



2023 OCEAN CARRIERS

New Venture Financial Evaluation



Imperial College Business School



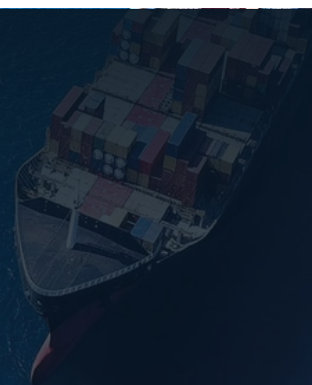
TABLE OF CONTENTS

1. Background	1
<hr/>	
2. Methods & Practice	2
<hr/>	
3. Assumptions & Calculations	2
<hr/>	
4. Main Figures	3
<hr/>	
5. 25 Years Cash Flow	4
<hr/>	
6. 15 Years vs 25 Years	5
<hr/>	
7. Hong Kong Scenario	6
<hr/>	
8. Scenario Analysis	7-8
<hr/>	
8.1 Inflation (INF)	
8.2 Spot Rate Inclusion (SPI)	
8.3 Charter Growth Rate (CGR)	
8.4 Realistic Optimistic Scenario	
<hr/>	
9. Final Remarks	9



BACKGROUND

In January 2001, Mary Linn, Vice President of Finance at Ocean Carriers, was faced with the decision to commission a new capesize carrier for a potential lease agreement starting in early 2003. Ocean Carriers, a company specialising in operating large dry bulk carriers, had a client interested in a three-year lease, but lacked a suitable ship in their fleet. This strategic decision involved analysing market demand, hire rates, operational costs, and economic trends to assess the feasibility and profitability of the new vessel investment. The case presents a complex scenario where Linn must weigh the potential risks and benefits to make an informed decision for the company's future.





METHODS & PRACTICE

For accounting entry purposes, the January 2001 and December 2001 cash flows are assumed to represent 2 separate unique periods or “years”. For this reason, the first 10% payment for the ship is accounted for in January 2001, with the next 10% payment expected in January 2002 as “*due in a year’s time*” in the case study and thus included in the December 2002 cashflow, resulting in the empty period in December 2001. This is an important methodological assumption and affects our calculations.

ASSUMPTIONS & CALCULATIONS

In our base case analysis using the provided spreadsheet data, we assume a 3% inflation rate throughout the period. Operating costs are expected to rise by 4% annually, reflecting a 1% increase over the inflation rate. Net working capital changes are based on the incremental growth of the initial \$500,000 investment, adjusted for 3% inflation. For depreciation, we use straight-line depreciation over 15 or 25 years without subtracting the salvage value, treating any sale of the ship for scrap as a capital gain, which will be taxed in the final year at 35%. Later, we will examine the impact of varying these assumptions on the capesize investment's viability.



MAIN FIGURES

15 Years (Tax)

NPV: \$ (4.137)

IRR: 6,46%

BCR: 0,85

15 Years (No Tax)

NPV: \$ 1.210

IRR: 9,73%

BCR: 1.04

25 Years (Tax)

NPV: \$ (4.608)

IRR: 6.68%

BCR: 0.84

25 Years (No Tax)

NPV: \$ 3.173

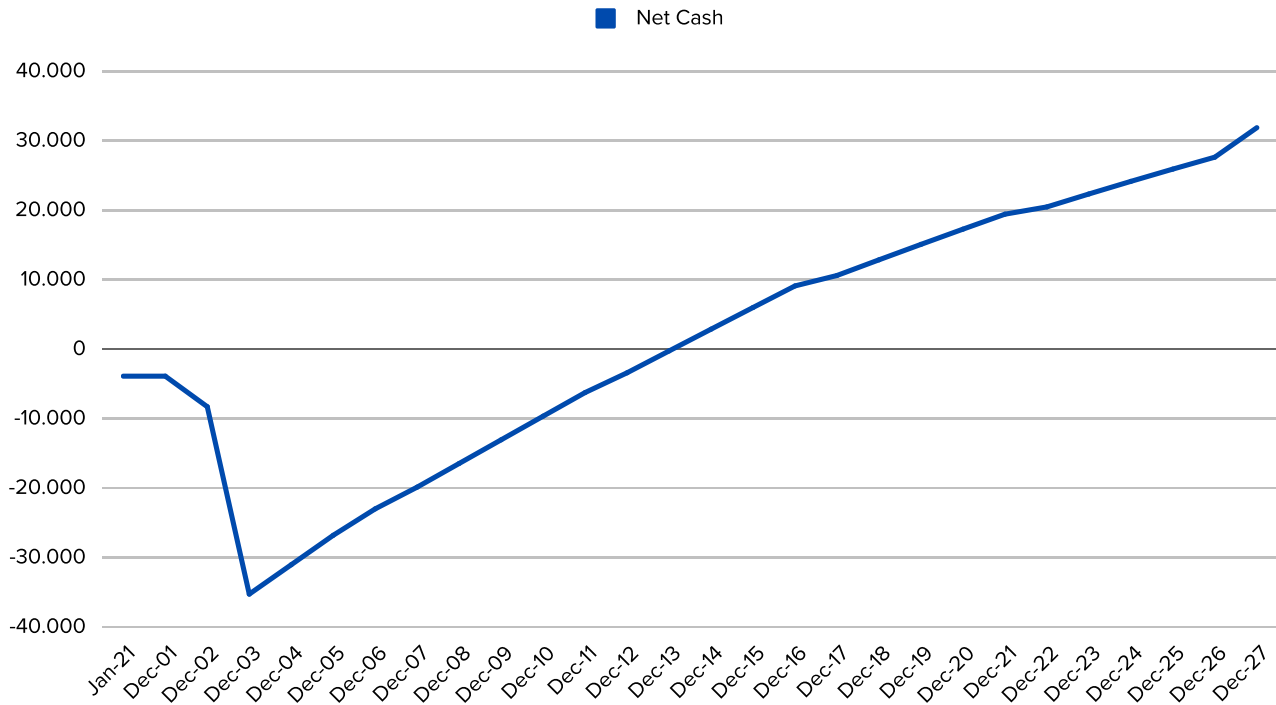
IRR: 10.64%

BCR: 1.12



Question 1. *SEE ATTACHED SPREADSHEET*

25 YEAR CASH FLOW



Graph showing Net Free Cash Flow and Payback Period

The 25-year cash flow analysis, accounting for a 35% tax rate, reveals a **negative NPV** of \$(4,608.79), an **IRR** of 6.68%, a **BCR** of 0.84, and a payback period of **13.07 years**. These metrics, notably the negative NPV in the millions, a BCR below 1, and an IRR below the discount rate, collectively suggest the investment is **unadvisable** under current conditions.

Operating Margin	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	0.78	0.75	0.72	0.71	0.70	0.69	0.68	0.65	0.63	0.62	0.61	0.60
	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	
	0.48	0.46	0.44	0.43	0.41	0.35	0.33	0.30	0.28	0.33	0.20	

A key factor contributing to this outcome is the exponential increase in operating costs, which end up almost doubling in the last year. This leads to a significant decline in free cash flow (**FCF**) over the 25-year span, as demonstrated in the table above showing the eroding operating margins.



Question 2

15 YEARS & 25 YEARS



In the U.S. under a **35% tax regime**, the capesize project's negative NPV for both 15 and 25-year periods indicates it should be abandoned, as it fails to meet the basic investment criterion of a positive NPV. Additionally, a low IRR for both periods, falling below the 9% discount rate, suggests the project is unable to meet the required cost of capital, rendering it unprofitable in a taxed environment. The BCR below 1 further implies the project's inability to generate shareholder value, as its costs exceed potential benefits.

Financially, the most viable option is to scrap the carrier at 15 years for \$5 million. This decision is based on the smaller NPV loss at 15 years (-\$4,137,810) compared to 25 years (-\$4,608,790), even with a \$3.5 million salvage value. Thus, **scrapping the carrier after 15 years** aligns with the company's policy to minimize losses, as the 15-year NPV is more favorable than at 25 years.



Question 3

HONG KONG SCENARIO



Ms. Linn should **avoid purchasing** the capesize under a 35% U.S. tax regime, as it yields a negative NPV and low IRR over both 15 and 25 years indicating that the investment would not be profitable.

In Hong Kong's **tax-free environment**, the project becomes viable over both 15 years and over 25 years, showing positive NPVs with IRR exceeding the 9% discount rate. According to the NPV and IRR rules, and a BCR above 1, the project is theoretically sound for both 15 and 25-year operations in a tax-free zone. There is a clear incentive to operate the carrier for 25 years under these circumstances, as the NPV of the project for 25 years is over 2.5x the NPV of the project over 15 years. Moreover, the 25 year case has a better IRR and BCR than the 15 year case, clearly indicating it is the more lucrative investment.



SCENARIO ANALYSIS

1. Inflation (INF)

Inflation significantly impacts cash flow by affecting operating costs ($OC = 4000 \times (\text{inflation} \pm 1\%)$) and changes in Net Working Capital, with a greater effect over a 25-year period compared to 15 years due to its exponential nature.

	4%	3,5%	3%	2,5%	2%	1,5%	1%
15Y T	-4684,0	-4405,4	-4137,8	-3880,7	-3633,8	-3396,5	-3168,4
15Y NT	427,3	826,7	1210,8	1580,2	1935,6	2277,5	2606,4
25Y T	-5777,7	-5173,5	-4608,8	-4080,6	-3586,2	-3123,4	-2689,6
25Y NT	1450,8	2340,9	3173,9	3954,0	4684,9	5370,1	6012,8

2. Spot Rate Inclusion (SPI)

The case notes that OceanCarrier occasionally engaged in the spot charter market, characterised by significant fluctuations, including notably higher peaks and lower troughs. Based on **EXHIBIT 5** data, it's feasible to assume incorporating spot rates every five years at a 25% average premium. When including the SRI however, we see only small gains with both the 15 and 25 Year No Tax.

3. Charter Growth Rate (CGR)

Referring to **EXHIBIT 6**, the annual growth rate of charter directly influences revenue by determining the daily charter rate, by default at 1.2% since 2006. This rate is based on the growth in iron shipments, which was higher (2.2% and 2%) from 2003 to 2006, suggesting that the 1.2% estimate might be conservative.

	1,6%	1,5%	1,4%	1,3%	1,2%	1,1%	1,0%
15Y T	-3653,2	-3761,9	-3869,9	-3977,2	-4137,8	-4189,6	-4294,8
15Y NT	1921,2	1761,9	1603,6	1446,4	1210,8	1134,9	980,6
25Y T	-3740,8	-3937,1	-4131,3	-4323,3	-4608,8	-4701,2	-4887,0
25Y NT	4483,9	4187,7	3894,7	3604,9	3173,9	3034,5	2753,8



SCENARIO ANALYSIS

4. Realistic Optimistic Scenario

In our optimistic scenario, we use the most favourable yet realistic values: **SRI** active, **2%** inflation, and **1.5%** CGR. This results in positive NPVs of \$2.585,48 and \$5.812,85 for the 15-year and 25-year tax-free periods, respectively, with a payback period of 9.83 years. Given potential increases in iron shipments, a CGR of 1.6% or 1.7% is plausible, enhancing realism. This optimistic outlook yields an increase NPV in the 15-year timeframe and a payback period under 10 years, indicating a more secure investment being subject to reduced risk of possible fluctuation increasing with time.

<div><div>15 YEARS</div><div>No Tax</div><div><div>\$</div><div>NPV</div><div>2.585,48</div></div><div><div>IRR</div><div>BCR</div><div>10,52%</div><div>1,09</div></div></div>	<div><div>25 YEARS</div><div>No Tax</div><div><div>\$</div><div>NPV</div><div>5.812,85</div></div><div><div>IRR</div><div>BCR</div><div>11,75%</div><div>1,21</div></div></div>
<div><div>15 YEARS</div><div>Tax</div><div><div>\$</div><div>NPV:</div><div>(3.188,04)</div></div><div><div>IRR</div><div>BCR</div><div>7,10%</div><div>0,89</div></div></div>	<div><div>25 YEARS</div><div>Tax</div><div><div>\$</div><div>NPV:</div><div>(2.838,46)</div></div><div><div>IRR</div><div>BCR</div><div>7,67%</div><div>0,90</div></div></div>



CLOSING REMARKS

Our analysis identifies taxation as key obstacle to profitability. Under a 35% tax regime, profit is unattainable, even when strongly adjusting for inflation and charter growth. In contrast, tax-exempt conditions show viable returns, though modest relative to initial investment. However, small positive adjustments in key variables can significantly enhance outcomes, given their exponential impact.

We suggest a scenario with manageable inflation, spot rate inclusion, and improved charter growth, indicating substantial profit potential under slightly better market conditions. However, the investment's success is highly sensitive to small macroeconomic changes, such as a 1-2% inflation miscalculation, which could negate profitability and its long time frame make it susceptible to fluctuations.

It is crucial to acknowledge that results are substantially influenced by the underlying assumptions. The selection of these assumptions plays a pivotal role in shaping the results, as different assumptions will lead to varying conclusions.