

Free Webinar



Ship Finance Analysis and Modelling

Monday, March 16th 2020
2:00 PM (CET)

KEY QUESTIONS

- What financing do I want?
- What financing can I get?

=> Analyse and compare alternatives.

- What alternative do I choose?
- What do I need to prepare to execute?

SHIP FINANCING – A CAPITAL MARKETS APPROACH

- A ship have an asset price and a cash yield.
- Yield curve for charters reflects forward expectations (rising market, falling market). Charters have different durations and rates depends on duration (period).
- Ships are traded in liquid, transparent, well reported global markets 24 hours a day.
- Credit risk (counterparty risk on charters).
- Age of ship determines remaining economic life (characteristic similar to duration for bonds and options).
- Market efficiency in shipping markets?
- Stochastic mean reverting returns?
- Arbitrage opportunities?

FINANCIAL ANALYSIS OF SHIP INVESTMENTS

PURPOSE:

To maximize return on equity invested by evaluating all relevant factors in order to structure and execute the best possible deal.

- Net Present Value (NPV) is calculated by discounting the cash flow using a discount rate reflecting required return (cost of debt and equity)
- Internal Rate of Return (IRR) is the discount rate that gives $NPV = 0$
- We also take into account volatility of ship prices and charter rates and the value of flexibility (the value of optionality).

KEY FACTORS

- **Ship purchase price:**
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 - Where are we in the cycle ? “When is it a good time to buy?”
 - Financing, availability and mix of debt and equity
- **Cash flow from earnings:**
 - Employment: Term of charter = Market Risk and to whom = Credit Risk
 - Opex
- **Ship sale price (residual value):**
 - Timing of exit – remaining economic life (value of optionality)
- **Required Return on Equity**
- **Debt Capacity** (% of debt, cost of debt, repayment schedule)

Select Project Type:

SUMMARY:

Project Type: Newbuilding
Ship Name: Example Ship
Ship Type: Dry Bulk Supramax
Ship Size: 56,000 DWT
Built: January 2021

Project Start Date: May 2020
Contract Price: 23.50 USD million

Ship Delivery Date: January 2021
Employment: 48 months
Average Daily Rate : 14,250 USD per day
Total Project Period: 57 months

Project End Date (Exit): February 2025
Ship Residual Value : 19.00 USD million
Debt Balance: 11.15 USD million

Project NPV: -1.662 US
Equity NPV: -1.574 US

PROJECT

Project Name: Pacoship Example

Owner: Bergen Shipping Investments

Prepared by: Lars Patterson

E-mail: lars.patterson@pacomarine.com

Version: Presentation to Investors

Project Type: Newbuilding (selected)
Newbuilding
Secondhand Purchase

CANCEL OK

Calculate Equity IRR

DASHBOARD | REPORTS

*) Internal Rate of Return (IRR) is the discount rate that gives Equity NPV = 0

Ship - Newbuilding

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Open Save Project SHIP - Newbuilding

Project

SUMMARY

Project Type:
Ship Name:
Ship Type:
Ship Size:
Built:

Project Start Date:
Contract Price:

Ship Delivery Date:
Employment:
Average Daily Rate:
Total Project Period:

Project End Date:
Ship Residual Value:
Debt Balance:

Ship Name: Example Ship

Ship Type: Dry Bulk Supramax

Size: 56,000 DWT

Contract Year and Month: 2020 May

Contract Price: 23.50 USD Million

Shipyard: Yantai Shipyard

Country of built: China

Lightweight Tons: 14,000 LWT

Net Registered Tons: 8,750 NRT

Scrap Price per LWT: 380 USD

Estimated Scrap Value: 4.8 USD Million

Age at Purchase: 0.0 years

Residual Value (Ship Sale Price): 19.0 USD Million

Calculate Required Residual Value

Brokers Sale Commission: 1.00 %

Other Ship Sale Costs: 175 USD '000

Time from Delivery to Ship Sale: 51 months

Project End Date: June-2022

Ship Age at end of Project Period: 2.5 years

Max Economic Life from Newbuild: 30.0 years

Remaining Economic Life of Ship: 25.7 years

VIEW PAYMENT SCHEDULE NEWBUILDING

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Newbuilding Payment Schedule

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Open Save Project SHIP - Payment Schedule Newbuilding

Project

SUMMARY

Project Type: Pre-Contract/Pre-purchase survey May-2020

Ship Name:

Ship Type:

Ship Size:

Built:

Project Start Date:

Contract Price:

Ship Delivery Date:

Employment:

Average Daily Rate:

Total Project Price:

Project End Date:

Ship Residual Value:

Debt Balance:

Date	Month #	Percentage of Contract Price	Contract Price Amount USD '000	Owners Supplies and Extras USD '000	Owners Supervision USD '000	SUM TOTAL USD '000
Pre-Contract/Pre-purchase survey	May-2020					150
Payable on Signing of Contract	May-2020	1 20 %	4,700	101	20	2,100
Payable on Steel Cutting	Jul-2020	3 20 %	4,700	102	21	4,823
Payable on Keel Laying	Sep-2020	5 20 %	4,700	103	22	4,825
Payable on Launching	Nov-2020	7 20 %	4,700	104	23	4,827
Payable on Delivery	Jan-2021	9 20 %	4,700	105	24	4,829
Takeover Costs	Jan-2021					150
SUM DELIVERED COST		100 %	23,500	515	110	24,425

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EMPLOYMENT – The decision to fix

The type of employment we choose for the ship affects:

- **Volatility of earnings**
 - **Percentage of debt we can use (debt capacity)**
 - **Expected average earnings**
-
- **Short term charters have higher expected earnings but more volatility**
 - **Longer term charters to good credits makes it possible to use more debt**
 - **Trade off between market risk and credit risk**

Employment

[illegible]

OPERATING EXPENSE (OPEX)

- Daily opex *):
 - Crew
 - Spare Parts
 - Insurance
- Dry Docking / Special Survey:
 - In accordance with DD/SS schedule
- Off-hire:
 - Ordinary off-hire (annual average)
 - Off-hire due to Dry Docking / Special Survey

**) For TC - charterer pays bunkers. On BB - owner does not pay opex.*

Operating Expense - Opex

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Project

SUMMARY

Project Type:
Ship Name:
Ship Type:
Ship Size:
Built:

Project Start Date:
Contract Price:

Ship Delivery Date:
Employment:
Average Daily Rate:
Total Project Period:

Project End Date:
Ship Residual Value:
Debt Balance:

Opex per Day (ex DD/SS) 5,200 USD per day

Escalation of Opex 3.00 % p.a. Escalated every 12 months

Ordinary Off-hire 10 days per year

General & Admin 500 USD per day

Escalation of General & Admin 3.00 % p.a. Escalated every 12 months

Expenses after Ship Sale *) 100 USD '000

*) Includes repatriation of crew, legal costs, run off of management fees, etc.

VIEW DRYDOCKING SCHEDULE

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Drydocking/Special Survey:

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Open Save Project Ship

Project

SHIP DRYDOCKING CYCLE FROM DELIVERY AS NEWBUILDING

#	Date	Ship Age (Years)	Estimated Cost (USD '000)	Estimated Off-hire (Days)	Days to DD/SS	DD/SS Provision
0	Jan-2021	New				
1	Jul-2023	2.5	500	1	911	549
2	Jan-2026	5.0	700	2	915	765
3	Jul-2028	7.5	400	3	912	439
4	Jan-2031	10.0	500	4	914	547
5	Jul-2033	12.5	550	5	912	603
6	Jan-2036	15.0	700	6	914	766
7	Jul-2038	17.5	700	7	912	768
8	Jan-2041	20.0	950	8	915	1,038
9	Jul-2043	22.5	850	9	911	933
10	Jan-2046	25.0	1100	10	915	1,202
11	Jul-2048	27.5	1000	11	912	1,096
12	Jan-2051	30.0	1200	12	914	1,313

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SUMMARY

Project Type:

Ship Name:

Ship Type:

Ship Size:

Built:

Project Start Date:

Contract Price:

Ship Delivery Date:

Employment:

Average Daily Rate:

Total Project Period:

Project End Date:

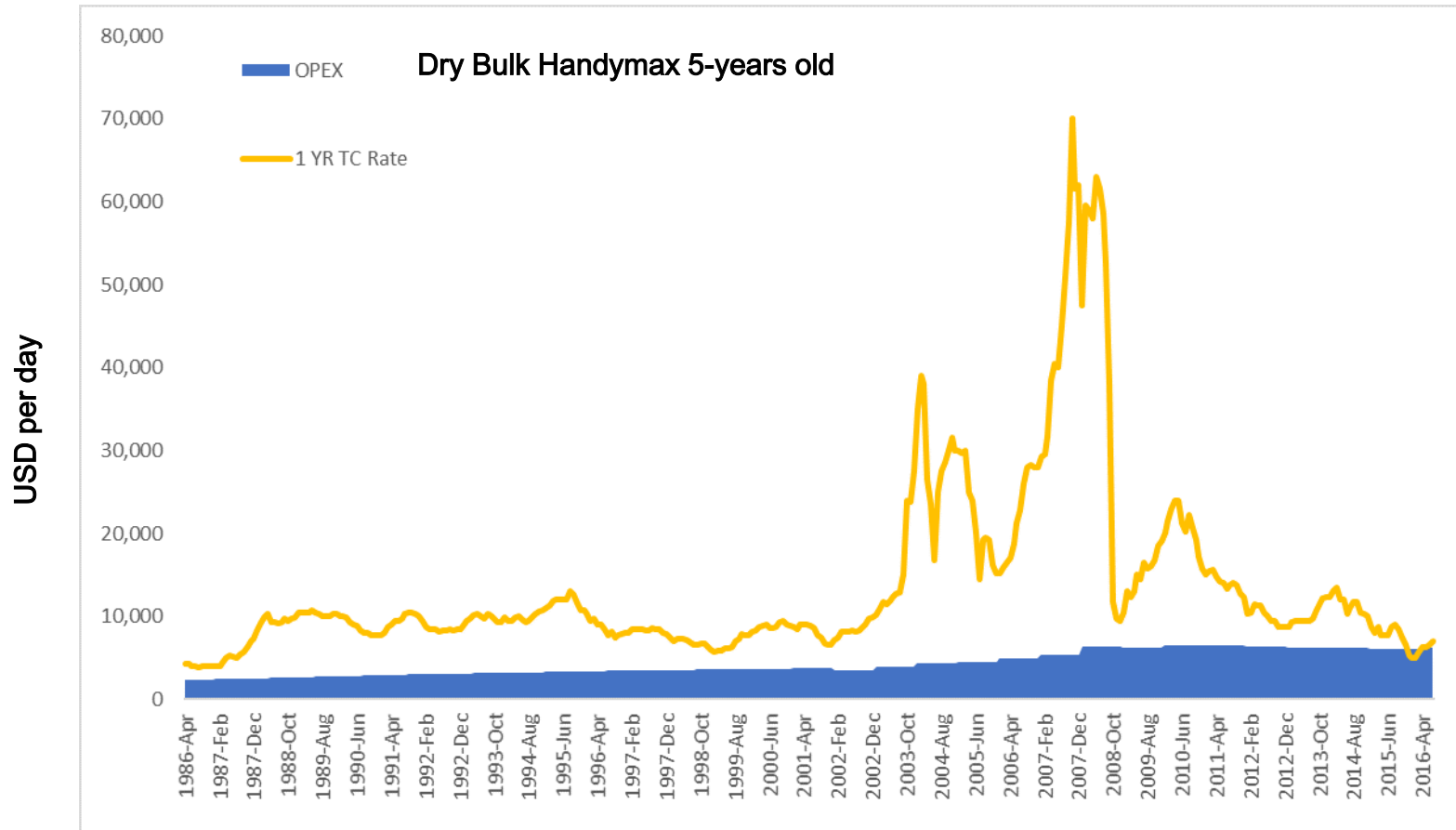
Ship Residual Value:

Debt Balance:

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Ship Operating Cashflow



Source: Marine Capital Limited

FINANCING TO MATCH DEAL CASHFLOW

- Financing to match deal cashflow
 - => Term
 - => Volatility of earnings
 - => Residual value exposure
- Trade off between benefit of higher percentage of debt and lenders' requirement for long-term charter employment to support higher debt
- Higher percentage of equity provides flexibility in terms of employment and possible dividend payments

WHAT FINANCING DO I WANT?

- **Risk Capital for Asset Play:**
 - => (Private) Equity
- **Flexible Financing for Survival:**
 - => Uncertain variable earnings
 - => Low earnings , low asset values, tight cashflow
- **Cheapest Possible Financing :**
 - => (Tax) Leasing
 - => Bond Issue
 - => Securitisation
 - => Public listing of shares

BANK FUNDING – A HISTORICAL PERSPECTIVE

Bank financing of ships is a “relatively new” phenomenon.

Historically (going back a long way) shipping ventures were financed by subscription of equity (partnerships and later shares in limited companies), retained earnings and joint ventures with cargo owners.

Bank financing of ships grew out of the development of the Eurodollar market in the 1960's. Ship financing was a way for banks to deploy large sums of US\$ dollars.

It was considered “safe” lending until the shipping crisis in the late 1970's and early 1980's. A number of large American banks who had entered the market on a large scale withdrew from ship financing in a rapid and dramatic way.

For the shipowner, bank financing was cheap, flexible and readily available in abundance. Shipping loans were probably priced too cheaply and resulted in a massive transfer of wealth from banks to the shipowners.

We are now returning to a more normal, and probably a lot healthier state of affairs where bank financing is less available, more expensive and maybe less flexible.

IMPACT OF BASEL III ON SHIP FINANCING

=> Bank financing becomes more expensive and less available

- More expensive because the bank needs to put up more equity behind every dollar it lends out. (Combination of higher capital ratio rule and stricter risk weighting)
- Less available because risk weighting rules makes it uneconomical for the bank to carry some risks.

Creates opportunity for shipowners to buy back existing loans at a discount. Debt bought by Private Equity Firms with a view to convert debt to equity. Few DISTRESSED opportunities “(Vulture funds)”

Increased need for Alternative Ship Financing

Shortage of shipping Equity => Increasing investment returns

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- **Debt Capacity (% of debt, cost of debt, repayment schedule)**

DEBT CAPACITY

Max age at final repayment *

20

 years

Loan Profile

15

 years

Bank Loan Tenure *

8

 years

Loan residual value as % of historical average ship price *

20%

***) Individual Bank Lending Criteria**

MAXIMUM LOAN

Ship Operating Cash Flow per year	\$4.0 million
Required debt service ratio	1.4
Debt Service Capacity	\$2.9 per year
Duration of loan	8 years

Debt Service during loan term	\$22.9 million
- Sum Interest payments	-\$5.3
= Sum Total Instalments	\$17.6
+ Maxium Balloon	\$6.0
= MAXIMUM LOAN	\$23.6 million

Finance - General

FINANCING

General | Loan 1

SUMMARY

Project Type:
Ship Name:
Ship Type:
Ship Size:
Built:

Project Start Date:
Contract Price:

Ship Delivery Date:
Employment:
Average Daily Rate:
Total Project Period:

Project End Date:
Ship Residual Value:
Debt Balance:

USD LIBOR % p.a.

Interest Rate Earned on Cash Balances % p.a.

Dividends as % of Equity Invested % p.a.

Working Capital Investment (Cash) USD Million

Days for Calculating Working Capital Requirement:

	Opex Paid Days	Hire Received
Timecharter (TC)	<input type="text" value="30"/>	<input type="text" value="15"/>
Timecharter Equivalent (TCE)	<input type="text" value="30"/>	<input type="text" value="-15"/>
Bareboat (BB)	<input type="text" value="0"/>	<input type="text" value="30"/>

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Finance – Loan 1

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Project

SUMMARY

Project Type:
Ship Name:
Ship Type:
Ship Size:
Built:

Project Start Date:
Contract Price:

Ship Delivery Date:
Employment:
Average Daily Rate:
Total Project Price:

Project End Date:
Ship Residual Value:
Debt Balance:

FINANCING

General Loan 1

Lender: DnB
Borrower: International Ship Investm.

Contract Price: 23.500 USD Million

Loan as % of Contract Price: 60 %

Loan Amount: 14.100 USD Million

Balloon: 6.000 USD Million

Loan Drawdown: January-2021

Number of Instalments: 22 Semi-Annual

Loan Term: 11 Years

Loan Type: Serial

Loan Margin: 1.50 % Plus LIBOR = 2.75 %

Arrangement Fee: 2.00 %

Day Count Convention: Actual 360

Covenants:
Loan as % of Ship Value: 80 %
Loan To Value (LTV): 1.25 Ratio
Minimum Cash Balance: 1.000 USD Million

Scheduled Final Loan Repayment: January-2032

Opening Loan Balance Loan 1
Opening Loan Balance Loan 1
Loan Repayments Loan 1
Closing Loan Balance Loan 1
Total Loan Payments (Debt Service) Loan 1
Debt Service per Day Loan 1 (BB Equivalent)
Interest Payments Loan 1
Interest Payments per Day Loan 1
Required TCE to pay interest only Loan 1
Required Ship Value to meet LTV requirement Loan 1
Trade Out Rate to Scrap Value Loan 1
Trade Out Rate to Zero Loan Balance Loan 1
Debt Service Cover Ratio - DSCR
Interest Service Cover Ratio - ISCR

USD '000
H2
13,732
12,995
12,259
11,523
10,786
10,050
9,314
8,577
7,841
7,105
6,368

Year 13
Year 14
Year 15
Year 16
Year 17
Year 18
Year 19
Year 20

Definition:

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TRADE OUT RATE

Ship age at end of TC	10.00	years		
Remaining economic life of ship	15.00	years		
Loans to be repaid by ship age	20.00	years		
Remaining time for loans to be repaid	10.00	years		
Scheduled loan when coming off TC	\$13.6	million		
Cash accumulated on redelivery	\$4.5	million		
Net Debt on redelivery	\$9.1	million		
Cost of debt going forward	4.50%	p.a.		
Required loan trade out rate to zero	\$1,894	BB	\$8,558	TCE
Scrap value	\$1.2	million		
Required loan trade out rate to scrap	\$1,792	BB	\$8,456	TCE

Trade Out Rate

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Project

SUMMARY

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 Ship Name:
 Ship Type:
 Ship Size:
 Built:

Project Start Date:
 Contract Price:

Ship Delivery Date:
 Employment:
 Average Daily Rate:
 Total Project Price:

Project End Date:
 Ship Residual Value:
 Debt Balance:

FINANCING

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Covenants:
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Scheduled Final Loan Repayment: January-2032

Trade Out Rate to Scrap Value Loan 1 USD per day

	H1	H2
Year 1	1,914	1,854
Year 2	1,845	1,795
Year 3	1,784	1,734
Year 4	1,712	1,671
Year 5	1,657	1,606
Year 6	1,590	1,538
Year 7	1,520	1,468
Year 8	1,440	1,395
Year 9	1,372	1,318
Year 10	1,292	1,237
Year 11	1,208	1,151
Year 12		
Year 13		
Year 14		
Year 15		
Year 16		
Year 17		
Year 18		
Year 19		
Year 20		

Definition:
 Trade Out Rate to Scrap Value is the Bareboat Rate (Debt Service) per Day required to pay the remaining debt balance down to estimated scrap value over the remaining economic life of the ship.

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Cashflow - Monthly

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MONTHLY CASH FLOW US\$ '000	Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Start Date	01-May-20	01-Jun-20	01-Jul-20	01-Aug-20	01-Sep-20	01-Oct-20	01-Nov-20	01-Dec-20	01-Jan-21	01-Feb-21	01-Mar-21	01-Apr-21	01-May-21	01-Jun-21	01-Jul-21	01-Aug-21	01-Sep-21	01-Oct-21	01-Nov-21	01-Dec-21	01-Jan-22	01-Feb-22	01-Mar-22	01-Apr-22	
End Date	31-May-20	30-Jun-20	31-Jul-20	31-Aug-20	30-Sep-20	31-Oct-20	30-Nov-20	31-Dec-20	31-Jan-21	28-Feb-21	31-Mar-21	30-Apr-21	31-May-21	30-Jun-21	31-Jul-21	31-Aug-21	30-Sep-21	31-Oct-21	30-Nov-21	31-Dec-21	31-Jan-22	28-Feb-22	31-Mar-22	30-Apr-22	
Days in month	31	30	31	31	30	31	30	31	31	28	31	30	31	30	31	31	30	31	30	31	31	28	31	30	
Operating Cash Balance		-	-	-	-	-	-	-	-	1,238	1,376	1,537	1,691	1,852	2,006	1,638	1,800	1,954	2,115	2,269	2,430	2,028	2,164	2,324	
Ship Purchase:																									
Pre Contract / Pre-purchase survey	150	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Contract Payments	4,700	-	-	4,700	-	4,700	-	4,700	-	4,700	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Takeover Costs	-	-	-	-	-	-	-	-	-	-	150	-	-	-	-	-	-	-	-	-	-	-	-	-	
Owners Supplies	20	-	21	-	22	-	23	-	24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	101	-	102	-	103	-	104	-	105	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
SHIP PURCHASE	4,971	-	4,823	-	4,825	-	4,827	-	4,979	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Working Capital Investment (Cash)	-	-	-	-	-	-	-	-	1,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Loan Arrangement Fee Loan 1	-	-	-	-	-	-	-	-	282	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Drawdown of Loan 1	-	-	-	-	-	-	-	-	14,100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
REQUIRED EQUITY INVESTMENT	4,971	-	4,823	-	4,825	-	4,827	-	(7,839)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Charter Income	-	-	-	-	-	-	-	-	425	384	425	411	425	411	425	425	411	425	411	425	428	387	428	414	
Charter Commission	-	-	-	-	-	-	-	-	10	10	11	10	11	10	11	10	11	10	11	10	11	10	11	10	
Net Charter Income	-	-	-	-	-	-	-	-	414	374	414	401	414	401	414	414	401	414	401	414	417	377	417	404	
Opex	-	-	-	-	-	-	-	-	161	146	161	156	161	156	161	156	161	156	161	156	161	150	166	161	
Drydocking Expense	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Ship Operating Cash Flow	-	-	-	-	-	-	-	-	253	229	253	245	253	245	253	253	245	253	245	253	256	227	251	243	
General & Admin	-	-	-	-	-	-	-	-	16	14	16	15	16	15	16	15	16	15	16	15	16	14	16	15	
OPERATING CASH FLOW (EBITDA)	-	-	-	-	-	-	-	-	238	215	238	230	238	230	238	238	230	238	230	238	241	213	235	228	
Interest Earned on Cash Balances	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	
Interest Payments	-	-	-	-	-	-	-	-	-	-	-	-	-	-	162	-	-	-	-	-	194	-	-	-	
Dividends Paid	-	-	-	-	-	-	-	-	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	
Net Financial Items	-	-	-	-	-	-	-	-	(77)	(77)	(77)	(76)	(76)	(76)	(238)	(76)	(76)	(76)	(76)	(76)	(270)	(76)	(76)	(76)	
Loan Repayments	-	-	-	-	-	-	-	-	-	-	-	-	-	-	368	-	-	-	-	-	368	-	-	-	
Target Residual Value (Ship Sale Price)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Brokers Sales Commission	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Other Ship Sale Costs and Expenses	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
SHIP SALE (NET)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Taxes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Change in Working Capital	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	5	-	-	-	
NET CASH FLOW	-	-	-	-	-	-	-	-	1,238	138	161	154	161	154	(368)	161	154	162	154	160	(402)	137	159	152	
Final Distribution after Ship Sale	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Closing Cash Balance	-	-	-	-	-	-	-	-	1,238	1,376	1,537	1,691	1,852	2,006	1,638	1,800	1,954	2,115	2,269	2,430	2,028	2,164	2,324	2,476	

MONTHLYDASHBOARDREPORTS

66%

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NOB

Sensitivity of Project NPV

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SENSITIVITY OF PROJECT NPV:

CHANGE STEPS: UPDATE SENSITIVITY TABLE

Opex per Day	Daily Rate Rate % Change	Residual Value	Contract Price	US\$ LIBOR
\$100	5%	\$1.00 million	\$1.00 million	0.10% p.a.

SENSITIVITY OF NPV OF PROJECT CASH FLOW TO CHANGE IN:

Ship Opex	NPV USD million	Average Rate per day	Daily Rate % of Base Case	NPV USD million	Ship Residual Value	NPV USD million	Contract Price Ship	NPV USD million	Loan Interest Rate p.a.	LIBOR	NPV USD million
\$4,800	-1.13	\$11,115	80%	-5.05	\$15.00	-4.67	\$19.50	2.84	2.35%	0.85%	-1.49
\$4,900	-1.26	\$11,810	85%	-4.20	\$16.00	-3.92	\$20.50	1.69	2.45%	0.95%	-1.54
\$5,000	-1.40	\$12,504	90%	-3.36	\$17.00	-3.17	\$21.50	0.56	2.55%	1.05%	-1.58
\$5,100	-1.53	\$13,199	95%	-2.51	\$18.00	-2.41	\$22.50	-0.56	2.65%	1.15%	-1.62
\$5,200	-1.66	\$13,894	100%	-1.66	\$19.00	-1.66	\$23.50	-1.66	2.75%	1.25%	-1.66
\$5,300	-1.79	\$15,283	110%	0.03	\$20.00	-0.91	\$24.50	-2.75	2.85%	1.35%	-1.70
\$5,400	-1.93	\$16,673	120%	1.73	\$20.00	-0.91	\$25.50	-3.84	2.95%	1.45%	-1.74
\$5,500	-2.06	\$18,062	130%	3.42	\$20.00	-0.91	\$26.50	-4.91	3.05%	1.55%	-1.79
\$5,600	-2.19	\$19,451	140%	5.12	\$20.00	-0.91	\$27.50	-5.98	3.15%	1.65%	-1.83

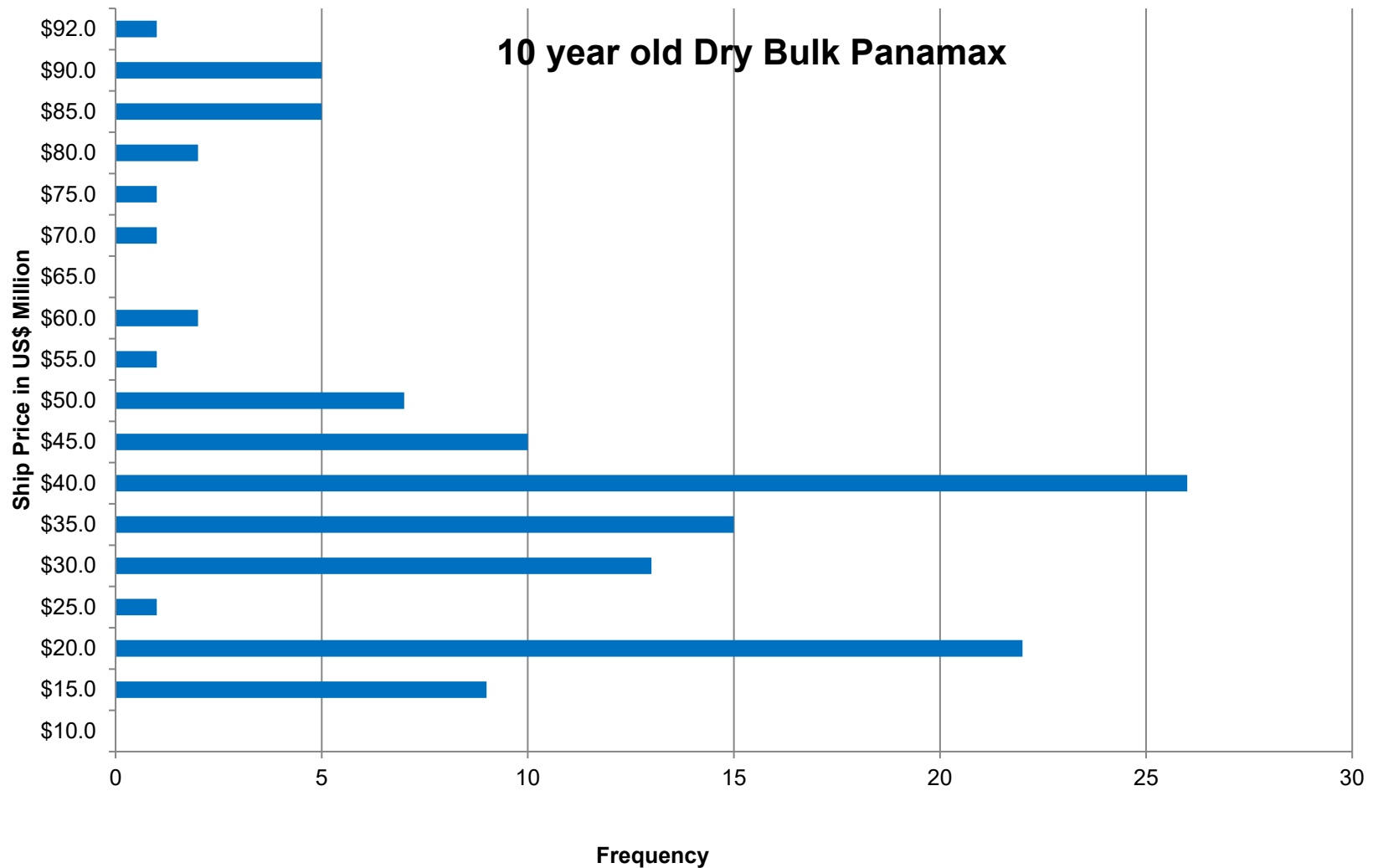
***) Project Net Present Value (NPV) with Discount Rate: 6.02% p.a.**

DASHBOARD REPORTS

KEY FACTORS

- **Ship purchase price:**
 - What type of ship to buy (category, size, age)
 - Where are we in the cycle ? “When is it a good time to buy?”
 - Financing, availability and mix of debt and equity
- **Cash flow from earnings:**
 - Employment: Term of charter = Market Risk and to whom = Credit Risk
 - Opex
- **Ship sale price (residual value):**
 - Timing of exit – remaining economic life (value of optionality)
- **Required Return on Equity**
- **Debt Capacity** (% of debt, cost of debt, repayment schedule)

RESIDUAL VALUE – PROBABILITY OF OUTCOMES



VALUE OF FLEXIBILITY

		Ship Sale at End of Year				
		Year 1	Year 2	Year 3	Year 4	Year 5
S a l e P r i e	\$10.0					
	\$20.0					
	\$30.0					
	\$40.0					
	\$50.0					
	\$60.0					
	\$70.0					
	\$80.0					
	\$90.0					



VALUE DRIVERS

CHOICE VARIABLES:

- When to buy and sell (“timing”)
- Type of employment (how, long and to whom)
- Financing (percentage of debt, equity, currency, term)
- Ship maintenance policy (opex, operational performance, residual value)

GIVEN VARIABLES:

- ⇒ State of shipping markets (level and volatility of prices, charter rates)
- ⇒ Cost of capital (interest rates, loan margins, cost of equity)
- ⇒ Cost of bunkers and lube oils
- ⇒ Cost of crew
- ⇒ Cost of placing insurance

RISK (From The Shipowners point of view)

- | | |
|------------------|---|
| • Market Risk | Ship Prices
Earnings (Spot, TC and FFA's) |
| • Credit Risk | Charterers Payment Default
Newbuilding refund guarantees |
| • Operating Risk | Off-hire
Hull and Machinery
P&I |
| • Financing Risk | Interest Rate Risk
Refinancing Risk |

Principle of Risk Pricing => The entity that is most capable of managing the risk should be the entity able to absorb the risk at the lowest cost.

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SUMMARY:

Project Type: Newbuilding
 Ship Name: Example Ship
 Ship Type: Dry Bulk Supramax
 Ship Size: 56,000 DWT
 Built: January 2021

Project Start Date: May 2020
 Contract Price: 23.50 USD million

Ship Delivery Date: January 2021
 Employment: 48 months
 Average Daily Rate : 14,250 USD per day
 Total Project Period: 57 months

Project End Date (Exit): February 2025
 Ship Residual Value : 19.00 USD million
 Debt Balance: 11.15 USD million

Weighted Average Cost of Capital (WACC)

	Amount USD million	Share	% Cost	Weighted % Cost
Equity Invested	11.607	45.2%	10.00%	4.52%
Debt Financing	14.100	54.8%	2.75%	1.51%
Project Investment WACC	25.707	100.0%		6.02%

Equity Invested 11.607 USD million
 Dividends Received 3.637 USD million
 Equity Returned on Ship Sale 11.284 USD million
Sum Equity Returned 14.920 USD million
 Returned / Invested 1.29 Ratio
 Holding Period 4.00 Years

Project NPV: -1.662 USD million with discount rate: 6.02% WACC
Equity NPV: -1.574 USD million with discount rate: 10.00% Target return on equity *)

*) Internal Rate of Return (IRR) is the discount rate that gives Equity NPV = 0

Calculate Equity IRR

DASHBOARD REPORTS

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Sensitivity of Equity Return

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SENSITIVITY OF RETURN ON EQUITY

CHANGE STEPS: UPDATE SENSITIVITY TABLE

Opex per Day	Daily Rate Rate % Change	Residual Value	Contract Price	US\$ LIBOR
\$100	10%	\$1.00 million	\$1.00 million	0.10% p.a.

SENSITIVITY OF NPV OF CASH FLOW TO EQUITY INVESTED TO CHANGE IN:

Ship Opex	NPV USD million	Average Rate per day	Daily Rate % of Base Case	NPV USD million	Ship Residual Value	NPV USD million	Contract Price Ship	NPV USD million	Loan Interest Rate p.a.	LIBOR	NPV USD million
\$4,800	-1.18	\$8,336	60%	-7.13	\$15.00	-4.11	\$19.50	2.14	2.35%	0.85%	-1.42
\$4,900	-1.28	\$9,726	70%	-5.72	\$16.00	-3.48	\$20.50	1.21	2.45%	0.95%	-1.46
\$5,000	-1.38	\$11,115	80%	-4.25	\$17.00	-2.84	\$21.50	0.28	2.55%	1.05%	-1.50
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\$5,500	-1.87	\$18,062	130%	2.31	\$22.00	0.33	\$26.50	-4.36	3.05%	1.55%	-1.69
\$5,600	-1.97	\$19,451	140%	3.61	\$23.00	0.96	\$27.50	-5.29	3.15%	1.65%	-1.72

*J) Equity Net Present Value (NPV) with Discount Rate: 10.00% p.a.

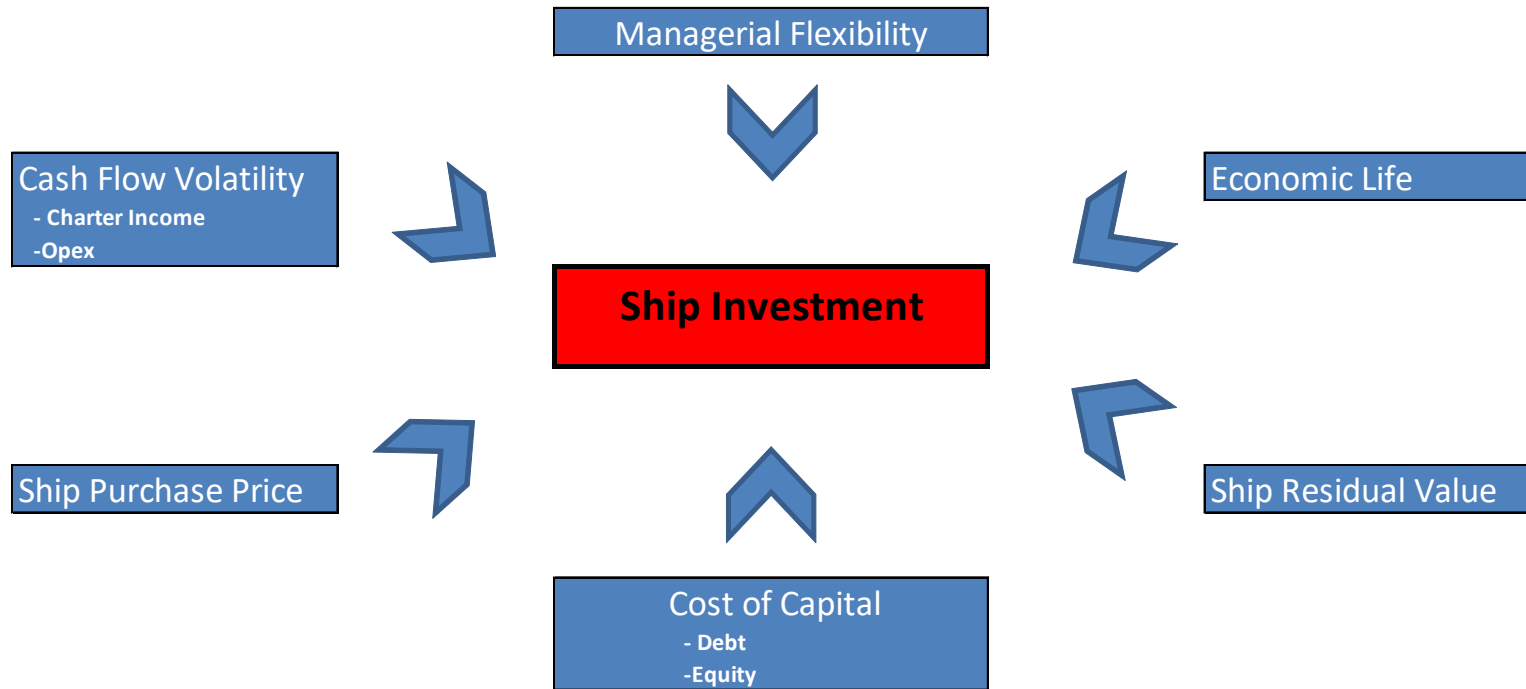
DASHBOARD REPORTS

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CASE STUDY – KEY ISSUES

VARIABLE:	FUNCTION OF:
Equity required	Ship Price and % of debt financing
Equity returned	Cash flow and residual value / scrap
IRR / Net Present Value (NPV)	Risk / Reward – Rate of return
Break Even rate per day (B/E)	Opex and debt service
Debt Service per day	Amount of debt, Cost and profile
Debt at end of investment period	Cost of debt, Cash Flow, Loan profile
Required “trade out” rate	Balance of debt. Remaining life of ship
Historical ship prices	Volatility of residual value (Market Risk)
Historical charter rates	Volatility of earnings (Market Risk)

SHIP INVESTMENT ANALYSIS - SUMMARY



What makes the deal work ?