.4%, respectively. Royal Caribbean Cruise ranks second with passenger and revenue shares at 23.0% and 20.2%, respectively. Norwegian Cruise Line Holdings follows at a distance with passenger and revenue shares at 9.5% and 12.6%, respectively. These three major players control a global cruise market share of 80% in passenger terms and 72.2% in revenue terms, respectively.
2.2. Growth drivers and prospects

Cruise shipping growth is driven by consistent efforts of all parties involved to explore alternative approaches towards increasing business efficiencies. These include further newbuilding investments to expand and modernize cruise fleet, adding new vessels of larger capacity, diversifying the destination choices offered, increasing penetration in core North American and Latin American markets, attracting more passengers from new source markets and enriching on-board and on-shore activities to meet cruise passenger demands. Furthermore, the inclusion of more local ports has been treated responsibly, based on collaboration with cruise destinations and local communities. The cruise industry is seen to become more conscientious, paying attention towards preservation of local cultures and landmarks and minimization of environmental footprints; exploring alternative creative ways to manage...
visitors’ flows; and, implementing higher standards of responsible tourism. The latter include partnerships with local governments, staggered arrivals and departures, local excursion diversification, shoreside power, and local passenger spending, as more travelers are spending time in and near cruise ports (e.g., Klein, 2011).

Broadly, the cruise industry demonstrates promising growth dynamics ahead. This is supported by a global shift in consumer tastes and habits around cruise services, irrespective of passenger generation. For instance, more than 66% of generation ‘X’, 71% of millennials, and expanding percentages of generation ‘Z’, originating predominantly from the vital US market, are seen to have an increasingly positive attitude towards cruise travel and tourism services compared with earlier years. Generation ‘Z’ is anticipated to become the largest consumer generation by 2020 outpaying even millennials. This generation, like the one before, prefers experiences over material items. They appear to prefer cruise travels, including multiple destinations and targeted specialized services (such as music festivals at sea, for instance; CLIA, 2020).

Cruise passenger numbers originating from major emerging markets, such as China, India, and Latin America, are anticipated to increase further, supported by improving global disposable income and economic growth conditions. In addition, social demographic shifts indicate that, as global marriage rates are on a decline, increasing numbers of single adults are seen to pursue lone cruise services with a ‘traveling alone’ focus. Cruise lines respond to this upcoming clientele by offering, targeted ‘solo travel’ services, such as studio cabins, solo-lounges, and single-friendly activities. Another upcoming cruise clientele sub-group is female travelers, as their numbers are seen growing. Many tourism and travel companies are creating female-centered cruise itineraries, based on focused interests, and facilitating building women community bonds (CLIA, 2020). Relevant references investigating these issues further include Teye and Leclerc (2003), Chen, Neuts, Nijkamp, and Liu (2016), Satta, Parola, Penco, Persico, and Musso (2016), inter alia.

What is more, cruise travelers are now seen to set sights on destinations that were previously out of reach and some only accessible by cruise ships from the Galapagos Islands to Antarctica. Demand for off-peak season cruise packages also exhibits rising popularity, as travelers may prefer to visit tropical destinations to escape a domestic cold season. The number of modern ‘digital nomads’, that is travelers combining work with leisure time, is also on the rise. This target group can enjoy cruise vacation services in conjunction with remote e-work, cutting down on time-off and still earning an income. On the other hand, micro travel cruise services exhibit upward demand trends as well, as many travelers are interested in quick recreational trips of varied and flexible trip duration alternatives. In response to that, cruise companies offer bite-sized cruise options of three-to-five-days, scheduling shorter itineraries to a variety of destinations.

3. Investment decisions in the cruise business

The cruise companies promote consistently a set of ambitious and capital-intensive strategies to sustain business growth. Newbuilding investment projects target to expand and modernize the existing fleet with vessels of larger capacity. Total cruise industry capacity reached 537 thou. passengers and 314 ships, with about 55 active cruise companies at the end of 2018 (CLIA, 2020). The brand diversification of operations is summarized in Table 5.

Most cruise players have large investment plans under deployment, scheduled over 2019–2025. For instance, Carnival, Royal Caribbean, and Norwegian plan to invest $4.2 bln., $7.2 bln., and $4.5 bln., respectively, in newbuilding vessels, aggregating to $16 bln. in investments. With total cruise sector investments adding up to $70.3 bln., the joint investment share of these three major players corresponds to 23% of total cruise investment budget (Table 6).

Broadly, an impressive newbuilding cruise vessel orderbook is under execution over 2019–2025 (Table 7; more details in Table 7A in the Appendix; (WAC, 2019)). It is worth noting that the large vessel size in several cases can accommodate more than 6000 cruise passengers. Recent feedback on cruise investment plans indicates that 278 vessels are projected in operation by the end of 2020 and 19 vessels are scheduled to debut in 2020. The average age of cruise fleet is seen at 14.1 years, improved from 14.6 years in 2018.

A broader issue of concern for cruise investments relates to the environmental sustainability commitment. While cruise ships comprise less than 1% of global maritime fleet, the entire shipping industry benefits from the adoption of new technologies and practices that were
not in play earlier. The development of new technologies and cleaner fuels remains a high priority for the cruise industry. Estimates indicate that the cruise companies have invested over $22 bln. in new energy-efficient ships and technologies to minimize the environmental impact, supporting the goal of reducing carbon emission rates by 40% by 2030 compared to 2008 (CLIA, 2020). As per new emission standards, sulfur in the fuel is limited to 0.5% from January 2020. The cruise industry is also seen to be consistently committed to responsible tourism practices, with a focus on destination stewardship, setting-up partnerships with local governments in key destinations. A complementary concern relates inevitably to cruise hosting port constraints, including market segmentation, vessel size service capacities, seasonality effects and congestion bottlenecks at peak periods. To that end, cruise players are anticipated to invest further into port facilities and related infrastructure.

Having said that, the compliance of cruise companies to environmental protection is associated with high investment costs for the construction of new generation cruise ships. Vessel manufacturing costs also rise as ships incorporate innovative advanced technologies. Although cruise vessel prices are seen, on average, at around half a billion dollars, updated estimates indicate this figure to now surpass the one billion dollars threshold (CLIA, 2020). To that end, the critical questions as to how these massive investments are to be financed and at what capital cost remain to be tackled. Following the global financial crisis, several leading international banks specialized in ship credit, such as RBS and DVB, have decided to exit ship lending entirely, liquidating their ship loan portfolios. On the other hand, an emerging global trend relates to private entry strategies, partnerships, and internationalization patterns of cruise companies entering cruise terminal operations in major destinations, such as the Mediterranean Sea (Pallis, Parola, Satta, & Notteboom, 2018). Plausibly, the deployment of such strategies is anticipated to bring about considerable financial implications for cruise lines and cruise terminals, both in terms of spending patterns as well as of income.

4. Financing decisions in the cruise business

4.1. Capital funding priorities

The financing approach a cruise company is to follow to fund its investments and the contribution of alternative capital source options are of fundamental managerial importance. Obviously, this should have direct implications for this cruise company’s optimal capital structure mix and its cost of funding. The investigation of these issues in the context of cruise companies remains a challenging and innovative task. To the authors’ knowledge, this appears to be the first empirical study tackling these issues in the cruise industry. This research interest is further reinforced and justified considering that the global cruise industry is a highly capital-intensive business with consistent investment expansion plans under development over the last decades, associated with substantial funding requirements. As noted earlier, most cruise companies plan to expand and upgrade their fleet and have already placed a massive newbuilding orderbook under play. The incorporation of luxury facilities and high-end technological advances and services drive unit vessel prices even higher than $1.3 bln. (CLIA, 2020).

Managerial financing decisions have direct implications for the cruise company’s capital structure mix, its cost of capital and, eventually, shareholder value creation and growth prospects. The capital structure mix refers to the percentage weights of equity and debt, reflecting the respective capital source contribution to form the company’s total invested capital. As the cost of equity and cost of debt differ, modifications in the capital structure mix also affect the company’s overall cost of capital. These focal issues have generated steaming debate among academics and market practitioners over time. A summary of major finance theories on capital structure is now provided and subsequently explored briefly in the context of the cruise business. Modigliani and Miller (1958), first, postulate the capital structure irrelevance approach. Assuming perfect markets and absence of taxes and bankruptcy costs, the capital structure mix is irrelevant because firm market value is determined by the company’s earning power and the risk of its underlying assets. Modigliani and Miller (1963) incorporate, subsequently, the tax effect on capital cost and firm value. In this case, firm value increases with leverage due to tax shield benefits. Interest on debt capital is an acceptable deduction from the firm’s income and thus decreases the firm’s net tax payment. Assuming potential tax benefits, debt financing can result to lower cost of capital.

Trade-off theory, furthermore, argues that the optimal level of debt is where the marginal debt benefit is equal to its marginal cost (Myers, 1984). Debt financing up to a certain level contributes interest tax shield benefits, offsetting financial distress costs. A firm can attain an optimal capital structure by adjusting debt and equity weights, thereby balancing tax shield benefits and financial distress costs. Myers and Majluf (1984) postulate the pecking order theory, based on earlier research by Donaldson (1961), and argue that (assuming perfect capital markets) management prefers internally generated funds rather than raising external funds. A company should prefer internal funding first, then issue debt, and finally, as a last resort, issue equity capital. Firms with higher profit and growth opportunities would use less debt capital (Myers, 2001). If a firm has no investment opportunities available, profits are retained to avoid future external financing. Information asymmetry between insiders and outsiders and separation of ownership can explain why firms avoid capital markets.

Market timing theory of capital structure maintains that companies are more likely to issue equity when their market value is high, relative to book and past market values, and to repurchase equity when their market value is low (Baker & Wurgler, 2002). Share price volatility affects corporate financing decisions, and eventually the firm’s capital structure. As the resulting effects on capital structure are persistent, this indicates that current capital structure is strongly related to historical market values. Capital structure is perceived to be the cumulative outcome of past attempts to time the equity market. It is argued though, that market timing does not exert material effects on the firms’ capital structure in the long run (Hovakimian, 2006). The credit rating-capital structure (CR-CS) hypothesis is proposed as an extension of the existing trade-off theory of capital structure (Kigosen, 2006). Capital structure decisions are expected to adjust along the relevant benefits and costs associated with shifts between different credit rating levels. When a firm is closer to a rating shift, it may issue less debt compared to the alternative of being far from a credit rating shift.

To sum up, debt financing can offer a lower cost of capital, due to tax deductibility advantages. A company with positive prospects can proceed to raise capital using primarily debt rather than equity, so to avoid ownership dilution (transmitting negative signals to market players). Debt signaling (company announcements of funding with debt) is typically seen as positive news. However, a high debt exposure bears enhanced bankruptcy risks, and increases shareholders’ financial risks, thus a higher return on equity is required. To conclude, companies must assess their optimal funding mix at which the marginal benefits of debt equal the marginal costs incurred. The optimal capital structure mix is associated with that combination of equity and debt financing that results to a lower cost of capital, supporting robust value creation prospects.

4.2. Capital structure mix and WACC

Based on 2019 figures, all three major cruise companies have seen their long-term debt exposure increased against 2018, by 22.8% at $9.7 bln. for Carnival, by 8.4% at $9.0 bln. for Royal Caribbean, and, by 5.2% at $6.1 bln. for Norwegian (Table 8). This reflects a debt weight reallocation in the capital structure mix for Carnival and Norwegian, though this remained stable for Royal Caribbean. Over 2016–2019, debt funding contribution increased from 41.9% to 43.7% for Carnival and from 59.2% to 59.9% for Royal Caribbean but declined overall from 65.1% to...
The weighted average cost of capital (WACC) is a critical metric for a company’s aggregate cost of funding from all potential capital sources. It is calculated as the weighted average cost of equity and cost of debt (weighted contribution of equity and debt in the company) that is:

$$\text{WACC} = k_e \times \left( \frac{E}{E + D} \right) + k_d \times (1-t) \times \left( \frac{D}{E + D} \right)$$

where: $k_e =$ cost of equity; $E =$ Equity; $k_d =$ pre-tax cost of debt; $t =$ corporate tax rate; $D =$ Debt; $E/(E + D)$ and $D/(E + D) =$ weights of equity and debt in the company’s capital structure, respectively.

Hence, WACC is a key indicator of the minimum after-tax required rate of return which the cruise company must earn for all its investors (capital suppliers, i.e. shareholders and debtholders). At the same time, the company’s cost of capital is the expected return to both stakeholders (owners and lenders) and represents investors’ opportunity cost of taking on the risk of investing their funds into the company. More specifically, cost of equity is the required rate of return on common stock of the company. It is the minimum rate of return which a company must earn to keep its common stock price from declining. Cost of equity is estimated using alternative models (including, dividend discount model (DDM) and capital asset pricing model (CAPM)). After-tax cost of debt represents the after-tax rate of return debtholders require to earn until debt maturity. Cost of debt is calculated by assessing the yield to maturity of the company’s bonds and other loan instruments. If no yield to maturity is available, the cost of debt can be estimated using the instrument’s current yield. After-tax cost of debt is included in WACC calculation because debt offers a tax shield (i.e., interest expense on debt reduces taxes and this is incorporated in the cost of debt calculation). The WACC factor for major cruise companies in 2019 is summarized below (Table 10).

The next section focuses on the core research objectives and develops the empirical methodology on the financial performance evaluation of major cruise companies to contribute a set of fruitful managerial recommendations, and conclusions.

**5. Financial performance evaluation: Methodology and key findings**

This section deals with a solid quantitative assessment of corporate financial performance dynamics, and trends shaped in the cruise industry, over the period 2016–2019. As mentioned, this topic remains surprisingly unresearched in the relevant academic literature (e.g., Clancy, 2017). To explicitly state the research objectives and innovative contributions of this study, the following critical issues are investigated for leading global cruise companies: the ambitious investment plans under deployment; the capital funding priorities and sources, based on the decomposition of the capital structure mix; and, the assessment and evolution of the WACC metric over time. To assess, subsequently, the profitability robustness, value creation dynamics and growth prospects of the sample cruise companies, an integrated financial performance evaluation approach is undertaken, based on a widely applicable, financial ratio analysis, focusing on the following key issues: revenue and profit growth; managerial efficiency, as depicted by ROE, ROA, ROIC ratios; the ROIC-WACC interrelationship and its growth and value dynamics implications; financial leverage exposure and solvency assessment; and earnings per share ratios and share price performance over time.

To serve these research objectives, the empirical methodology is based on a solid corporate financial analysis, assessment, and evaluation of critical financial ratios and established metrics on key cruise market players, built on financial statement, accounting, and stock market inputs. This applied approach can then produce useful empirical findings and policy recommendations for efficient managerial decisions of the cruise companies. Though this methodological framework is standard in different business sectors, to the authors’ best knowledge, this appears to be the first empirical application to global cruise corporate players.

A case study company sample is selected, consisting of the major cruise players, namely Carnival, Royal Caribbean, and Norwegian cruise lines. As discussed earlier, these cruise companies hold an undoubtedly dominant market share, as they jointly control more than 80% of the global cruise market in terms of revenue and passengers and set the financial tune in the sector (CLIA, 2020). Hence, by focusing on these companies, a solid, reliable, and sufficiently representative feedback can be gained for the overall cruise sector. Furthermore, these leading cruise companies have their shares listed and traded on international stock exchanges (New York, London); thus, useful empirical reflections can be gained by their stock market behavior, performance, and market value. The consolidated financial statements of the sample cruise companies have been incorporated for the empirical financial analysis. These cruise companies own several subsidiaries (e.g., Carnival Corporation & PLC...
strategies of the parent companies are realized also by their own brands.

As a point of clarification, MSC Cruise is also an important cruise market player, though it holds a relatively lower market share compared with the other sample companies. MSC was initially included in the preliminary sample compilation under study. However, it was eventually excluded from the final sample, to preserve data consistency and convergence, as MSC Cruise is not listed on a stock exchange and a part of the research interest is in the stock market behavior of the listed cruise companies. Due to the dominant market share and economic importance of the sample cruise companies, the empirical analysis and findings are not expected to be affected materially by the exclusion of MSC Cruise. In any case, a relevant follow-up study could enrich and expand on the current sample to include more cruise players.

A brief corporate profile of each sample cruise company now follows.

5.1. Cruise company profile

Carnival Corporation & Plc (CCL) offers cruise services under the Carnival Cruise Lines, Holland America Line, Princess Cruises, and Seabourn brand names in North America; and AIDA Cruises, Costa Cruises, Cunard, and P&O Cruises names in Europe, Australia, and Asia. Carnival runs 100 cruise ships and is a sole dominant cruise market player, as it controls a market share at 48%. This is the only cruise group with its shares traded on dual listing (S&P500 and FTSE100 indices). The company was founded in 1972 and is headquartered in Miami, Florida.

Royal Caribbean Cruises Ltd. (RCL) operates as a global cruise vacation company the cruise brands Royal Caribbean International, Celebrity Cruises, Azamara and Silversea Cruises. The firm also holds interest in TUI Cruises, Pullmantur and SkySea Cruises brands. Royal Caribbean runs 60 ships and holds a significant cruise market share at 23%. The company plans to launch 11 new cruise ships of average vessel capacity over 4500 passengers by 2025. The company was founded in 1968 and is headquartered in Miami, Florida.

Norwegian Cruise Line Holdings Ltd. (NCLH) is a global cruise company and operates the Norwegian Cruise Line, Oceania Cruises and Regent Seven Seas Cruises brands, offering itineraries to more than 490 destinations worldwide. With a combined fleet of 28 ships, and nine ships to be added by 2027 with an average capacity of 3000 passengers per vessel it holds a cruise market share at 10%. The company was founded in 2010 and is headquartered in Miami, Florida.

5.2. Revenue and profit growth

Cruise revenues exhibit consistently robust growth trends for the leading cruise players, over 2016–2019 (Table 11). Contrary to most commercial shipping market segments that experienced abrupt and persistent revenue declines since the outbreak of 2008 global financial crisis, cruise shipping has seen a robust resistance and relatively rapid recovery. In 2019, Carnival recorded cruise revenue at $20.8 bln. (+10.3%, 2019/2018). Similarly, Royal Caribbean also gained robust revenues at $10.9 bln. (+15.3%, 2019/2018). Norwegian Cruise Line, on the other hand, saw comparatively modest revenue growth at $6.5 bln. (+6.6%, 2019/2018).

Gross profits exhibit an upward trend for all three cruise players, especially for the market leaders, Carnival, and Royal Caribbean. Earnings before interest, tax, depreciation, and amortization (EBITDA) is considered as a critical indicator of operational profitability and is defined as income after operating expenses have been deducted and before interest payments, taxes, depreciation, and amortization have been deducted. This profit component is to compensate subsequently for debtholder claims (interest payments), State claims (taxes) and, lastly, shareholder claims (dividends), with the latter ones perceived as residual claimants, bearing highest risk levels. The leading cruise companies exhibit modest EBITDA and Net Income shifts over 2016–2019.

According to a market motto, ‘if gross profit is not there, there will be no net profit’ as well. Gross profit margin is calculated as the ratio of gross profits to revenue. Assuming a cruise company investing in a sector that exhibits a high gross profit margin but not making bottom-line net profits may be a striking indication of a mismanaged case. Corporate restructuring and operational tuning may be required to turn the business into a profitable venture. Broadly, the level of gross profit margin depends directly on how a business is organized and the other costs it must support. For instance, after gross profit calculation, a cruise company still must pay operating expenses, financial, tax and other expenses. Subsequently, a cruise company must have robust net profits to distribute an attractive return (dividend) to shareholders. In case a cruise company can effectively control operating expenses, it can remain profitable with a lower gross margin ratio. Broadly, a higher gross profit margin is preferred, as it indicates efficient processes and offers flexibility to have money left over to spend on other business operations.
The net profit margin is calculated as the ratio of net profits to revenue. Net profit is calculated as the gross profit (revenue minus cost of goods sold) minus operating expenses, interest paid on debt, taxes and all other expenses. The net profit margin is a far more definitive profitability metric for investors and analysts and indicates how much of each dollar received as revenue translates to corporate profit. This is critical since revenue increases do not necessarily translate into increased profitability. A higher profit margin is desirable since it means the company generates more profits from its revenue. A careful assessment of both cruise company gross profit margin and net profit margin reveals managerial efficiency in earning profits relative to the costs involved in producing cruise services.

The profit margin ratios for all three sample cruise companies remain consistently high over 2016–2019 (Table 12). The 2019 net profit margin for Royal Caribbean, for instance, at 17.4% indicates that, for $100 of revenue, $17.4 have remained as net profit in the company. The joint evaluation of gross, operating, and net profit margins for the leading cruise companies indicates a broadly stable, efficient, and successful financial management.

When examining the per day figures, cruise revenue and profits per day are seen at $51.7 mln. and $8.6 mln., for Carnival; $26.0 mln. and $5.0 mln., for Royal Caribbean; and $16.6 mln. and $2.6 mln., for Norwegian, respectively, for 2018. Average cruise revenue and expense per passenger are estimated at $1791 and $1562, respectively. This corresponds to a profit at $227 per passenger, forming a net profit margin at 12.7%. A breakdown of the estimated average cruise revenue and expense per passenger is summarized in Table 13.

5.3. Managerial efficiency ratios

A set of critical and widely employed diagnostics tools to evaluate managerial efficiency on cruise company financial performance include the Return on Equity (ROE), Return of Assets (ROA) and Return on
Table 12
Cruise management financial efficiency.

| Year       | Carnival Corporation | Royal Caribbean Cruises | Norwegian Cruise Line Holdings |
|------------|----------------------|-------------------------|-------------------------------|
|            | GPM (%) | OPM (%) | NPM (%) | GPM (%) | OPM (%) | NPM (%) | GPM (%) | OPM (%) | NPM (%) |
| 2019       | 30.0    | 15.7    | 14.4    | 44.9    | 19.2    | 17.2    | 43.3    | 18.2    | 14.4    |
| 2018       | 41.3    | 17.6    | 16.7    | 46.6    | 19.9    | 19.1    | 44.2    | 20.1    | 15.8    |
| 2017       | 40.0    | 16.0    | 14.9    | 44.2    | 19.8    | 18.5    | 43.2    | 19.4    | 14.1    |
| 2016       | 42.8    | 18.7    | 16.9    | 41.0    | 17.4    | 15.1    | 41.5    | 19.0    | 12.9    |

GPM: Gross Profit Margin; OPM: Operating Profit Margin; NPM: Net Profit Margin.
Source: Authors’ calculation based on cruise company financial statements.

Table 13
Average cruise revenue and expense breakdown per passenger.

| Revenue                          | Carnival Corporation | Royal Caribbean Cruises | Norwegian Cruise Line Holdings |
|----------------------------------|----------------------|-------------------------|-------------------------------|
|                                  | Ticket ($) | ( % ) | Expenses ($) | ( % ) | Ticket ($) | ( % ) | Expenses ($) | ( % ) | Ticket ($) | ( % ) | Expenses ($) | ( % ) |
| Ticket                           | 1293       | 72.2 | Agent commission | 233 | 14.9 |
| Onboard Spending                 | 498        | 27.8 | Other operating costs | 260 | 16.6 |
| Casino & Bar                     | 274        | 15.3 | Ship fuel costs | 193 | 12.4 |
| Shore excursions (cruise line portion) | 100 | 5.6 | Corporate operating costs | 208 | 13.3 |
| Spa                              | 50         | 2.8 | Ports | 197 | 12.6 |
| All other onboard spending       | 75         | 4.2 | Depreciation/Amortization | 172 | 11.0 |
|                                  |            |     | Victualing (food) | 107 | 6.9 |
|                                  |            |     | Onboard and other | 77 | 4.9 |
|                                  |            |     | Other and transportation | 59 | 3.8 |
|                                  |            |     | Interest Expense | 56 | 3.6 |
| Total spending(1)                | 1791       | 100 | Total Expenses | 1562 | 100 |
| Profit before taxes(2)           | 229        | 12.7% |

2018 figures; financial breakdown of typical cruiser worldwide (across all cruise lines). Average cruise duration: 8.0 days; median duration: 7.0 days.
Source: Carnival Corporation & Plc., Royal Caribbean Cruises, Norwegian Cruise Lines, Thomson/First Call, Cruise Lines International Association (CLIA), Florida Caribbean Cruise Association (FCCA), DVB Bank, Cruise Pulse; www.cruisemarketwatch.com.

Invested Capital (ROIC) ratios. These metrics permit comparative performance evaluation of each sample cruise company over time as well as against its competitors. They can also reveal critical drivers of growth and provide explanation for the stock market behavior of the cruise companies’ share trading patterns at higher/lower valuation levels.

ROE is defined as net income to equity and indicates the equity required to generate a certain amount of net income; or, how well the company is using equity (owners’ capital). ROA is calculated as net income to assets and indicates the assets required to generate a certain amount of net income; or, how efficiently the management utilizes the company’s fixed and current assets (how dependent it is on them). ROIC is defined as EBIT (earnings before interest and tax) to total invested capital (equity plus debt) and indicates the operational profit generated by the total capital employed in the company; or, how efficiently the company allocates all its capital to profitable investments; or, how much capital is required to grow its business. ROE attracts investors’ attention as it is a critical indicator of how effectively a company’s management uses shareholders’ capital and reveals whether management is growing the company’s value at an attractive and competitive rate. ROE, ROA and ROIC ratios are calculated as in the forms below (Table 14).

A key factor distinguishing ROE and ROA is financial leverage or debt, since the fundamental balance sheet equation holds that assets equal equity plus debt. Plausibly, in case a company carries no debt, its equity and total assets will be the same, hence, ROE and ROA would also be the same. However, if that company takes on financial leverage, ROE will rise above ROA; this relates to the balance sheet equation, since equity equals assets minus liabilities. Thus, by taking on debt, a company increases its assets, due to the cash that comes in. But since equity equals assets minus debt, a company decreases its equity by increasing debt. In other words, when debt increases, equity shrinks; since equity is ROE’s denominator, then ROE, in turn, gets a boost. At the same time, when a company takes on debt, total assets (ROA denominator) increase; hence, debt amplifies ROE in relation to ROA. ROE, however, weights net income only against owners’ equity and does not provide any feedback on how well the management uses funding from borrowing and issuing bonds. If ROA is sound and debt levels are reasonable, a strong ROE is a solid signal that management is efficient at generating returns from shareholders’ capital. On the other hand, if ROA is low or the company bears a heavy debt, a high ROE may be misleading as to the company’s growth prospects.

ROIC overcomes certain ROE and ROA limitations and is a better measure of profitability than ROA and ROE, as it removes the debt related distortion that can make highly leveraged companies look highly profitable when using ROE. Unlike ROE and ROA that incorporate net income, ROIC is based on EBIT (earnings before interest expenses and taxes), arguably a critical operating profitability indicator that takes total invested capital into account. This can offer a closer focus on the core operating performance, removing financing decision effects (that is, regardless of the capital source, equity, or debt).

The joint evaluation of ROE ROA and ROIC ratios for the leading cruise companies indicates a persistently robust financial performance and efficient use of each company’s equity, debt, and assets in all cases (Table 15). ROE ratios run from 12.1% (Carnival) to 14.9% (Norwegian) to 16.0% (Royal Caribbean), respectively, reflecting a satisfactory return on shareholders’ equity. Carnival is seen to attain the best performance of its assets (ROA: 6.7%), with the other cruise companies following closely (Royal Caribbean: 6.3%; Norwegian: 5.8%). ROIC ratios are seen also to be very close for all three cruise companies (Carnival: 9.6%, Royal Caribbean: 10%, Norwegian: 9.8%), indicating a solid operational performance with efficient use of shareholder and debtholder capital, and supporting robust growth dynamics and value creation.

5.4. ROIC versus WACC: Growth and value dynamics

When comparing a company’s return on invested capital (ROIC) against its cost of capital (WACC), ROIC should stand higher than WACC to support robust growth prospects, value creation and share price trading at a premium. ROIC also can be used as a benchmark to compare a firm’s value against competitors. A common market benchmark spread in support of value creation is a ROIC higher than WACC by at least +2%. A ROIC lower that WACC (or a spread of less than 2%) is considered as a value destroying condition. Some companies run at a zero-return level, and while they may not be destroying value, they have no excess capital to invest in future growth (Koller, Goedhart, &
The ROIC ratio can be adjusted on a per unit basis to be equivalently recalculated as:

\[
\text{ROIC} = \left( \frac{\text{Price per Unit} - \text{Cost per Unit}}{\text{Invested Capital per Unit}} \right) \%
\]

This implies that superior ROIC ratios can be attained from either a) a ‘price premium’ relative to peers; b) a lower ‘cost of capital’ per unit, improving cost and capital efficiency; or, c) a combination of both, a) and b). A company can create value by investing its capital into profitable investment projects to attain attractive ROICs. Robust revenue growth rates, ROIC higher than WACC and operating cash flows are core drivers to corporate value creation.

In the longer-term, a company can sustain strong revenue growth and high ROIC only in case it possesses and preserves a well-defined ‘competitive advantage’ against its peers. However, as competition erodes ROICs and competitive advantages, management should consistently seek new sources of competitive advantage to create sustainable value. Empirical evidence indicates that, of alternative growth models to value creation, launching new products or services typically creates more value for shareholders (Koller et al., 2020). In this context, a challenging strategic option for cruise companies remains as to how effectively they can respond towards their competitive advantages, by developing, for instance, alternative diversified bundles of cruise products and services to contain intensified global competition.

### 5.5. Financial leverage – Solvency

Cruise companies, in line with commercial shipping counterparts, have typically relied mainly on debt (bank lending and bond issuing) to finance their capital-intensive investment projects (Syriopoulos, 2007, 2010). The financial leverage, or debt-to-equity ratio (or debt ratio), is a widely used financial debt burden metric that compares a company’s total debt (creditors’ financing) to shareholder equity (owners’ financing). Based on that, management and investors can evaluate debt contribution into invested capital, signal equity or asset adequacy to fulfill obligations to creditors (particularly under distress conditions), and assess the borrower’s credit risk profile.

\[
\text{Financial Leverage} = \frac{\text{Total Debt Liabilities}}{\text{Shareholder Equity}} \%
\]

A debt ratio of 0.5, for instance, means that there are half as many liabilities than there is equity. In other words, shareholder funding is twice as high as creditors funding, implying shareholders and creditors own 66.6% and 33.3% of company assets, respectively. A lower debt-to-equity ratio usually implies a more financially stable business. On the other hand, a high debt-to-equity ratio indicates an aggressively debt-financed business. Companies with a higher debt component must repay their credit obligations to lenders (debt servicing with regular interest payments); hence, debt financing can turn more expensive than equity financing. Highly leveraged companies, furthermore, may run at risk of being unable to adequately service a high debt exposure. As a result, prospective investors may assume a higher risk exposure, refraining from investing their funds on this company. At the same time, financial leverage should not decline excessively, as companies raising equity (by issuing stock) are exposed to high stock market volatility and ownership dilution implications.

Financial leverage contributes to a better understanding of the debt impact on the overall cruise company profitability and growth. It is important to investigate whether debt is high because it supports healthy business expansion and growth. This can eventually generate higher earnings than it would have without this debt financing. If leverage increases earnings by a greater amount than debt’s cost (interest payment), then the business and its shareholders should expect to benefit by value creation. On the contrary, high leverage associated with a weak financial performance may result to additional debt financing, as shareholders should be reluctant to contribute additional equity financing. In this case, share prices and corporate value may decline.

The interest coverage or times interest earned (TIE) ratio is another widely popular debt metric. It indicates how many times a company’s annual debt obligations (interest and debt service expenses) are covered by the net operating income (income before interest and tax). It is a long-term solvency ratio, expressed in times, to assess a company’s long-term solvency ability to pay its debt liabilities as they become due. TIE reveals also whether a prospective borrower can afford to take on any additional debt.

\[
\text{TIE} = \frac{\text{EBIT} - \text{Interest Expenses}}{\text{Interest Expenses}}
\]

Higher TIE ratios are considered more favorable than lower ones. A TIE at 4.0, for instance, indicates that operating income is four times higher than yearly interest expense liabilities; hence, the company can comfortably meet its debt obligations. On the contrary, a TIE less than 1.0 reflects a company that cannot meet its interest obligations on its debt. Companies with weak TIE ratios may face difficulties in raising funds for their operations. A better TIE ratio implies the company has enough cash after paying its debt to continue investing in the business. However, management should be careful to avoid a very high TIE ratio in case this is due to an unnecessarily conservative stance towards debt and/or absence of policies to take full advantages of debt facilities. Plausibly, a company’s capital structure mix has a critical direct impact on TIE ratio.

The leading cruise companies are seen to follow a careful approach towards debt financing and to maintain robust solvency positions over 2016–2019 (Table 16). Carnival exhibits a consistently attractive and stable debt-to-equity ratio, at 0.78 in 2019. This is obviously in line with the higher equity component apparent in its capital structure mix. The same holds for Carnival’s solvency position, displaying a comfortable operating profitability position to meet its interest payment obligations, with TIE ratio at 14.4 in 2019. Royal Caribbean and Norwegian are exposed to higher debt financing with a debt-to-equity ratio at 1.49 and
5.6. Earnings per share ratios

Earnings per share (eps) growth is an important financial indicator to measure managerial performance as it reflects a company’s growth prospect dynamics. If revenue shows how much money is flowing into the company, eps depicts how much of that money is flowing down to shareholders, as profits per every outstanding share of stock. In other words, eps shows the net earnings contribution generated per share to shareholders, not simply because of changes in earnings but also after accounting for the effects of issuance of new shares. This may be particularly important in case the growth comes because of acquisitions, a strategic path of growth preferred by several cruise companies over the last decades.

\[
Earnings\ Per\ Share\ (eps) = \frac{Net\ Income\ (Earnings\ After\ Tax)}{Number\ of\ Shares\ Outstanding}
\]

A comparison of eps growth for major cruise companies, over 2016–2019, reveals that Norwegian has attained the best performance (eps growth: 56%), and Royal Caribbean follows closely (eps growth: 50%), whereas Carnival is lagging behind at a distance (eps growth: 12%). Broadly, the leading cruise companies exhibit robust profitability and promising growth prospects, rendering cruise company shares a broadly challenging investment choice (Table 17).

6. Managerial implications and conclusion

6.1. A note on the COVID-19 impact

As this study was about to close, the World Health Organization (WHO) declared the COVID-19 outbreak as a global pandemic on March 11, 2020. Most countries around the world introduced restrictions to international travel and imposed bans on non-essential travel to contain the virus spread. To that end, recent UNWTO estimates indicate that the near-complete global lockdown has abruptly halted economic growth, exerting an unprecedented impact on most business sectors, and especially on the travel, tourism, and cruise industries. In fact, these dramatic circumstances resulted eventually to the cruise ship business shutting, inevitably, entirely down. Current forecasts estimate the total industry revenues for 2020 to be 35% lower than in 2019 (from $685 bln. in 2019 down to $447 bln. for 2020; UNWTO, 2020; Richter, 2020). This translates into a fall of 300 mln. tourists and $320 bln. losses in international tourism receipts, more than three times the losses during the 2008 global financial crisis.

With a focus on the global cruise business, the virus spread led many countries to close their borders, resulting to thousands of cruise passengers kept at sea and vessels seeking a port to dock. Canada, for instance, banned all ships with more than 500 people from docking in its ports (mid-March). Australia, New Zealand, and the US banned all ships arriving from foreign ports and directed all foreign flagged ships to leave the country. Cruise passengers and crew members were quarantined on board and cruise liners had to struggle hard to attain delayed repatriation (Giese, 2020; Ito, Hanaoka, & Kawasaki, 2020; Moussali & Tsekoura, 2020).

The following points highlight a set of critical implications for the cruise industry due to the coronavirus pandemic (Giese, 2020; Research and Markets, 2020):
- most operators have had to suspend all voyages and others have cancelled most cruises;
- cruise companies have experienced detrimental financial implications, in terms of revenue and profits and at the same time of upward additional costs (for instance, costs associated with substantial refunds for cancellations, costs associated with docking ships at ports where ships were quarantined, costs of maintenance even when not sailing for utilizing cruise ship engines to provide power to maintain onboard services, air conditioning, desalination and propulsion);
- the defensive reaction to coronavirus spread has exerted domino effects and provoked far reaching implications for many cruise-linked companies, and cruise destinations, as many small island nations and other local economies rely heavily on the jobs, income cashflows and value chain effects generated by cruise ships and related business; for instance, the cruise industry is estimated to contribute about $2.0 bln. to the Caribbean each year; this results in a 5.9% contribution to some nations’ entire GDP, as is the case with St. Kitts and Nevis (Ship Technology, 2020);
- it is highly doubtful whether the cruise companies will remain in a position to sustain their robust financial performance, as discussed in the previous sections; liquidity constraints are expected to eventually force cruise companies into additional debt (with global investors’ stock market sentiment remaining low); hence, further deterioration in their funding costs is anticipated (McKinsey, 2020a; Syriopoulos & Bakos, 2019);
- to elaborate the deterioration in financial terms and capital costs, Carnival Cruise Line, the world’s largest cruise operator, has lost its investment-grade status in June 2020, after S&P downgraded its rating at BB- (dropped from BBB-); S&P analysts perceive a ‘high level of uncertainty’ for the cruise operator’s return to normal services and its ultimate recovery path; furthermore, the firm’s credit measures are expected to ‘remain very weak through 2021 because of its plans for a gradual reintroduction of capacity’; the weak demand may eventually force Carnival to speed up removal of older ships and delay new ship deliveries (Nagarajan, 2020);
- in sum, the cruise industry faces a long struggle to ensure its survival as a widespread sentiment of concern, uncertainty, and instability has prevailed in the sector (McKinsey, 2020b);
- these adverse circumstances are vividly reflected on the abrupt share price and market value decline of leading listed cruise companies (Fig. 4).

The detrimental COVID-19 financial implications for cruise revenue, profits and the gloomy business prospects (risk of closure for several cruise companies) are underlined indeed by the highly volatile and dramatic collapse of share prices for the largest listed cruise companies.

### Table 16

Financial leverage – solvency ratios.

| Year | Carnival Corporation | Royal Caribbean Cruises | Norwegian Cruise Line Holdings |
|------|----------------------|-------------------------|-------------------------------|
|      | Debt-to- equity ratio | TIE ratio               | Debt-to- equity ratio | TIE ratio               | Debt-to- equity ratio | TIE ratio               |
| 2019 | 0.78                 | 14.4                    | 1.49                        | 5.3                    | 1.57                        | 4.3                    |
| 2018 | 0.73                 | 17.0                    | 1.50                        | 6.0                    | 1.56                        | 4.5                    |
| 2017 | 0.69                 | 14.1                    | 1.09                        | 6.3                    | 1.46                        | 3.7                    |
| 2016 | 0.72                 | 13.9                    | 1.45                        | 5.4                    | 1.87                        | 3.2                    |

Source: Authors’ calculation based on cruise company financial statements.

1.57, respectively in 2019. Whereas TIE ratios for Royal Caribbean and Norwegian are well above 1.0, at 5.3 and 4.3, respectively in 2019, these ratios still lag considerably behind Carnival. Broadly, the debt-to-equity and TIE ratios of leading cruise companies reflect balanced financing strategies with manageable debt exposures and adequate solvency positions. This comes in contrast to the typically heavily indebted commercial shipping companies (Syriopoulos, 2007, 2010).

### Table 17

Cruise company eps ratios.

| Year | Carnival Corporation | Royal Caribbean Cruises | Norwegian Cruise Line Holdings |
|------|----------------------|-------------------------|-------------------------------|
| 2019 | 4.19                 | 9.05                    | 4.31                          |
| 2018 | 4.51                 | 8.49                    | 4.24                          |
| 2017 | 3.59                 | 7.41                    | 3.32                          |
| 2016 | 3.75                 | 6.02                    | 2.76                          |

Source: Authors’ calculation based on cruise company financial statements.
(even by −130% on average in few days; Fig. 4). Indicatively, Carnival, Royal Caribbean and Norwegian cruise share prices declined sharply, at $7.97, $24.36, and $8.40, respectively, as the virus burst (April 2), recording losses by 70–80% from the beginning of the year (share prices at $51.31, $134.65, and $58.83, respectively, on January 2). Cruise share prices, nevertheless, rebounded impressively recently, returning up at $14.33, $50.83, and $14.22, respectively (July 28), partly mitigating the earlier heavy losses.

6.2. Key managerial implications and recommendations

This study has undertaken a concise, focused, and updated financial performance evaluation of the cruise sector, based on a sample of leading cruise players. Surprisingly, to the authors’ best knowledge, relevant studies remain extremely thin on this topic. This paper intends to partially fill this research gap and to offer a set of innovative contributions and managerial recommendations. Cruise companies have shown a consistently dynamic growth performance over recent years, rebounding impressively after the 2008 financial crisis impact. Cruise revenue and profitability are seen on a solid upward trend, diverging from commercial shipping companies. Critical financial performance indicators, such as a ROE, ROA and ROIC ratios, are consistently high, reflecting efficient managerial investing, operating, and financing decisions. The leading cruise companies have ambitious and highly capital-intensive investment plans under development, with active newbuilding orderbooks for vessels of larger carrying capacity, expensive technological advances, and modern facilities to cater for diversified cruise passenger needs, complying at the same time with strict environmental conditions. As major international banks are seen to exit ship lending, a critical question remains as of potential alternative capital sources to finance these investments, assuming that cruise vessel construction costs typically range from $0.5 bln. to over $1.5 bln. The capital structure of the leading cruise companies demonstrates a balanced and healthy debt-equity mix, with dept-to-equity ratios and solvency ratios performing impressively.

The global pandemic has hit the cruise sector severely with devastating effects to many corporate players as well as to cruise-related businesses even at risk of fatal default. These fragile financial circumstances generate a set of critical managerial implications, recommendations, and potential actions for the cruise companies under pressure to support their business overcome the virus crisis, including the following:

- robust cash liquidity positions supported by the earlier impressive profitability are to benefit the most prudent, well prepared, and forward-looking cruise companies;
- in fact, heavy pressure on cruise revenue and profits is already apparent, as cruise cancellations, customer refunds, additional operational costs and widespread uncertainty have been escalating;
- cruise managers must inevitably proceed towards an extensive reassessment of their investment, financing, and operating plans with a view to curtail the earlier ambitious projects for larger costly newbuild cruise vessels;
- as the pandemic implications affect nearly all business sectors and liquidity turns scarce and expensive, financing strategies have to be redesigned, conveniently tailored under these adverse circumstances;
- the relatively attractive cruise company WACCs, estimated earlier in this study, are hard to maintain further, as funding is turning more expensive, typically in favor of the largest and best reputed players;
- the optimal capital structure mix remains of critical concern, as different capital sources bear different funding costs, diversified among competing cruise companies;
- as a result, the earlier robust and promising financial performance of the cruise companies, as depicted by the ROE, ROA, ROIC, WACC ratios, leverage exposure, solvency, earning per share and stock market performance, is highly unlikely to remain unaffected under the prevailing gloomy market circumstances;
- a vital short-term goal for cruise business is undoubtedly survival; this comes at a severe cost, as government intervention and extensive lending is seen to become imperative to keep cruise companies afloat;
- long term objectives of cruise companies should include the restoration of the disastrous reputational damage that has been caused by the virus effects on the broader cruise business.

Having said that, cruise business has in fact faced hard times and global crises in the past but managed to recover convincingly, demonstrating tough resilience, adaptability, and flexibility. This virus crisis, however, appears to be quite different. The critical question remains as to when the cruise industry is going to return into business operations again (Calder, 2020). Unfortunately, there is no clear answer to that yet, as there are many uncertainties to make rational forecasts for the entire 2020. Fears are that this crisis will affect cruise revenues for a long time, particularly in the Asian region, as this is a dynamic market of growing importance for the cruise industry in recent years (Moussali & Tsekoura, 2020; OMR Global, 2020). Obviously, these adverse implications are anticipated to have a tremendous financial impact on all cruise players, inducing downward adjustments in investment, financing, and profitability projections. However, it is for small cruise players that the implications are expected to be even more painful, forcing inevitably several of them to exit the market or to be taken over.

According to a recent KPMG report (Giese, 2020), a set of direct responsive actions is under play by the cruise industry to keep future business intact, including bonus credit offers (110–125% of booking amount) instead of cash refunds, as an option to cruise passengers whose trips have been cancelled due to the pandemic, providing flexibility for future bookings. Based on recent UBS bank estimates (Panetta, 2020), around 76% of the passengers whose cruises were cancelled due to
pandemic have opted for a credit for future trips instead of a refund. Furthermore, based on a recent CLIA survey, 82% of cruisers indicate their interest in booking a cruise for their next vacation. Despite multiple outbreaks of COVID-19 and uncertainty over when sailing will re-continue, several reports record increased bookings for 2021 in comparison to 2019. This reflects a persisting interest of cruise passengers in continuing pursuing cruise travel and tourism services in the future, though it may be harder to convince first-time cruisers (Giese, 2020; Panetta, 2020). At the same time, as most countries continue to fight against COVID-19 effects, the virus impact is anticipated to challenge the business model of several industries (McKinsey, 2020c). For the time being, there does not seem to be a clear timeline for the restart of cruise operations. To gain customer support after travel restrictions will have been lifted, companies consider promotion campaigns at reduced cruise package prices for 2021, to compete and revitalize cruise demand. In any case, the assessment of the post-COVID-19 impact on the global cruise business can be more accurately evaluated after the pandemic is over. This could well lead to a challenging follow-up empirical study.

**Appendix A**

**Table 7A**

| Cruise line | Ship | Passenger capacity | Tonnage (GT thous.) | Ship value (USD mln.) | Yard |
|-------------|------|-------------------|--------------------|-----------------------|------|
| Cruise ships ordered for 2019 | | | | | |
| TUI | Mein Schiff 2 | 2900 | 110 | 625 | Meyer Turku |
| Viking Ocean | Viking Jupiter | 930 | 47 | 400 | Fincantieri |
| MSC Cruises | Bellissima | 4500 | 167.6 | 900 | Chantiers |
| Costa Cruises | Costa Venezia | 4232 | 135.5 | 780 | Fincantieri |
| Mystic Cruises | World Explorer | 200 | 9.3 | 85 | West Sea |
| Colar Expeditions | Adventurer | 120 | 5.5 | 75 | VARD |
| Hapag-Lloyd | Hms. Nature | 230 | 16.1 | 155 | VARD |
| Ponant | Le Bougainville | 180 | 10 | 110 | VARD |
| Royal Caribbean | Spectrum | 4200 | 167 | 950 | Meyer |
| Hurtigruten | Roald Amundsen | 530 | 20 | 220 | Kleven |
| Oceanwide | Hondius | 174 | 6.3 | 85 | Brodosplit |
| Celebrity | Flora | 100 | 5.7 | 75 | De Hoop |
| Saga Cruises | S/Discovery | 1000 | 58.3 | 350 | Meyer |
| Ponant | Le Dumont-d’Urville | 180 | 10 | 110 | VARD |
| S.Stone/Aurora | Greg Mortimer | 160 | 8 | 65 | CMIH |
| Scenic | Eclipse | 228 | 16.5 | 185 | Uljanik Group |
| Antarctica21 | M/Explorer | 100 | 4.9 | 50 | ASNAV |
| Hapag-Lloyd | H/Inspiration | 230 | 16.1 | 155 | VARD |
| Costa Cruises | Costa Smeralda | 5224 | 183.9 | 950 | Meyer Turku |
| Princess | Sky Princess | 3660 | 141 | 760 | Fincantieri |
| Norwegian | Encore | 4200 | 164.6 | 1100 | Meyer |
| MSC Cruises | Grandiosa | 4888 | 177.1 | 900 | Chantiers |
| Carnival | Panorama | 4000 | 135.5 | 780 | Fincantieri |
| Star Clippers | Flying Clipper | 300 | 8.8 | 100 | Brodosplit |
| Cruise ships ordered for 2020 | | | | | |
| Regent | Splendor | 750 | 54 | 478 | Fincantieri |
| Crystal | Endeavor | 200 | 19.8 | 195 | MV Werften |
| Virgin | Scarlet Lady | 2770 | 110 | 710 | Fincantieri |
| Silversea | Silver Origin | 100 | 5.7 | 75 | De Hoop |
| Hurtigruten | Fridtjof Nansen | 530 | 20 | 220 | Kleven |
| Celebrity | Apex | 2900 | 129.5 | 900 | Chantiers |
| Ponant | Le Bellet | 180 | 10 | 110 | VARD |
| Silversea | Silver Moon | 596 | 40.7 | 370 | Fincantieri |
| Lindblad | NG Endurance | 126 | 12 | 135 | Ulstein |
| P&O Cruises | Iona | 5200 | 183.9 | 950 | Meyer |
| Mystic Cruises | World Voyager | 200 | 9.3 | 80 | West Sea |
| Ritz-Carlton | unnamed | 298 | 25 | 225 | Barreras |
| Princess | Enchanted Princess | 3660 | 14 | 760 | Fincantieri |
| Ponant | Le Jacques Cartier | 180 | 10 | 110 | VARD |
| Carnival | Mardi Gras | 5200 | 183.9 | 950 | Meyer Turku |
| Saga | S/Adventure | 1000 | 58.3 | 350 | Meyer |
| Seascout | Spirit | 136 | 6 | 100 | Metalships |
| SunStone | Ocean Victory | 186 | 8 | 65 | CMIH |
| MSC Cruises | Virtuosa | 4888 | 177.1 | 900 | Chantiers |
| Costa Cruises | Firenze | 4232 | 135.5 | 780 | Fincantieri |
| Royal Caribbean | Odyssey | 4200 | 167 | 950 | Meyer |
| Colar Expeditions | Geographer | 120 | 5.5 | 75 | VARD |
| Quark | Ultramarine | 200 | 13 | 150 | Brodosplit |
| Scenic | Eclipse II | 228 | 16.5 | 185 | Uljanik Group |
| Cruise ships ordered for 2021 | | | | | |
| Ritz-Carlton | unnamed | 298 | 25 | 225 | Barreras |
| Dream Cruises | Global Dream | 5000 | 208 | 1800 | MV Werften |
| Viking Ocean | Viking Venus | 930 | 47 | 400 | Fincantieri |
| Sunstone | Ocean Explorer | 140 | 8 | 65 | CMIH |
| Holland America | Ryndam | 2660 | 99 | 520 | Fincantieri |
| Ponant | Commandant Charcot | 270 | 30 | 324 | VARD |
| Royal Caribbean | Wonder | 5448 | 227.6 | 1300 | Chantiers |
| AIDA Cruises | Unnamed | 5400 | 183.9 | 950 | Meyer |

(continued on next page)
### Table 7A (continued)

| Cruise line | Ship       | Passenger capacity | Tonnage GT thous. | Ship value USD mln. | Yard        |
|-------------|------------|--------------------|-------------------|---------------------|-------------|
| Seabourn    | Venture    | 264                | 23                | 225                 | Mariotti    |
| MSC Cruises | Seahore   | 4560              | 169.4             | 1100                | Fincantieri |
| Viking Ocean | Unnamed  | TBA                | TBA               | TBA                 | VARD        |
| Hapag-Lloyd | H/Spirit   | 230               | 16.1              | 155                 | VARD        |
| Hurtigruten | Unnamed   | 530               | 20                | 220                 | Kleven      |
| Mystic Cruises | World Navigator | 200        | 9.3              | 80                  | West Sea    |
| Virgin      | Unnamed    | 2770              | 110               | 710                 | Fincantieri |
| Vodohod     | Unnamed    | 148               | 10                | 150                 | Helsinki    |
| SealDream   | Innovation | 220               | 15.6              | TBA                 | Damen       |
| SunStone    | Unnamed    | 132               | 8                 | 65                  | CMIH        |
| Oceanwide   | Janssonius | 174               | 6.3               | 85                  | Brodosplit  |
| Princess    | Discovery Princess | 3660     | 141              | 760                 | Fincantieri |
| Celebrity   | Unnamed    | 2900              | 129.5             | 900                 | Chantiers   |
| Lindblad    | NG Resolnss | 126            | 12               | 150                 | Ulstein     |
| Silversea   | Silver Dawn | 596            | 40.7              | 380                 | Fincantieri |
| Disney      | Disney Wish | 2500           | 140              | 900                 | Meyer       |
| Costa Cruises | Toscana | 5224             | 183.9             | 950                 | Meyer Turku |
| Crystal     | Unnamed    | 200               | 19.8              | 195                 | MV Werfen   |
| Aramui      | Aramui 6   | 280               | 14                | 150                 | Huanghai    |

**Cruise ships ordered for 2022**

| Vodohod     | Unnamed    | 148               | 10                | 150                 | Helsinki    |
| Crystal     | Unnamed    | 298               | 25                | 225                 | Barreras     |
| Mystic Cruises | Unnamed  | 800               | 67                | 900                 | MV Werfen   |
| Dream Cruises | Unnamed  | 200               | 9.3               | 80                  | West Sea     |
| SunStone    | Ocean Odyssey | 5000          | 208              | 1800                | MV Werfen   |
| Seabourn    | Unnamed    | 264               | 23                | 225                 | Mariotti    |
| Royal Caribbean | Unnamed | 5000             | 200               | 1100                | Meyer Turku |
| Viking Ocean | Unnamed   | TBA               | TBA               | TBA                 | VARD        |
| SunStone    | Ocean Albatross | 186           | 8                | 65                  | CMIH        |
| Celebrity   | Unnamed    | 2900              | 129.5             | 900                 | Chantiers   |
| Virgin      | Unnamed    | 2770              | 110               | 710                 | Fincantieri |
| Mystic Cruises | Unnamed  | 200               | 9.3               | 80                  | West Sea     |
| MSC Cruises | Unnamed   | 5400              | 200               | 1200                | Chantiers   |
| Carnival    | Unnamed    | 5200              | 183.9             | 950                 | Meyer Turku |
| Norwegian   | Unnamed    | 3300              | 140               | 850                 | Fincantieri |
| Viking Ocean | Unnamed   | 930               | 47                | 400                 | Fincantieri |
| Disney      | Unnamed    | 2500              | 140               | 900                 | Meyer       |
| Cunard Line | Unnamed    | 3000              | 113               | 600                 | Fincantieri |
| Crystal     | Unnamed    | 200               | 19.8              | 195                 | MV Werfen   |
| P&O Cruises | Unnamed    | 5200              | 183.9             | 950                 | Meyer       |
| Silversea   | Unnamed    | TBA               | TBA               | TBA                 | Meyer Werft |
| Oceania     | Unnamed    | 1200              | 67                | 660                 | Fincantieri |

**Cruise ships ordered for 2023**

| TUI Cruises | Mein Schiff 7 | 2900 | 110 | 652 | Meyer Turku |
| AIDA Cruises | Unnamed    | 5400 | 183.9 | 950 | Meyer       |
| MSC Cruises | Unnamed    | 1000 | 64   | 600 | Fincantieri |
| Royal Caribbean | Unnamed | 5714 | 231  | 1300 | Chantiers   |
| Princess    | Unnamed    | 4300 | 175  | 1000 | Fincantieri |
| Virgin      | Unnamed    | 2770 | 110  | 795 | Fincantieri |
| Regent      | Unnamed    | 750  | 54   | 545 | Fincantieri |
| Disney      | Unnamed    | 2500 | 140  | 900 | Meyer       |
| Norwegian   | Unnamed    | 3300 | 140  | 850 | Fincantieri |
| Carnival China | Unnamed | 5000 | 135  | 750 | CSSC        |
| MSC Cruises | Unnamed    | 4560 | 169.4 | 1100 | Fincantieri |
| Viking Ocean | Unnamed   | 930   | 47   | 400 | Fincantieri |
| MSC Cruises | Unnamed   | 4888 | 177.1 | 1000 | Chantiers   |
| Silversea   | Unnamed    | TBA   | TBA  | TBA | Meyer Werft |
| Mystic Cruises | Unnamed | 200  | 9.3  | 80  | West Sea    |

**Cruise ships ordered for 2024**

| Royal Caribbean | Unnamed | 5000 | 200 | 1100 | Meyer Turku |
| MSC Cruises    | Unnamed | 1000 | 64  | 600  | Fincantieri |
| Celebrity     | Unnamed | 2900 | 129.5 | 900  | Chantiers   |
| MSC Cruises   | Unnamed | 5400 | 200  | 1200 | Chantiers   |
| Norwegian     | Unnamed | 3300 | 140  | 850  | Fincantieri |
| Carnival China | Unnamed | 5000 | 135  | 750  | CSSC        |
| Viking Ocean  | Unnamed | 930  | 47   | 400  | Fincantieri |
| TUI Cruises   | Unnamed | 4000 | 161  | 850  | Fincantieri |

**Cruise ships ordered for 2025**

| MSC Cruises | Unnamed | 1000 | 64  | 600  | Fincantieri |
| Princess    | Unnamed | 4300 | 175  | 1000 | Fincantieri |
| Royal Caribbean | Unnamed | 5000 | 200  | 1100 | Meyer Turku |
| MSC Cruises | Unnamed | 5400 | 200  | 1200 | Chantiers   |
| Norwegian   | Unnamed | 3300 | 140  | 850  | Fincantieri |

(continued on next page)
Table 7A (continued)

| Cruise line | Ship Name | Passenger capacity | Tonnage GT thous. | Ship value USD mln. | Yard |
|-------------|-----------|--------------------|------------------|-------------------|------|
| Viking Ocean | Unnamed | 930 | 47 | 400 | Fincantieri |
| Viking Ocean | Unnamed | 930 | 47 | 400 | Fincantieri |
| Oceania | Unnamed | 1200 | 67 | 660 | Fincantieri |

Source: Authors’ compilation; www.cruiseindustrynews.com (Cruiseindustrynews, 2020). A summary version is presented in Table 7.

Author’s statement

The authors confirm that their paper entitled ‘The Global Cruise Industry: Financial Performance Evaluation’ (RTMB-D-20-00143R1_R2) is the output of original research and it has not been published elsewhere, nor is it currently under consideration for publication elsewhere.

To the authors’ view this manuscript is appropriate for publication in the Research in Transportation Business and Management – Special Issue on Cruise Shipping, Ports and Destinations (Cartagena 2020 Conference) because it covers an unresearched topic and contributes innovative empirical findings and useful policy recommendations.

Declaration of Competing Interest

The authors have no conflicts of interest to disclose.

References

Baker, M., & Wurgler, J. (2002). Market timing and capital structure. Journal of Finance, 57(1), 1–32.
Byung-Wook, W. (2005). A dynamic game model of strategic capacity investment in the cruise line industry. Tourism Management, 26(2), 203–217.
Charlier, J. (2004). The cruise shipping industry in the corporate mergers and overpanamana era. A comparison with the container shipping industry. Revue Belge de Geographic, (4), 433–460.
Chen, J., Neuts, B., Nijkamp, P., & Liu, J. (2016). Demand determinants of cruise tourists – findings and useful policy recommendations.
Daly, J., & Fernandez-Stark, K. (2017). CLIA. (2019). Cruiseindustrynews. (2020). Cruise Ship Order Book 2019.
Koller, T., Goedhart, M., & Wessels, D. (2020).
Kisgen, D. (2006). Credit ratings and capital structure.
Kiziellewicz, J. (2017). Methods of raising funds for purchasing of new cruise ships by international corporations.
Klein, R. A. (2011). Responsible cruise tourism: Issues of cruise tourism and sustainability. Journal of Hospitality and Tourism Management, 18(1), 107–116.
Koller, T., Goedhart, M., & Wessels, D. (2020). Valuation: Measuring and managing the value of companies (7th ed.). McKinsey & Company Inc.
Lester, J., & Weeden, C. (2004). Stakeholders, the natural environment and the future of cruise tourism. International Journal of Tourism Research, 6, 38–50.
McKinsey. (2020a). Managing and monitoring credit risk after the COVID-19 pandemic, Article, posted on July 31. https://www.mckinsey.com/business-functions/retail-and-consumer gestãoinsider.com/cruise-ship-bookings-are-increasing-for-2021-despite-coronavirus-
McKinsey. (2020b). Consumer sentiment and behavior continue to reflect the uncertainty of the COVID-19 crisis, article, posted on July 8. https://www.mckinsey.co m/strategy/business-functions/marketing-and-sales/our-insights/a-global-view-of-how-con-
McKinsey. (2020c). Bankruptcy models after COVID-19: Taking model-risk management to the next level, article, May 5. https://www.mckinsey. com/business-functions/risk/our-insights/bankruptcy-models-after-covid-19-taking-model-risk-management-to-the-next-level?cid=other-eml-alt-mkp-mck&hdpid=278468611e2446262c26ca272f4c4fbh&hctky=2577872&hdpid=cbbb6006-5653-4cb5-8955-1061d384f119.
Modigliani, F., & Miller, M. (1958). The cost of capital, corporation finance, and the theory of investment. American Economic Review, 48, 161–197.
Modigliani, F., & Miller, M. (1960). Corporate income taxes and the cost of capital: A correction. American Economic Review, 53, 433–443.
Mouselli, M. A., & Tsokou, I. (2020). COVID-19 marine: Cruise industry impact from coronavirus, Clyde and co report, posted on May 10. https://www.clydeo.com/ insight/article/coronavirus-and-the-impact-on-the-cruise-industry.
Myers, S. (2001). Capital structure. Journal of Economic Perspectives, 15(2), 81–102.
Myers, S., & Majluf, N. (1984). Corporate financing and investment decisions when firms have information those investors do not have. Journal of Financial Economics, 13, 187–221.
Nagarajan, S. (2020). Carnival has its credit rating slashed as its return to the seas is likely crippled by an uptick in COVID-19 cases, business insider article, posted on June 24. https://markets.businessinsider.com/news/stocks/carnival-losses-invest-grade-rating-after-uptick-covid-19-cases-2020-1029369119, OECD. (2007). Report on ship financing, organisation for economic cooperation and development. Paris: Working Party on Shipbuilding.
OMR Global. (2020). Impact of COVID-19 on global cruise industry, and forecasts: 2019–2025, report. https://www.omrglobal.com/industry-reports/impact-of-covid-19-on-global-cruise-industry (April).
Other authors, O. (2020). Cruise ship bookings for 2021 are already on the rise despite multiple COVID-19 outbreaks, business insider article, posted on April 12. https://www.businessinsider.com/cruise-ship-bookings-are-increasing-for-2021-despite-coronavirus-
Other authors, O. (2020). Research and Markets. (2020). Impact of COVID-19 on the global cruise industry, market report, June. https://www.researchandmarkets.com/reports/5017152/impa ct-of-covid-19-on-the-global-cruise-industry?ehid0=5010882.
Richter, H. (2020). Cruising post-COVID-19: Lessons and challenges for the cruise ship industry, report, Sustainalytics, a Morningstar Company, posted on June 24. https://www.sustainalytics.com/esg-blog/cruising-post-covid-19-lessons-and-challenges-for-the-cruise-ship-industry/.
Satta, O., Parola, F., Penco, L., Arcico, L., & Musso, E. (2016). Motivation-based segmentation in the cruise industry: An exploratory study. International Journal of Transport Economics, 43(1–2), 155–184.
Ship Technology. (2020). The cruise industry will struggle to cope with the effects of Covid-19, report, posted on March 18. https://www.ship-technology.com/co mm/ cruis-industry-effects-covid-19/.
Syriopoulos, T. (2007). Financing Greek shipping: Modern instruments, methods and markets (Ch. 6). In A. Pallis (Ed.), Maritime transport: The Greek Paradigm, research in transportation economics, 21 (pp. 171–219).
Syriopoulos, T. (2010). Shipping finance and international capital markets (Ch. 28). In C. T. Grammenos (Ed.), The handbook of maritime economics and business (2nd ed., pp. 811–849). Informa Law: Routledge.

Syriopoulos, T., & Bakos, G. (2019). Investor herding behaviour in globally listed shipping stock returns. Maritime Policy & Management, 46(5), 545–564.

Teye, V., & Leclerc, D. (2003). The white Caucasian and ethnic minority cruise markets: Some motivational perspectives. Journal of Vacation Marketing, 9(3), 227–242.

UNWTO. (2020). Impact of COVID-19 on global tourism made clear as UNWTO counts the cost of standstill, UNWTO Report, posted on July 28. https://www.unwto.org/news/impact-of-covid-19-on-global-tourism-made-clear-as-unwto-counts-the-cost-of-standstill.

Veronneau, S., & Roy, J. (2009). Global service supply chains: An empirical study of current practices and challenges of a cruise line corporation. Tourism Management, 30(1), 128–139.

Veronneau, S., & Roy, J. (2011). Cruise Lines’ purchasing and logistics management (Ch. 7). In M. Vogel, A. Papathanassi, & B. Wolber (Eds.), The business and Management of Ocean Cruises (pp. 90–100). CAB International.

Veronneau, S., & Roy, J. (2012). Cruise lines and passengers (Ch. 8). In T. K. Wayne (Ed.), The Blackwell companion to maritime economics (pp. 158–160). Blackwell.

Veronneau, S., Roy, J., & Beaulieu, M. (2015). Cruise ship suppliers: A field study of the supplier relationship characteristics in a service supply chain. Tourism Management Perspectives, 16, 76–84.

WAC. (2019). Cruise ships on order 2017–2025 (10th revision), Anem communication. www.anem.at.

Wie, B. (2005). A dynamic game model of strategic capacity investment in the cruise line industry. Tourism Management, 26(2), 203–217.

Wondirad, A. (2019). Retracing the past, comprehending the present and contemplating the future of cruise tourism through a meta-analysis of journal publications. Marine Policy, 108. https://doi.org/10.1016/j.marpol.2019.103618.

Wood, R. (2000). Caribbean cruise tourism: Globalization at sea. Annals of Tourism Research, 27(2), 345–370.

Wood, R. (2004). Cruise ships: Deterritorialized destinations (Ch. 10). In L. Lumsdom, & S. Page (Eds.), Tourism and transport: Issues and agenda for the new millennium (pp. 133–146). Elsevier.