

STRATEGIC RISK MANAGEMENT AT TITAN SHIPPING COMPANY: LESSONS FROM METALLGESELLSCHAFT

Research Associate Albert André Diversé prepared this case under the supervision of Professor Andrea Buraschi as a basis for class discussion rather than to illustrate either effective or ineffective handling of a business situation. While the main character and his organization are fictional, references to historical events are factual.

As he was leaving the office to celebrate his first three months as managing director of Titan Family Shipping with his family, Peter was quite puzzled. Having finished his MBA earlier in the summer, he had returned, as planned, to take over the helm of the family business. The past three months had been devoted to a close examination of the financial picture of both his family and the family business. During this time, he reacquainted himself with the current state of the shipping industry and Titan's recent performance.

Shipping tonnage had become a commodity business with shrinking margins and highly volatile prices. Companies which needed to ship could not depend on having an accurate figure for how much shipping tonnage would cost in the medium and long term. Such volatility was partly due to changes in oil markets, but, regardless of its source, it was hurting the business of Titan and its customers.

Historically, Titan's revenues came mostly from its long-term loyal customers, but customer loyalty was declining. And Peter empathized with their position: Their business cycles were becoming increasingly short and their own margins thin – they had to ship at the lowest possible cost. Yet, in spite of being an extremely competitive and efficient shipping company, Titan just could not match those rates, since so many of its costs were fixed ahead of time.

All of these events and findings were leading Peter toward a definite conclusion: Titan's business model needed to be changed. Titan had to offer an innovative value proposition if it were to expand, or even hold on to, its customer base – it needed something to get them locked in. And whatever that turned out to be, it would also have to reduce Titan's exposure to volatile freight prices so that it could get an improved valuation.

Peter had preliminary discussions with investment bankers. However, the outcome of those discussions was somewhat disappointing. The valuations he received were below his expectations. The bankers used higher discount rates of future cash flows than he would have liked, stating that the three main reasons for this were: “Titan’s exposure to the volatility of freight spot markets, shrinking margins in the industry and increased customer turnover.”

Having examined the scope and extent of Titan’s operations, Peter drafted a new organizational chart containing five business units. By reallocating business lines across these new business units, he could rationalize the company and generate more business. Four of these units were Spot Chartering, Upstream/Shuttle Tankers & Offshore, Energy & LNG, and Marine Operations (essentially a service unit to the other three).

But it was the fifth one, which sprang from the bankers’ feedback during the valuation process, that he felt was his unique insight – a Risk Management Unit. By designing and implementing a risk management strategy and using financial engineering, this new unit would help Titan’s business and financial position. New financial instruments, traded on exchanges such as IMAREX, could be used to reduce the volatility of the prices it offered its customers. Similarly, Titan should also avail itself of other financial instruments to hedge against price changes of key cost drivers, such as fuel.

Peter thought to himself: “If one of the main problems shipping customers face is the volatility of freight prices in the medium and long term, then we need to provide for that.” If his firm were able to offer consistent freight prices to its customers for an extended period of time, it would thereby gain a significant competitive advantage. By lowering spot price risk for its customers, Titan could increase the scale of the operations and establish longer-term relationships with clients.

A solution became clearer – Titan could offer certain customers contracts fixing the price of tonnage for a given route over a fairly long period (at least a couple of years). Customers purchasing these contracts would thus be protected from variations in the spot price of shipments for the contracted route. Such contracts could take the form of Forward Freight Agreements (FFAs) – agreements between two principals specifying a route, amount of capacity and settlement rules. As these are private agreements, they are sold over the counter (OTC), meaning that they are not traded on an exchange.¹

However, Peter recognized that, “There’s no such thing as a free lunch.” By selling the contracts, his shipping company would be taking on the risk that when it had to provide the service, the actual cost could be higher than that specified in the forward contract. The question then was, “How could Titan hedge the risk that it would be taking on through the long position?”

It was time to call on his old college roommate, Nick, who had been working in London for the past few years as a trader specializing in oil futures. Peter explained his idea about reorganizing the company, and asked Nick for his thoughts on it and on whether selling future contracts for shipping would really be an innovative offering to its most loyal

¹ A property of future contracts, when compared with OTC forwards, is the clearing function engaged upon by the exchange. For exchange-traded futures, a clearinghouse acts as counterparty between the two positions involved in a trade. The clearinghouse acts as a buyer vis-à-vis the seller of the future; it is the buyer’s seller and the seller’s buyer. The main advantage both parties gain is that risk of default upon the obligation is effectively eliminated, since it has been transferred on to the clearinghouse.

customers. Nick replied, “Yes it’s a good idea to have a risk management unit, but you’d better have the right know-how before you even think of implementing such a program.”

When pushed further on whether it would be possible to create such a product, Nick replied that such a strategy was theoretically possible by buying and selling different types of derivatives. But he also warned Peter:

The risk and cost of getting burned ... could be astronomical ... you’d better learn about it yourself. Remember what happened to Metallgesellschaft in the early 1990s? If you don’t, and you insist on going forward with this idea, then you’d better become extremely familiar with it first. What you want to do is somewhat similar... There are arguments for why the strategy failed and shouldn’t be replicated, as well as extremely respected individuals who defend the strategy to the end.

Peter did a quick search on Google for Metallgesellschaft. After going through the first few items in the search, it was apparent that this was something that required further investigation. As Peter began to learn about the story, he became fascinated with it and the implications it could have for the strategy he had in mind for his company.

Metallgesellschaft AG (MG) was a traditional German conglomerate owned (at that time) largely by Deutsche Bank AG, the Dresdner Bank AG, Daimler-Benz, Allianz, and the Kuwait Investment Authority. In the early 1990s, it evolved from a traditional metal company to also being a provider of risk management services to its customers through the subsidiaries of its Energy Group.

One of the subsidiaries of MG’s Energy Group, Metallgesellschaft Refining and Marketing Inc. (MGRM), was in charge of refining and marketing petroleum products in the US. MGRM wanted to gain more clients by offering them the opportunity to buy contracts for delivery of petroleum products such as gasoline, heating oil and diesel at a fixed price over the long term – up to 10 years. In 1993, when the program began, oil prices were relatively low, since they had fallen sharply after the Gulf War in 1991. MGRM managers believed customers would jump at the opportunity of locking in those low prices for future delivery, especially if they lacked the sophistication to use financial hedging instruments.

Now Peter understood why Nick had referred him to this example. MG’s marketing needs paralleled his own – instead of buying future barrels of oil, Titan’s customers would be buying space in a ship at a certain price fixed in advance.

As in the freight market, oil-related products were also plagued with large price fluctuations. What MGRM designed and sold to its customers was a way for them to shift or eliminate some of their oil price risk. MGRM offered such contracts because it believed its financial resources allowed it to manage risk in a way that its customers could not, and make a profit at it. To Peter, this was fine, but what about the risk that oil prices could change? How did MGRM deal with that?

To hedge the risk that future oil prices could rise above the one in the contracts it had sold, MGRM purchased short-term (one to three months) futures contracts traded on the NYMEX. Just before the contracts expired, MG would then sell them and buy new ones, executing a rollover strategy. If spot prices were good, MGRM would make a profit on the rollover, if they had dropped, it would take a loss.

Peter learned that, initially, the forward contracts proved to be very successful, since they guaranteed that in the long term MGRM would receive a price over the current spot for the

oil it delivered. And clearly there was demand for such a product: by September 1993, MGRM had sold forward contracts amounting to the equivalent of 160 million barrels – Kuwait’s output for 85 days, according to some estimates.

However, Peter realized why his friend Nick had advised him to understand the strategy. Alas, the situation turned sour in December 1993 when it was publicly revealed that MG’s Energy Group was responsible for losses of approximately \$1.5 billion because of the activities of MGRM. After the announcement, the pace of events was fast. Those judged responsible for the strategy and its oversight were summarily fired from their jobs. An oil consultant was brought in to unwind the positions that MGRM held as quickly as possible. Peter needed to know what had gone wrong and why.

After learning the role accounting regulations played in the MG affair, Peter made a mental note to check with his accountants the reporting requirements for his jurisdiction. Apparently, German accounting standards did not readily accommodate such a hedging strategy. Germany’s rules did not allow for the netting of a position. If oil prices dropped, MGRM was required to book a (paper) loss on its short positions without recognizing the (paper) gains on its forward positions. The gains on those forward positions could only be booked once they were realized. In contrast, Peter learned that in the US, MGRM could use hedge accounting, and could therefore recognize the gains it made on its long positions and defer the hedge losses on the short.

The more he learned about the MG affair, the more Peter understood why Nick was so adamant that he really had to know what these dealings would entail. For Titan to conduct a similar strategy would require a significant commitment to provide, if necessary, the cash flow reserves necessary for buying the short-term contracts. MGRM faced the risk that the proceeds from selling the short contracts near their maturity may not have been enough to cover the cost of buying the new short contracts to cover the long position, requiring an injection of cash.

Such back-up cash commitment would have been prudent, since MGRM’s strategy assumed that oil markets are normally in a state referred to as backwardation: when the spot price is greater than the future price. As long as this had been the situation, MGRM’s strategy would have worked and it would have made a gain each time it rolled over its positions. But if it is the opposite – when long-term prices are higher than the spot price – the market is said to be in contango. And when the market was in contango, MGRM faced unrecoverable losses on the roll-over of the short contracts. Still, Peter remained unclear on why the market would become “in contango.”

It was enough learning for one day. Peter needed to do more research and thinking about the implications of what he had learned about MGRM on his future pricing strategy for loyal customers. There were several questions on his mind that he had to address fully to avoid ending up in an MGRM type of situation. What were the forward freight markets like – in backwardation or in contango? How would traders react to such regular “roll-over” of short contracts – would they pick up on it? Would his company be willing to commit the necessary cash? And as regards the possibility of an IPO – could such a strategy expose the business to more risk and have an impact on the bankers’ discount rate?

Exhibit 1 Volatility of Freight Spot Prices

Route P1A (Transatlantic Round Voyage, Panamax) Time Charter Assessments, 2004–2007

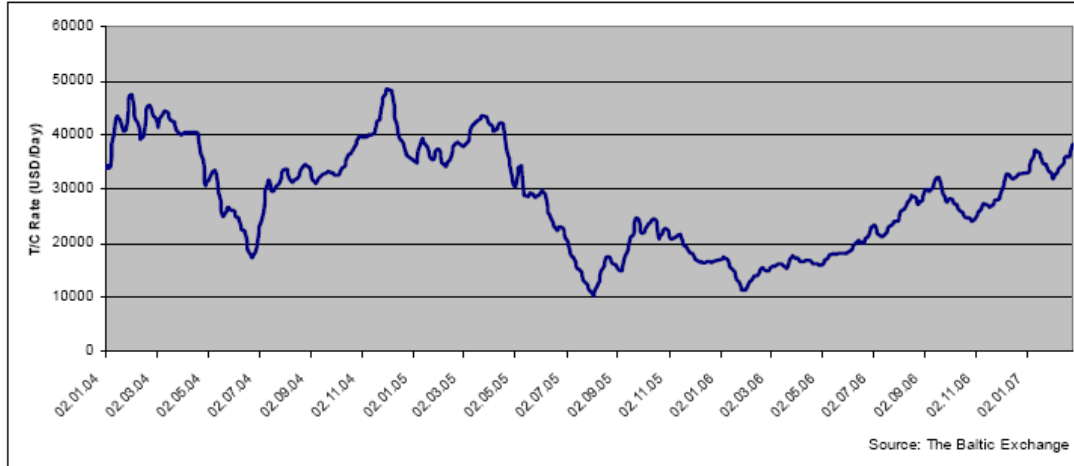


Exhibit 2 Freight Derivatives Trading via Reuters 3000 Xtra Platform

The screenshot shows the Reuters 3000 Xtra interface with a table of freight derivatives. The table lists various contracts with columns for Commodity, Del. Date, Last price, and other details.

Commodity	Del. Date	Last	Src	Terms	Loc
PM4TC OCT17	OCT07	78361 +961	IMARE		
PM4TC NOV17	NOV07	78948 +1948	IMARE		
PM4TC DEC17	DEC07	78948 +2448	IMARE		
PM4TC JAN18	JAN08	73875 +2669	IMARE		
PM4TC 4Q07	Q407	78750 +1792.00	IMARE		
PM4TC 1Q08	Q108	73875 +2669.00	IMARE		
PM4TC 2Q08	Q208	66528 +2167.00	IMARE		
PM4TC 3Q08	Q308	54640 +1583.00	IMARE		
PM4TC 2008	CAL08	61139 +2046.00	IMARE		
PM4TC 2009	CAL09	40660 +899.00	IMARE		
PM4TC 2010	CAL10	28931 +348.00	IMARE		

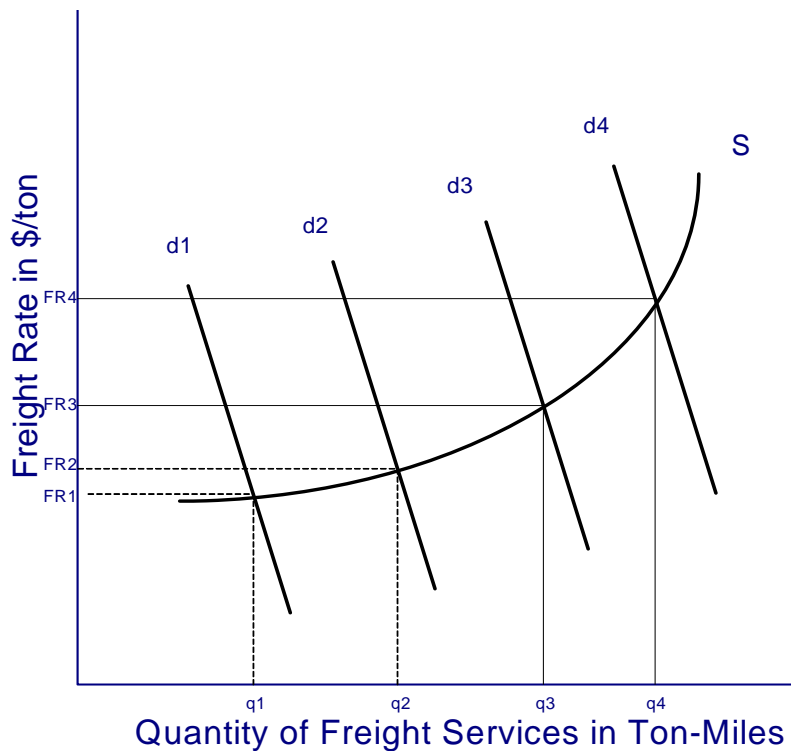
Additional data on the right side of the screen shows USD rates:

USD	Ask
7525	+94.7575
860	+94.900
975	+94.960
245	+95.250
410	+95.415
485	+95.490
490	+95.495
450	+95.455
355	+95.365
255	+95.260
160	+95.165
90	+95.095
015	+95.025

Appendix 1 Shipping Market Structure

Rates in the shipping freight markets are determined at the interaction of supply and demand. The supply depends on the current global fleet and its productivity, as well as new ship building, net of scrapped vessels. Supply can also be affected by changes in the elements of the productivity of the fleet: speed, loaded days at sea, load factor. Higher speed; more loaded days at sea mean more output. Higher load factor means each ship carries, on average, more cargo.

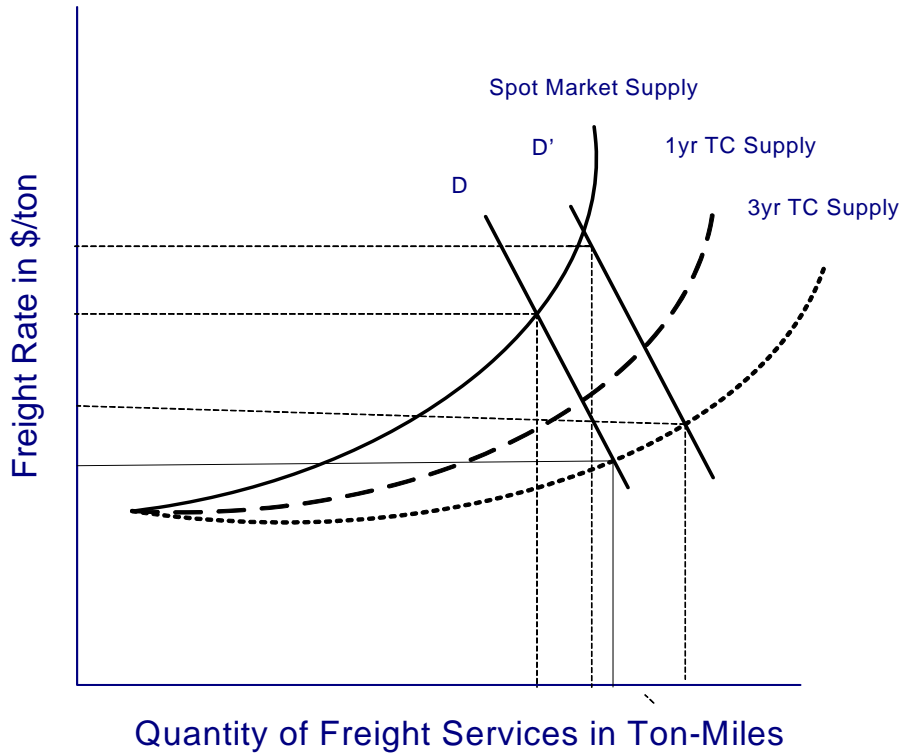
Freight supply is relatively flat when freight rates are low – when the market is weak. The least efficient vessels are taken out of service and ships on voyages travel at lower speeds – lower fuel costs compensate for the lower revenue. As freight prices rise, vessels are reintroduced into service, and ships travel at faster speeds. As rates rise even further, there are no ships to introduce and ships run at full speed, thus the supply curve becomes vertical. In the long run, new vessels can be built and added to the global fleet, shifting the entire supply curve to the right.



However, the shipping market is not a singular one. There are multiple sub-markets separated across things such as the types of vessels and cargo involved, the route and the duration of a given contract.

Different duration contracts for the same type of vessel in the same route constitute distinct markets. The next figure illustrates three different supply curves on the same diagram, representing spot, one-year and three-year time-charter supply curves. The longer the duration of the freight contract, the flatter its supply curve. Such a flat supply curve indicates that the supply of freight services for a one-year time-charter contract is less responsive to changes in freight rates compared to spot markets because time-charter fixtures of longer duration are less flexible in comparison to ones with shorter durations. Suppliers of vessels

assigned to longer time-charter agreements cannot be as responsive to changes in freight rates – they cannot shift vessels in response to changes in spot prices as they could with shorter time-charter contracts. Thus, the elasticity of supply of the longer duration contracts is lower in comparison to shorter duration ones, producing flatter shape supply curves.



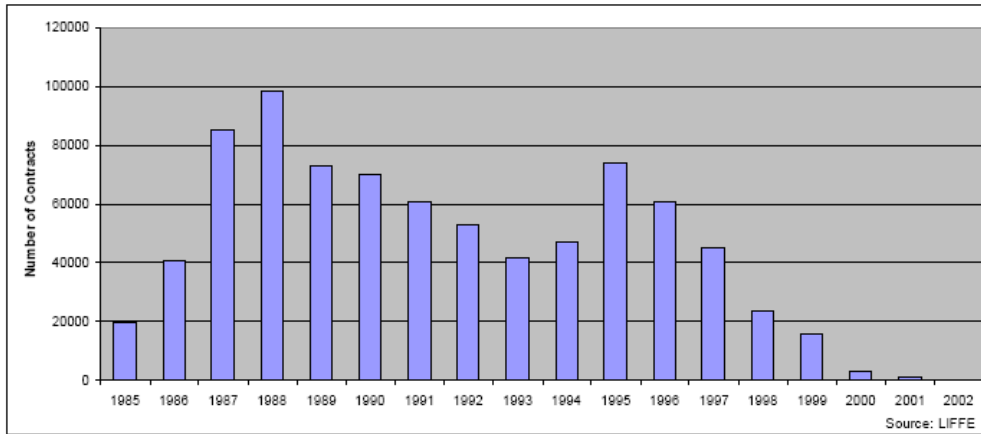
Such supply dynamics have consequences for the response of freight rates of different duration contracts to changes in demand. The same change in demand from D to D' brings about a larger reaction in spot freight rates in comparison to one- and three-year time-charter rates.

Appendix 2 Freight Future Exchanges

BIFFEX

The BIFFEX (Baltic International Freight Future Exchange) was a London-based exchange for trading ocean freight futures contracts with settlement based on the **Baltic Freight Index** (BFI), an index composed of a number of routes in dry-bulk shipping. The index was later replaced by the Baltic Panamax Index, but many minor changes were made to its composition as the patterns of world trade changed. The BIFFEX contract started trading in May 1985 on the London International Financial Futures Exchange (LIFFE), and ceased trading in April 2002 due to low trading volume.

Yearly Number of Traded BIFFEX Contracts (1985 to 2002)



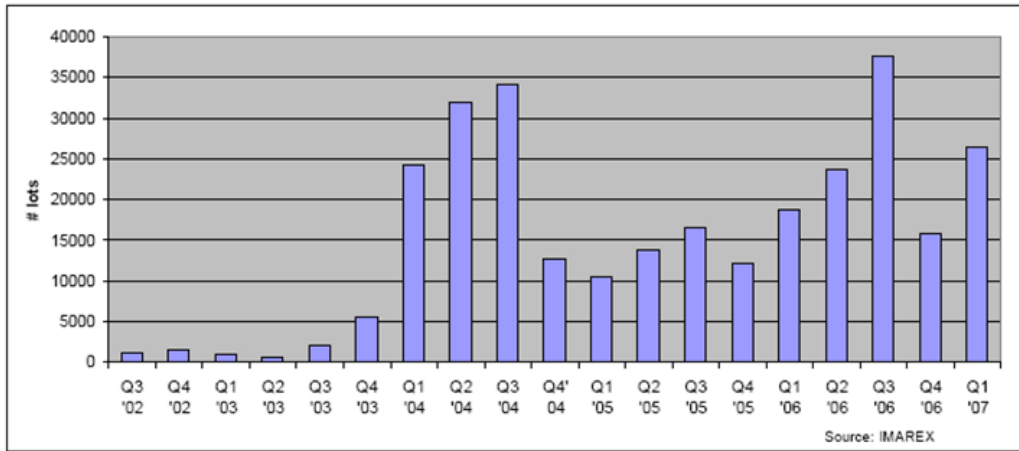
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MAREX

The International Maritime Exchange (IMAREX) opened for trading on 2 November 2001. It was the first and, at the time, only authorized and regulated marketplace for trading and clearing of maritime derivatives. IMAREX is situated in Oslo and has 210 trading customers. It is publicly listed on the Oslo Stock Exchange and is regulated by the Financial Supervisory Authority of Norway (Kredittilsynet). The underlying indices for the freight futures and options traded on IMAREX are provided by The Baltic Exchange.

Trading on the IMAREX is either done as a direct member or via a member bank. In addition to transaction services and trade in bulk-, tanker-, fuel-oil- and power-derivatives, IMAREX offers clearing services in cooperation with NOS and information services such as market pricing and data distribution. On 1 September 2006, IMAREX merged with the clearing house NOS (Norsk Oppgjørssentral) and created the company IMAREX NOS ASA. In the future, the group hopes to expand into markets where freight and/or energy are in focus.

Quarterly Number of Lots Traded on IMAREX Dry Bulk Freight Futures



Appendix 3 Risk and Derivative Market Dynamics

The basis is the spot price of an underlying commodity, minus the price of the futures or forward contract. A narrowing or strengthening basis occurs when the basis moves towards zero and the absolute difference between spot and future prices becomes smaller, or they eventually converge. In contrast, a widening or weakening basis occurs when the basis moves away from zero and the absolute difference between spot and futures prices increases.

A feature of the basis is its tendency to narrow as the contract expiry approaches –known as basis convergence – when the spot and the derivatives prices are equal. When spot prices are higher than derivatives prices, the basis is positive and the market is said to be in *backwardation*. When spot prices are lower than derivative prices, the basis is negative, and the market is in *contango*.

The main purpose of hedging is to minimize the risk exposure caused by adverse price movements in a commodity, i.e., the price risk, which is due to the uncertainty of price levels in the future. Besides price risk, there is also basis risk – the uncertainty as to whether the spot-futures spread will widen or narrow between the time a hedge position is implemented and the time it is liquidated. Basis risk occurs from changes in derivative prices in relation to the corresponding spot prices. When entering into derivatives trading, users are willing to accept some small level of basis risk in order to eliminate the price risk.