

Chapter 17

Risk Management and Applications

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Abstract Containerisation is one of the youngest sectors in the shipping industry. It first emerged in 1955. A decade later, the container fleet stood at r.d. 2.8 m TEU, and it has continued this significant growth. As of May 2012, the total container fleet is recorded at r.d. 15.7 m TEU, an increase of 458 % in 16 years at the rate of 28.6 % per year.

This chapter aims to outline a concept of how new projects—either the acquisition of second-hand tonnage or the placement of new building orders—in the container segment could be structured and considers the limitations of the traditional models used in the container shipping industry.

The concept follows the assumption that ships earn money through the transportation of cargo. The basis of the charter rate for a ship should be connected to the income generated in the freight market. As a benchmark, one of the existing

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container freight indices will be used. Through the use of derivatives that are settled against the same index, the remaining market risk can be transferred to a third party within the industry, or outside, to a professional risk taker.

17.1 The Freight Market

The container-shipping segment differs from other shipping markets because of the following aspects:

- Only a limited number of existing intercontinental liner services currently organise the ocean transportation of boxes.
- Ocean carriers offer to transport containers in “loops” along a certain route calling at several ports as per a published timetable. These are comparable to a London red bus service with its various fixed drop-off and pick-up points.
- Regarding the transshipment in use, containers are transported along with smaller vessels from smaller ports to central container hubs, where they are reloaded to larger vessels for the long haul trade. This is comparable to intercontinental airline services—e.g. the hub feeder system.
- Container vessels are never empty. Some containers will still be on board when arriving at the final destination of the trade lane, because most of the vessels are employed on round trips.
- With respect to an imbalance of equipment, empty boxes have to be transported to areas with higher cargo output.
- The base of BCOs (Beneficial Cargo Owners) is highly diversified as virtually anyone producing or trading goods for the international market is a potential customer.

This differs considerably from the bulk or oil markets where only a few users of coal or crude oil ship the same kind of cargo in huge lots from A to B. Commodities are commonly transported via ships on a “tramp” or “voyage” basis. This is best compared with the black cab service in London.

The container carrier market is a good example of an oligopoly: only a few major shipping lines control the majority of the market. This is especially true in key trade lanes such as Asia–Europe, Asia–USA, the US east coast and the US west coast (Transpacific). Theoretically, it allows carriers to influence directly the market where they operate either singularly or collectively.

Container cargo was commonly priced through the establishment of tariffs, where the transportation of certain goods was priced differently—i.e. the freight rate for coffee was cheaper than that of electronics or garments, as it was a more stable and high-volume business. Over several years, the tariffs were agreed upon in regular meetings. Such meetings no longer take place. This is mainly due to antitrust market regulations and competition rules. The term, “tariffs”, has largely been replaced by the term, “FAK” (freight all kind). The income of ocean carriers represents a mix of earnings from contract and spot cargo. Carriers try to cover their costs—i.e.

time charter rates, staff, bunkers, etc. by long term contracts—and earn profits through spot freight rates and additional surcharges. However, in the eyes of the shipper, surcharges like the BAF (Bunker Adjustment Factor) and the FAF (Fuel Adjustment Factor), as well as location-based charges like a fog surcharge at certain international ports, are considered to be irritating additional costs.

It seems that over the long term, the majority of logistics services have been sold purely on price. It has been observed that relationships between carriers and third-party logistics providers (3PLs), as well as between carriers and BCOs, have been changing because of minimal fluctuations in the freight rate of oceangoing cargo. This is despite the set-up of additional services like—warehousing, labelling, IT solutions etc.—being costly in the initial set-up phase and requiring longer-term client relationships. Many industry participants say that service and reliability is sacrificed for the sake of minimal cost savings.

17.2 The Charter Market (Tramp Owners)

It is common practice for ocean carriers to secure their tonnage from ship owners via bareboat (b/b) or time charter (t/c) agreements with different durations.

From a carrier's perspective, a charter strategy can be implemented by building a portfolio of long and short-term tonnage. Different durations provide the opportunity to return tonnage to the tramp market to adjust the supply side and remove excess capacity from the market. The ability to use this option is becoming obsolete as ocean carriers increasingly act as ship owners themselves. Most of the larger vessels in the market or those that are currently on order are directly intended for the account of one of the main liner companies. Even when leasing structures, trusts, or other finance vehicles have been used to fund this tonnage. Lenders or investors usually back the order with long-term charters to one of the larger liner networks. Capacity adjustments become difficult for individual industry participants because they own the vessel but lack the option of returning it to the ship owner for the duration of the contract. As tonnage becomes ever larger with charter contracts extended in duration, it becomes increasingly difficult for the entire industry to adjust capacity on demand.

The market for charter tonnage, the so-called “tramp market”, is dominated out of Europe, especially in Germany and Greece. A further significant fraction of container tonnage is controlled out of Asia.

Mainly small to mid-sized companies act as ship owners and provide the following services to their clients, the shipping lines:

- Arranging finance (debt and equity)
- Design/order/purchase of tonnage
- Bearing the employment risk
- Crewing
- Insurance
- Technical management

- Dry docking (maintenance)
- Voyage administration
- Commercial management of the asset (chartering)

A substantial proportion of the market comprises companies that secured loans (debt) with capital provided by private investors who contributed via KG or KS (limited partnership) structures funds arranged by so called “issuing houses” or “emission houses”. These investment arrangers can be directly linked to the actual manager and/or disponent owner in many cases. KG and KS funds are legally independent special purpose vehicles (SPVs) that invest the funds in the ownership of a vessel. The regular share between EQT and debt was r.d. 50–50 pct, but in boom years, it rose to 70–30 pct.

In terms of cash flow for these financial models, a t/c or b/b agreement with a major shipping line was considered the ultimate security for both lenders and investors in the SPVs. However, after the initial charter period, the employment risk—i.e. the risk that the vessel cannot find suitable employment to earn sufficient revenue—is transferred to the investors who bear the associated risk. On the other hand, investors benefit if the employment of the vessel results in a higher financial return to the SPV.

A weakness of the model is the necessity for a long-term forecast over the assumed 25-year lifetime of the vessel. This can only be an assumption, considering the fast-changing world with respect to technology, market regulation, inflation and volatile interest and foreign exchange (FX) markets.

Even if the initial time charter was agreed to extend over a long period, thereby reducing the employment risk, the SPVs still face the problems of an imprecise financial model. Operational costs (OPEX), especially the costs of crew, lube oils, and insurance premiums, might escalate further than initially expected. In addition, interest rates on the loan and changes in exchange rates may fluctuate significantly, thereby resulting in an inaccurate initial calculation. Owners and investors face unstable costs related to the employment of the vessel while maintaining a fixed income that cannot be amended to cover potentially increasing costs.

Naturally, a vessel’s t/c is finite. Once the current t/c runs out, all participants are exposed to current market conditions, which can be negative or positive for investors. If OPEX and CAPX were to increase beyond expectations, their associated costs would absorb a larger proportion of the vessel’s generated income from a higher charter market. A worse situation could occur if costs go up and the t/c market weakens.

If a vessel enters employment in a bullish market and its use is always prolonged in other high markets, it will naturally turn into an outperformer. Similarly, if a vessel enters the market at a certain point and the charter agreement needs to be prolonged for the short to mid-term, it might miss certain highs and end up in a low market again; it will become an underperformer from a purely investment perspective. As indicated below, two equivalent vessels that might have been ordered at the same time may end up with completely different financial results simply because they delayed slightly before entering the market (see Fig. 17.1).

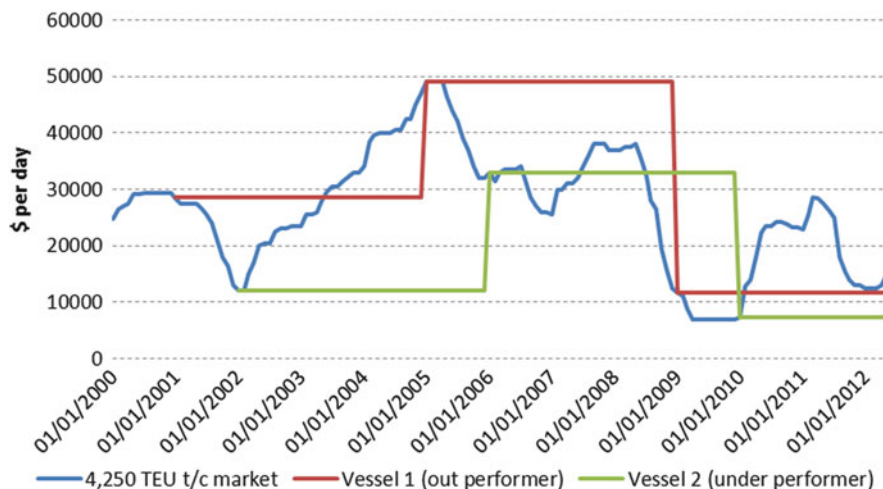


Fig. 17.1 t/c spot market 4,250 TEU. Source: ICAP Shipping Ltd

It appears that even with the current oversupply in the market, demand for new tonnage will emerge soon. Previous advances in vessels related to size rather than to economical engines and environmental standards—i.e. ballast water management, filters, CO₂-emissions, etc. It seems realistic that vessels will be scrapped before their maximum assumed lifetime simply because they are uneconomical. Ships will have to adhere to the stricter environmental standards that are set to be introduced. Hence, there will be a greater emphasis on efficiency to keep bunker costs low.

17.3 The Container Market: A Commodities Market

With the growing size of container vessels, more and more cargo has been containerised. By the end of the twentieth century, a larger portion of high-valued goods had been transported in boxes. For several years now, an increasing amount of low-value, high-volume cargo like soya beans, scrap metal, woodchips and waste paper is being containerised.

Commoditisation takes place when goods or services lose differentiation across their supply base. We have seen this occur in the container market with standard 20-ft. and 40-ft. dry containers on the major trade lanes being described as commodities, with carriers hardly able to differentiate their product offerings. Some carriers use the proposal of service quality—i.e. on time deliveries—as a method to differentiate their product. With cargo now being quoted on a FAK (freight all kind) basis, the underlying product—i.e. the container—is identical regardless of the provider.

The industry has seen huge losses, as well as profits over the years, as market volatility has led to large swings in container freight rates and t/c rates. It is still common practice during times of heavy losses for governments to keep companies afloat due to political or nationalistic interests. Moreover, many container divisions have been subsidised through group activities, profits, or by virtue of being state-backed businesses.

17.4 Freight Indices

Freight indices have been in existence since the beginning of the twenty-first century. A freight index is a snapshot of the actual market environment and can be used as an indicator in the physical market. It can also be used as a neutral benchmark for future settlements in the securities market.

The Shanghai Shipping Exchange (SSE) launched several container-related indices focusing on ex-Asia cargo. Other currently available indices include the WCI (World Container Index), the CCFI (China Container Freight Index), the CTS (Container Trade Statistics) and the TSA Index (Transpacific Stabilisation Agreement). Each index has a slightly different methodology, as is outlined below (see Table 17.1). This suggests that the core number may differ individually. However, there is a high correlation between the rate movements reported in each. Market players have been familiar with indexation in the stock, energy, and commodities markets for decades. Users must deem the indices to be trustworthy. This can happen only if the index reflects the market accurately and is transparent in its methodology. Participants are unlikely to use it if they do not believe that it reflects the market or if they do not understand or trust how it is calculated.

In the container industry, the Hamburg ConTex has already been used as a charter benchmark. However, this index reflects only the t/c market. The approach to index the relatively small t/c market is difficult. Although standards are clearly defined, too many differentiating factors separate individual vessels. Successful indexation of the commodity itself seems to hold more promise.

It appears that a derivatives market can be established in a much easier way in the underlying freight market. Risk can be successfully transferred to more potential risk takers.

17.5 Derivatives

Many believe that the first record of a modern futures exchange originated in seventeenth century Japan with rice futures commonly hailed as the first. Gluts and shortages of the product led to price fluctuations. Participants were able to trade in forward (future) contracts, which insulated them from adverse movements in price. This is now more commonly known as a hedge and is commonplace in other

Table 17.1 Comparison of currently existing container freight indices

	SCFI	WCI	CCFI	CTS	TSA
Data frequency	Weekly	Weekly	Weekly	Monthly	Monthly
Freight rate timing	Week of quoting	Last 2 days prior to index publication	Time of payment	Time of loading	Last day of departure
Publication delay	None	None	None	One month	One month
Measurement	TEU/FEU	FEU	Index	Index	index
No. of rate providers	30	Minimum 8	15	Unknown	12
Known panellists	Yes	No	Yes	No	No
Carrier input	Yes	No	Yes	Yes	Yes
Shipper input	Yes	Yes	No	No	No
THC included	No	US: Yes Europe: Yes, apart from Rotterdam/Genoa imports	Yes	Yes	Yes
BAF included	Yes	Yes	Yes	Yes	No

Source: SeaIntel, Copenhagen, November 2011

Table 17.2 Specifications of derivatives

Forward	Future
Private contract between two parties	Traded on an exchange
Not standardised	Standardised contract
Usually one specified delivery date	Range of delivery dates
Settled at the end of the contract	Settled daily
Delivery or final cash settlement usually takes place	Contract is usually closed prior to maturity
Some credit risk	Virtually no credit risk

Source: ICAP Shipping Ltd

markets, such as those dealing in interest rate swaps, foreign exchange (FX), and oil, to name a few. A derivative is a financial product whose value is derived from an underlying variable. This variable may be a freight index such as the Shanghai Containerized Freight Index (SCFI). Swaps, options and forward freight agreements (FFAs) are forms of derivatives.

In particular, a forward contract is an agreement made on a specific date (X) between two parties to exchange at a fixed future date (Y) a specific quantity of an underlying asset for an amount of money that was agreed upon at the start of the contract (X). Future contracts are closely linked to forward contracts but are instead normally traded on an exchange. To make trading on an exchange possible, contracts have specific standardised features (see Table 17.2).

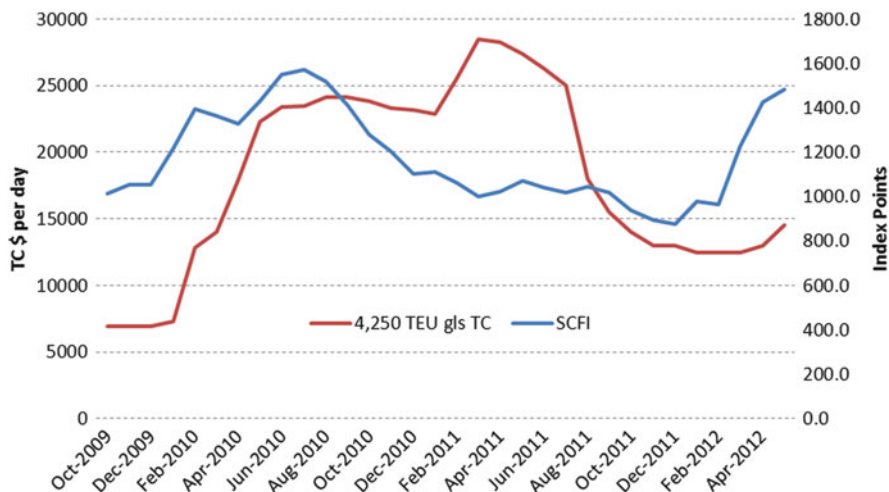


Fig. 17.2 TC rates vs. Freight rates. *Source:* ICAP Shipping Ltd

17.6 Freight Index-Linked Vessel Employment

The correlation of the two existing markets in the container industry-i.e. charter market vs. freight market-has been controversially discussed for many years. It seems logical that also container vessels are ultimately earning money through the cargo they transport. Due to technological (e.g. rapid development of vessel size) and several artificial influences (e.g. tax exemptions, government support of the shipbuilding industry, cartels, substations, etc.) the two markets can appear to have an extensive time delay, although in the end, the markets have been following one another. Ultimately, the demand for vessels and, thus, for the t/c rate in the market is influenced by demand from operators for vessel employment. The operators, in turn, are affected by the growing demand for containerised cargo. Therefore, it is logical to suggest that when demand for cargo is high (freight rates increase), there is a greater demand for vessels (t/c rates increase) and vice versa (see Fig. 17.2). As discussed earlier, other influencing factors can affect each market individually, but due to market fundamentals over the long term, the two markets are closely correlated.

It has been common practice for many years in the wet and dry shipping markets to link charter contracts to indices. The Baltic Freight Index (for bulkers) and the Worldscale (for tankers) are commonly accepted industry standards.

To make long-term projects happen, owners and carriers must discuss how a flexible agreement can be reached. If both parties earn more in good markets and less in weak markets, both sides should be satisfied.

The current t/c model creates an artificial separation of the cargo from the tonnage market. Hence, the underlying market conditions are not connected to the asset being deployed. In reality, revenue earned through the freight market goes towards



Fig. 17.3 Floating charter contract

paying for the t/c of the vessel. From an owner's point of view, an upside in the freight market should be reflected in his charter income, as presumably in a bullish economic environment his financing, crewing, and other expenses will rise.

The distortion of costs or revenues can be solved by reuniting the two markets using a freight index as a basis to calculate the charter income/costs.

A certain factor is connected to each index point; the charter rate payable is calculated by multiplying both of these factors. Besides, on creating a charter rate that always conforms to market conditions, counter-parties can benefit from the container FFA market to lock in their cash flows, as these financial tools are settled against the same index.

Procedure:

To implement an index-linked contract, a number of parameters need to be negotiated to allow owners, charterers, and brokers to continue playing the market.

Certain quality criteria of individual tonnage evolve around by what factor to apply as well as any possible base rate. Simple calculation tools can help both parties establish the possible effect on the overall t/c.

1. How to calculate the floating element of the contract

- (a) Which index to use (e.g. SCFI)
- (b) What factor to apply (the floating element)

2. If any, base t/c rate is to be applied

3. Payment terms

- (a) Weekly/fortnightly debit or credit notes
- (b) Weekly/fortnightly payment in arrears

Floating element: This would be linked to a suitable index such as the Shanghai Containerized Freight Index (SCFI) and would indicate the factor with which to multiply the index. This would establish the floating t/c element, which would fluctuate as the index increased or decreased.

Basis rate: A base t/c that is fixed for a given period may be added (see Fig. 17.3). This could be a figure that would allow the owner to cover OPEX costs.

Once these negotiations between the two parties (owner and charterer) are completed, the owner or charterer may wish to enter into an FFA position to secure their income (owner) or costs (charterer). Because FFAs are future contracts, they can be bought or sold before the actual vessel delivery.

Because Forward Freight Agreements (FFAs) are linked to the same index as the one where the floating t/c is based, they can be used to lock in future cash flows.

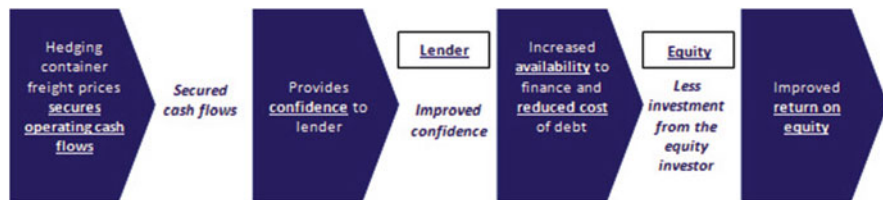


Fig. 17.4 Use of derivatives in a floating charter contract



Fig. 17.5 FFAs used to provide stable cash flows

They also remain fungible, allowing either party to reverse their fixed cash flow and participate in the spot market. Another important factor is that FFAs remain flexible as they can be traded for a chosen period. This can provide parties with long-term cash flow security, which should attract lenders and investors (see Fig. 17.4).

An embedded derivative is formed when a derivative instrument, such as a container FFA, is combined with a non-derivative contract, such as a vessel employment contract (t/c), to create a single hybrid contract (see Fig. 17.5). An embedded derivative causes some or all of the cash flows generated from the host contract to be adjusted based on a specified variable, such as a freight index. The use of such derivatives enables participants to secure cash flows that would otherwise fluctuate due to changes in the host contract. The use of derivatives in this manner is commonplace in the oil markets, with companies that participate in crude derivatives being able to cover exploration costs. In the meanwhile, index-linked contracts are regularly used in the bulk and tanker markets with settlements against the BDI and BCI.

17.7 Examples

17.7.1 General Example

A vessel owner negotiates a rate with a prospective charterer using the following parameters.

Base t/c: \$5,000/day

Market element: Additional \$10 per index point

At the time of negotiation, the SCFI is at 1,500 points.

Therefore, the t/c for Day 1 will be $\$5,000 + \$15,000(10 * 1,500) = \$20,000$

On Day 2, the SCFI will be at 1,400 points.



Fig. 17.6 Market movements netted against FFA outcome

Therefore, the *t/c* for Day 2 will be $\$5,000 + \$14,000(10 * 1,400) = \$19,000$

Therefore, in good freight markets—i.e. when the charterer (carrier) is earning more through higher freight rates—the owner will receive a higher *t/c* and vice versa.

17.7.2 Example Using FFAs

Using the above, the *t/c* for Day 1 will be $\$5,000 + \$15,000(10 * 1,500) = \$20,000$

On Day 1, the owner decides to sell FFAs to lock in their income at \$20,000

The owner, therefore, sells 300 FFAs (30 days per month * \$10 per index point) at 1,500 points to lock in their income for the month (assuming 30 days).

On Day 2, the SCFI is at 1,400 points.

Therefore, the physical *t/c* for Day 2 will be $\$5,000 + \$14,000(10 * 1,400) = \$19,000$

We must now add to the physical *t/c* the cash flow from the container FFA, which was sold at 1,500.

Assuming that the index settles at 1,400 points, the owner will receive \$100 per FFA contract (1,500–1,400).

The owner sold 300 FFAs; hence, he will receive \$30,000 ($\$100 * 300$) in cash at the end of the month.

Assuming that the month has 30 days, $\$30,000/30 \text{ days} = \$1,000$ per day in cash received through the FFA.

Therefore, $\$19,000 \text{ t/c income} + \$1,000 \text{ FFA income} = \text{net t/c income of } \$20,000$ per day.

Changes in the physical contract are equally and oppositely offset by the cash flow received through the FFA. This creates a fixed net *t/c* income for the owner (see Fig. 17.6).

17.8 Main Arguments for the Index-Linked Employment of Container Vessels

- There is no over-commitment from the operator.
- Tonnage will be competitive in every market environment.
- There is no under-commitment from the owner.

- The base rate should cover OPEX/CAPEX.
- Investors and owners have the chance to participate in the upside of the global freight market.
- There are no expensive repositioning or delivery procedures due to the likelihood of long-term employment with the same account.
- Flexibility is present, even in long-term projects.
- Swaps (Container FFA's) lock in minimum returns or fix convenient market levels.

17.9 Failures and Limitations of the Index-Linked Employment of Container Vessels

At present, only four to six regularly traded routes exist in the FFA market. These include Asia-NWE, Asia-Med, Asia-USWC, and Asia-USEC. This does not provide complete market coverage, but allows participants to be active in the main trade lanes. As the existing instruments reflect more than 50% of the total market, entering a sufficient proxy hedge is possible.

As with any derivative, market liquidity begins low as participants usually enter with low volume trades before placing larger volumes. This trend is reflected in the current market with increasing participants entering and volumes gradually increasing as players become familiar with the process.

Compared to a classical time charter, an index-linked employment requires a little more administration. The accounting and finance department has to check the index and calculate the amount payable for each specific week.

17.10 Counter-Party Risk in the Derivatives Market

When trading derivatives, transacting a deal involves two options:

1. Bilateral
2. Cleared

Bilateral: Two parties agree on a contract. This is commonly a standard contract—e.g. International Swaps and Derivatives Association (ISDA). As with any business transaction, counter-party risk always exists when agreements are made between two parties. The risk is that the counter-party may default upon settlement.

Cleared deals: A clearing house assumes the function of a central risk taker. Clearing houses have substantial capital base and insure their risks. This enables them to step in should a counter-party fail. The service is comparable to PayPal in the retail industry.

This method of trading eliminates the counter-party risk associated with bilateral trading. Since the clearing house acts as the central counter-party, it also ensures anonymity for all market participants. As transactions are registered there and the clearing houses are normally regulated by the local financial authorities, they play an important role in an increasingly regulated financial market.

17.11 The Role of the Broker

Brokers gather people and organisations that possess the willingness to buy or sell. Brokers normally staff trading desks or run electronic networks to bring these buyers and sellers together, facilitating price discovery and receiving a commission when a transaction is finalised.

This helps provide price transparency and aids in establishing the best possible rate in derivative markets for their clients.

17.12 Costs

The costs of hedging are commission and clearing fees ranging from US\$5 to US\$15 as well as some margin and administration costs (see Table 17.3).

In theory, these can be offset because of a lower cost of capital or less invested capital (see Fig. 17.7).

In the Tables 17.4 and 17.5 selected clearing fees are presented.

17.13 Illustration of Charter Agreements and Derivatives in the Balance Sheets of Ship Owners and Charterers

Charter rates stipulated in the charter agreement are recorded in the accounts of ship owners as earnings and in the accounts of charterers as expenses. Whether it involves a time charter agreement or an index-linked contract is irrelevant because the rates will be recorded in the same area of the financial accounts. A contract whose running time causes earnings and expenses to be recorded beyond the date of the balance sheet will not normally be recorded in the balance sheets of the contractual partners. According to the realisation principle, unrealised gains must not be considered.

The situation is different in the case of an onerous contract. According to IAS 37.68, an onerous contract is a contract where the unavoidable costs of meeting the obligations under the contract exceed the economic benefits expected to be received under it. If an entity has a contract that is onerous, the present obligation under the contract shall be recognised and measured as a provision (IAS 37.66). §249 (1) HGB

Table 17.3 Broker commissions

Volume	Commission
0–99 TEU pm	\$15 per TEU
100–999 TEU pm	\$10 per TEU
1,000+ TEU pm	\$5 per TEU

Source: ICAP Shipping

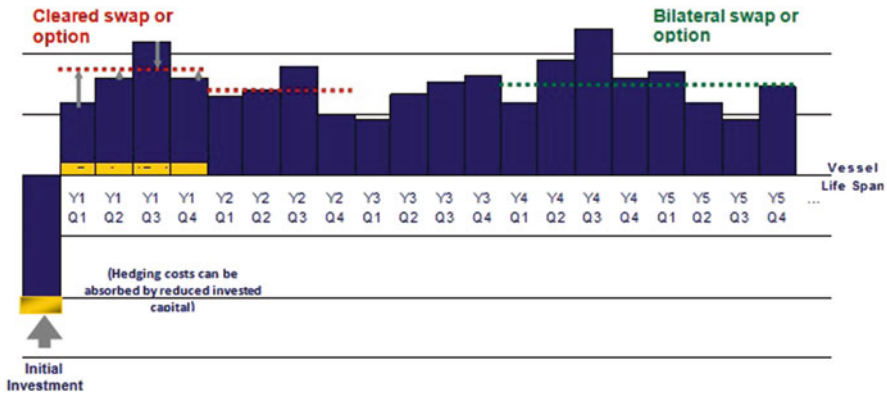


Fig. 17.7 Costs of hedging over a projects life span

Table 17.4 SGX clearing fees as per summer 2012

	Non-SGX members	SGX members
SGX clearing fee	\$10 per lot	\$8 per lot
Clearing member fee	\$10 per lot	n/a

Lot size = ten containers

Source: SGX, Singapore

Table 17.5 LCH clearing fees as per summer 2012

	Non-LCH members	LCH members
LCH clearing fee	\$3 per lot	\$3 per lot
Clearing member fee	\$3 per lot	n/a

Lot size = one container

Source: LCH Clearnet, London

contains the same consequence and deals with an “accrual for contingent losses”. For the calculation of the provision, the full costs have to be used. For several benefits and costs, the best possible estimations have to be made and the provision has to be discounted. Difficulties concerning the estimations arise out of long-term index-linked contracts. However, in a functioning market, such contracts lead to a kind of correlation between benefits and costs, which means that no onerous contract will be in existence.

As already mentioned, the owner or charterer may wish to enter into an FFA position to secure their income (owner) or costs (charterer). If these financial products or agreements have been entered into and will be closed beyond the balance sheet date, there is again the question of accounting. According to IFRS regulations,

the costs of hedging—commission, clearing fees, margin, administration costs, etc.—are recognised as assets in the balance sheet. The balance sheet will record whether future economic benefits for the business are likely and whether the asset has a cost or value that can be measured reliably (source: framework.89). Recognising the costs of hedging as an asset is a consequence of the accrual basis of accounting. In contrast to IFRS, the German HGB considers a balancing as an accrued item. An accrued item is no asset, but only a capitalisable aid. According to §250 (1) HGB, the balance sheet must record any expenditures both before and after the balance sheet date. The main difference between the IFRS and HGB regulations is that the latter requires the capitalisable aid to be shown in the balance sheet even though no future economic benefits are expected.

More significant than balancing the costs of hedging is balancing the FFA itself. Regarding the FFA, an initial forecast is necessary to see if benefits or costs are expected from the FFA in the future. The resulting transaction will not be shown in the balance sheet of a company that expects benefits. The company that expects costs will have to record this onerous contract in the provisions. If the considered company is not an owner or charterer entering into the FFA position to secure income (owner) or costs (charterer), then all aspects of balance sheet preparation are explained as mentioned above.

The situation differs, for example, when ship owner and charterer agree upon an index-linked employment, and the owner, as acceptor of a fixed charter rate and donor of the same index-linked rate agreed with the charterer, closes an FFA.

The explanations above and especially the example show that, in this case, the charter contract plus the FFA leads to a constant fixed net cash flow. For better understanding, it is assumed that this fixed net cash flow is larger than the unavoidable costs incurred by the owner. In our example, a massive decline of the charter rates and the indices leads to small benefits out of the charter agreement for the owner. If on balance sheet date the future expected unavoidable costs are higher than the benefits from the charter agreement, the present obligation under the contract shall be recognised and measured as a provision. This provision contains the amount of which costs exceed the benefits. At the same time, the owner receives benefits from the FFA. These benefits cannot be considered in the balance sheet.

The reverse is also applicable, future benefits from the charter agreement cannot be balanced, whereas a loss-making FFA has to be considered in the provisions. Both examples show that the hedging relationship of the deals is not visible in the annual financial statements. The economical view of connected deals requires an overall evaluation.

The special regulations for hedge accounting are applicable, according to IFRS, if all of the following conditions are met (source: IAS 39.88):

- (a) At the inception of the hedge, there is formal designation and documentation of the hedging relationship and the entity's risk management objective and strategy for undertaking the hedge. That documentation shall include identification of the hedging instrument, the hedged transaction, the nature of the risk being hedged and how the entity will assess the hedging instrument's effectiveness in

offsetting the exposure to changes in the hedged item's fair value or cash flows attributable to the hedged risk.

- (b) The hedge is expected to be highly effective in achieving offsetting changes in fair value or cash flows attributable to the hedged risk, consistently with the originally documented risk management strategy for the particular hedging relationship.
- (c) The effectiveness of the hedge can be reliably measured, i.e. the cash flows of the hedged item that are attributable to the hedged risk and the fair value of the hedging instrument can be reliably measured.
- (d) The hedge is assessed on an ongoing basis and determined actually to have been highly effective throughout the financial reporting period for which the hedge was designated.

The example above, where the owner agrees to index-linked employment and secures its cash flows with a counter-directional FFA, is based on the same index; hence, it should easily fulfil the conditions. The initial and subsequent documentation should be easy, the probability of the compensating effect is 100 % and future expectations concerning the development of the index and the resulting values of the covering transactions can be delivered by branch services.

The index-linked employment is a binding agreement for the exchange of a specified quantity of resources at a specified price on a specified future date or dates (firm commitment, source: IAS 39.9).

If the index-linked employment, which is an unrecognised firm commitment, is designated as a hedged item, the subsequent cumulative change in the fair value of the firm's commitment attributable to the hedged risk is recognised as an asset or liability with corresponding gain or loss recognised in terms of profit or loss. The changes in the fair value of the hedging instrument are also recognised in terms of profit or loss (source: IAS 39.93).

It becomes more difficult when, for example, a charterer backs a large volume of forward agreements or hedged business with only a few covering transactions, or when multiple indices are applied. If the effectiveness of a hedge remains unfulfilled, then general accounting principles will apply for unmatched financial hedges. Generally, the company drawing up a balance sheet can choose whether to apply for hedge accounting.

In the German accounting rules, the overall evaluation is codified in §254 HGB. The German (legally uncodified) accounting principles also require the documentation of the covering intention, the quantitative proof and a continuous monitoring of the effectiveness of the hedging relationship. Proof for the existence of a hedging relationship should be easy to provide, according to IFRS. If a hedging relationship exists, the regulation according to §254 HGB for the creation of an accrual for contingent losses (§249 (1) HGB) is not applicable.

Unlike in IFRS standards, the German practice of balance sheet preparation ensures that neither the underlying transaction nor the covering transaction would be balanced. Nevertheless, new German commentaries also allow financial accounting as per IFRS.

Nevertheless, this is applicable only if the cash flow of the underlying transaction plus covering FFA transaction (fixed net result) is bigger in total than the unavoidable costs incurred in running the vessel.

17.14 Employment of Vessels: Index-Linked Employment from a Contractual Perspective

The charterer may take over a fully-equipped vessel including crew for one or more specified trips (voyage charter) or for a particular period (time charter).

Alternatively, the vessels can be placed on a bareboat charter where the charterer hires the vessel without the crew.

In contrast to, for example, tankers that are predominantly employed via voyage charters, container ships are usually chartered within the framework of time charters based on internationally accepted standard forms—such as BOXTIME or BALTIME.

Traditionally, and in line with these standard forms, English law is agreed upon between the owner and the charterer in the vast majority of cases.

In contrast, German law is almost never proposed by either party because Germany's national maritime and shipping laws have generally been considered outdated, unclear and, thus, impractical.

However, the new German maritime and shipping laws—scheduled to come into effect in December 2012 will set a considerably improved legal framework.

Therefore, in the long term, German law may constitute an alternative in the container-shipping segment and in other shipping markets.

For the first time, the law will also contain special rules on bareboat charters, in §553ff German Commercial Code (HGB), and time charters, in §557ff HGB.

In our view, the new rules will not exclude new pricing methods such as the replacement of a fixed charter rate (US\$ per day) by a flexible time charter rate linked to an existing or a new trusted container freight index.

In contrast, the new §557 (2) HGB states solely that the (time) “charterer is obligated to pay the agreed time freight”. For that reason, we believe—in accordance with general contract law principles—that the agreement on a flexible calculation method instead of a fixed amount would not cause significant legal problems, provided the method is based on a transparent and accurate formula.

In particular, an index-linked calculation method would not violate the standard rules in relation to general terms and conditions (§§307ff German Civil Code-BGB).

Index-linked employment is an integral part of the parties' agreement on price-determining factors. Consequently, it is subject only to the general transparency requirements of §307 (1) sentence 2 German Civil Code-BGB.

Therefore, a violation of §307 (1) sentence 1 BGB is not possible.

An index-linked employment would also comply with the German Price Clause Act (Preisklauselgesetz) which—subject to exceptions—provides for prohibition of pricing clauses to prevent unregulated price increases with inflationary trends.

The flexible pricing terms of index-linked employment will reflect general market development in the container industry (charter market vs. freight market).

Additionally, they link to associated services (time charter and carriage of goods) that are—in view of the purpose of the Price Clause Act—sufficiently “similar or at least comparable” within the meaning of §1 (2) No. 2 to justify an exemption from the prohibitions of §1 (1) of the Price Clause Act.

In practice, the time charter parties may insert an index-linked formula into the standard time charter forms to document the hire of the time charter.

The application of a flexible, index-linked calculation method would also not raise serious legal concerns in relation to payment dates.

In this respect, the new German law in §565 (1) HGB states that in the absence of any agreement to the contrary, the time freight shall be paid semi-monthly in advance, as reflects customary international practice.

Therefore, alternative agreements such as advance payment of a higher pre-agreed base rate in connection with a 2-week balancing of accounts (via a credit note) or a weekly debit note (i.e. the payment in arrears of the difference between the base-rate and the calculated final time freight) remain legally possible.

Thus, from a contractual point of view, index-linked employment of vessels would not cause significant legal issues under German law.

The applicability of English law does not lead to a different legal assessment.

In the event that the parties agree on a trusted index within the framework of a transparent, objective, and unambiguous formula, we see no serious legal issues under English law in connection with index-linked employment of the vessels.

Consequently, the commercial concept behind index-linked employment can be considered a legally practicable alternative to a fixed charter rate (US\$ per day).

17.15 Legal Overview of Container Freight Swap Agreements

Bilateral deals involving derivatives require a specific contract: an ISDA master agreement. This reflects that derivatives differ from financial products such as loans and bonds. Loans and bonds feature two parties with fixed roles—one counter-party is the debtor and the other is the creditor. Hence, cash flows are in one direction only. However, derivatives differ as the debtor and creditor can change, thereby leading to a “two-way road”. For example, with container swaps, if the settlement price is above the swap price, the buyer is the creditor and the seller the debtor. If the settlement price is below the swap price, the seller is the creditor and the buyer the debtor.

The structure of an ISDA agreement is shown in the diagram below. There is a fixed, pre-printed, non-negotiable part: the master agreement. This contains no information regarding the price or quantity of the transaction. Therefore, once a master agreement has been signed between counter-parties, they are able to trade

without renegotiating a contract each time. Furthermore, the master agreement allows positions to be netted. Hence, multiple transactions between the two counterparties can be reduced to one.

The agreement also allows a party to liquidate positions if the other defaults—i.e. if an event of default occurs. This covers:

- Failure to pay or deliver collateral
- Failure to provide credit support
- Misrepresentation
- Default due to financial obligations
- Bankruptcy

Positions can also be liquidated under a termination event, which can be defined as:

- Illegal changes in the law-making performance of the master agreement
- A merger that results in a decline in creditworthiness
- A merger or a change in tax law, which results in increased taxes being paid

17.16 Credit Support Annex

A credit support annex (CSA) is an optional part of an ISDA contract. This outlines the rules under which counter-parties post collateral. This is done to reduce the credit risk arising from a counter-party defaulting.

Terms of a CSA include:

- Threshold—i.e. when transfers of money should be made
- Minimum transfer amounts
- What is accepted as collateral, and the associated haircuts
- Rules for settling disputes regarding over-valued positions

17.17 Maritime Sector Regulatory Environment: EU

The maritime sector for trades to and from the EU is subject to some of the most stringent antitrust rules in the world. The scope of application of the rules prohibiting restrictive agreements is wider than in other jurisdictions and the levels of the penalties imposed for infringements more severe.

The limited safe harbour provided by the liner conference block exemption disappeared with the expiry of that exemption on 18 October 2008. There is now only a very limited block exemption regulation applicable to maritime transport: Commission Regulation (EC) No. 906/2009, the liner shipping consortia block exemption.

17.17.1 Liner Conferences

Since 18 October 2008, liner conferences for shipping lines operating on trades to and from the EU have been subject to the full application of the EU antitrust rules.

This means that liner conferences that have the purpose or effect of fixing tariffs and conditions of carriage on trades to and from the EU have been prohibited with effect from 18 October 2008. Exchange pricing, capacity, costs, and other commercially sensitive data as well as participation in discussion agreements for trades to and from the EU are likely to fall foul of the EU rules—in particular of Article 101 of the Treaty on the Functioning of the European Union—even if the exchange of information does not result in any change in behaviour. It does not matter that conferences are permitted in other jurisdictions; the fact that price fixing is permitted elsewhere does not authorise it on trades to and from the EU and would not afford an effective defence in antitrust proceedings. The EU rule change does not prevent shipping lines from participating in price-fixing and capacity-limiting conferences on non-EU trade routes.

17.17.2 Shipping Consortia

The liner shipping consortia block exemption was adopted on 29 September 2009 and came into force on 26 April 2010. It has a duration of 5 years. The block exemption applies to international liner shipping services for the carriage of cargo, excluding maritime cabotage. For the purposes of the EU antitrust rules, consortia involve the carrying out of activities in common by shipping lines for the primary purpose of rationalising costs. On that basis, they are distinguishable from conferences, which pursue the objective of coordinating tariffs.

Consortia that satisfy the requirements of the revised block exemption—in particular, those that have a market share below 30% on all trades on which they operate and that do not involve price fixing and customer allocation—will benefit from antitrust immunity. The European Commission has clarified the method for calculating the market share: the individual market share of each consortium member in the relevant market covering all activities, whether inside or outside the consortium, should be considered when determining market share.

More types of services are covered by the definition of consortia in the revised block exemption since references to services being carried out chiefly by container have been removed: all liner shipping cargo is covered.

The list of exempted activities covers only what is indispensable for operating joint services: activities of a consortium operating within a conference, cargo, revenue or net revenue pools, joint marketing activities, and joint documentation systems are no longer covered by the block exemption. Coordination of sailing timetables, exchange or cross-chartering of slots, pooling of vessels or port installations, use of joint operations offices and port services, use of a computerised

data exchange system and/or joint documentation system, and joint marketing are generally permitted because they facilitate rationalisation and economies of scale in the use of vessels and port services. Joint or coordinated capacity changes are permitted only where they are a response to fluctuations in supply and demand and are not a strategy to drive up prices.

The liner shipping consortia block exemption will not apply to agreements that include price fixing when selling liner services, limitation of capacity or sales except for permitted capacity adjustments, and market or customer allocation.

The relationship between the European Commission and many international shipping operators has not been particularly harmonious over the years. Fines for breaching the antitrust rules have been imposed in a number of cases. Even before the liner conference block exemption was repealed last year, the Commission condemned a number of shipping conferences that were found to not meet exactly the requirements of the block exemption. For example, fines totaling €273 million were imposed on 15 participants in the Trans-Atlantic Conference Agreement (TACA) in 1998. Subsequently, the Commission granted immunity to an amended version of the TACA, which included only seven participants and which placed strict limits on the nature and amount of commercially sensitive information exchanged between its members. Restrictions on the freedom of conference participants to enter into individual service contracts had also been removed.

17.17.3 Freight Indices

Freight indices and index-linked employment, in principle, do not give rise to antitrust risks in the EU. However, the maritime sector is a high-risk sector. In the past, it has been subject to antitrust investigations on numerous occasions in the EU and is currently under investigation by the European Commission. Therefore, any mechanism or development that provides transparency regarding commercially sensitive information amongst competing carriers, or which may enable carriers to coordinate their behaviour or otherwise remove a degree of uncertainty as to the operation of the market should be reviewed carefully before introduction.

17.18 Regulatory Environment: US

17.18.1 US Perspective on CFDs

For the past several years, the great unknown in US shipping regulation has been the prospect of a market for container freight derivatives (CFDs). Given the economic instability of the global market since 2007–2008, the US Federal Maritime Commission (FMC) has made modernising certain aspects of US shipping

regulations a priority, among them the use of container freight rate indices. The FMC has encouraged the use of negotiated rate agreements (NRAs), for example, and as of 31 May 2012, announced its interest in creating and distributing an index of container freight rates for US agricultural exports. Given the global market where carriers exist, are CFDs the obvious next step in the US shipping market? If so, questions regarding how the US index will be populated and maintained are at the forefront for all types of players in the US market. In many ways, the creation of a futures trade for containerised cargo has been on the rise. Hedging and speculation have been used for centuries in both new ventures and well-established industries to steady markets and create profit out of uncertainty. Shippers of bulk freight are so reliant on derivatives that the Baltic Dry Index, the ruler against which forward freight agreements (FFAs) are measured, has been a key indicator of the health of the global economy. However, dry bulk accounts for only around 7 % of worldwide shipping value. Since it was pioneered in the 1960s, container freight has steadily climbed to become the dominant model for global trade. It now financially comprises around half of the international fleet—seven times more than dry bulk. Adding in the inherent uncertainty of spot-contracted voyages of container vessels, the question becomes even more compelling: how did the container freight market elude risk management until now?

17.18.2 History of CFDs

In 1975, the United States created the Commodity Futures Trading Commission (CFTC), an independent regulatory body tasked with ensuring clarity and fair dealing in futures markets. Although it dealt mostly with agricultural and industrial materials, CFTC was confronted with something entirely new when Clarkson Securities of London conceptualised the FFA in the 1990s. FFAs allow shippers and carriers of dry bulk freight to hedge against potential volatility in an inelastic market. The security of the Baltic Dry Index, now almost two centuries old, provided an added promise of legitimacy. At first, the concept was slow to take root, but in recent years, FFAs have accounted for \$36 billion, 40 % of the physical activity in the dry bulk market. FFAs have proved so lucrative that many hedge and mutual funds now invest in them in lieu of the more traditional instruments.

In the aftermath of the economic collapse of 2008, trade finance began to look for a way to stabilise container rates, and container freight derivatives were an obvious choice. In 2010, Clarkson Securities executed the first type of CFD, called a container freight swap agreement (CFSAs), between Morgan Stanley and carrier Delphis. A CFSAs is a cash-settled, principle-to-principle arrangement.

Like FFAs, CFDs require an index of prevailing container rates by route to serve as an anchor. While the Baltic Dry Index is not restricted to Baltic routes, it is limited to dry freight. Hence, for its CFSAs, Clarkson turned to the busiest container port in the world, Shanghai, and to the Shanghai Containerized Freight Index (SCFI), which is published by the Shanghai Shipping Exchange. The CFSAs

allow for price speculation up to 6 months in advance and service fifteen routes, each originating in Shanghai. Other indices have been quick to found their own CFD markets. A separate Chinese index, the China Containerized Freight Index, has earned some popularity, along with the Transpacific Stabilization Agreement Index. Drewry of London offers the World Container Index as well as the Global Container Rate Index, a joint venture with Cleartrade Exchange. However, CFSAs based in Shanghai have capitalised on creating the market. Under the eye of UK's Financial Services Authority, trades of derivatives on the Shanghai–Europe route indexed by the SCFI are becoming established as financial tools for European companies.

17.18.3 Current US Shipping Climate/FMC Activities

Although routes from China to both the east and the west coasts of the United States are hotly followed on the SCFI, American shipping has been slow to adopt CFDs. First, the popular indices track only US imports despite unexpectedly surging export strength—US exports are up by 34 % since President Obama's announcement of his initiative to double exports by 2015. Only the World Container Index lists American export routes, and even then, only as backhaul. However, more importantly, US shipping is accustomed to dealing with the stringent transparency requirements of the Federal Maritime Commission.

In accordance with the Shipping Act of 1984, the FMC requires the rates for freight carriage to be published in tariffs that are made accessible to the Commission and to the public. However, in March 2011, it issued a rule exempting thousands of small non-vessel operating container carriers (NVOCCs) from such requirements, citing a duty to promote efficiency and reduce regulatory burdens on shippers through the establishment of NRAs . NRAs breathed new life into the shipping industry, encouraging stronger and better-tailored relationships between carriers and shippers.

The FMC soon turned its attention to the recent European creation of a CFD market. In May 2011, FMC Chairman Richard Lidinsky, Jr., formally announced the creation of a Container Freight Index and Derivatives Working Group. “Index-based ocean freight rates and derivatives have potential to be useful tools for shippers, intermediaries, and ocean carriers to increase rate certainty and manage risk”, Lidinsky said. “It's important that market participants have flexibility in structuring rates and hedging strategies. At the same time, I want to explore whether modest, common-sense standards are needed to ensure participants have adequate information and avoid manipulation”.

Lidinsky outlined a series of concerns regarding CFDs, including compliance with the Shipping Act, public accessibility and legitimacy of indices, and restrictions imposed by Dodd-Frank and other new regulations. Although no formal report was issued, the working group confirmed its endorsement of index-based NSAs in early 2012. The FMC recommitted itself to removing regulatory barriers, and as it “began to consider whether these service contracts referencing freight indices

comport with its regulation, it decided to do a more fundamental assessment of whether the regulation in its current form is more restrictive than is necessary to protect the shipping public and carry out the purposes of the Shipping Act". The Commission concluded that accessibility requirements were outdated and that indices need only be available to contracting parties and the Commission itself. By mid-2012, the FMC has solicited comments from shippers regarding a proposition to create its own index of US containerised agricultural exports. Concerned that none of the existing container indices is satisfactorily neutral, the FMC is contemplating issuing an index itself. It has received "informal requests [from] several large US agricultural shippers, intermediaries, and derivative brokers" to issue an index based on data aggregated from service contracts filed with the FMC. Although it is first asking whether US export rate indices would be beneficial for US shipping at all, whether such indices should be targeted to specific commodities, whether the FMC or another party should create such an index, and whether it may draw on the data it collects via its regulatory authority, the FMC's working group appears intent to enter the CFD index market. Drewry, co-publisher of the World Container Index, has already expressed support for the FMC's plan.

17.18.4 Conclusion and Opposition from the Industry

Even with the blessings of the FMC, many industry players are sceptical about container freight derivatives. While still in the death throes of the economic collapse, stakeholders in ocean carriage have unfavourable associations with the words "derivative" and "futures", connecting them closely to the dangerous and unsound financial practices that caused a global economic shutdown. The CEO of Maersk Line famously likened them to "casinos".

Perhaps more critically, carriers foresee CFDs transforming container shipping into a commodity. Indeed, it is the freedom and alienability of commoditisation that gives derivatives their value. However, container space has traditionally been something different. Carriers develop relationships with shippers that provide for requirements beyond price and volume, including the use of containers themselves or arranging for complex inland transportation routes. Some carriers insist that these relationships provide true stability that an increasingly liquid market cannot offer. Whether these concerns can prevent a repeat of the exponential growth of the FFA market will soon be seen. If the FMC does endorse the general use of container freight derivatives in the US shipping market, all industry players would benefit from closely examining their business models to see how the changes will affect them individually. Shippers and NVOCCs may indeed find, as Chairman Lidinsky predicts, that CFDs offer an opportunity to plan for and manage turbulent economic climates beforehand. Carriers may find that prospective shippers are less interested in creating exclusive relationships than before as they swap for the lowest rates possible. Non-traditional parties may begin to take an interest in the ebb and flow of the containerised freight market. Lines dealing exclusively with containers may

suddenly find themselves forced to deal with the CFTC if it finds CFDs within its jurisdiction.

Over the past 2 years, the Federal Maritime Commission has implemented the most serious set of deregulatory actions since Congress last amended the Shipping Act. Likely spurred by the US fleet's limited ability to flex with an unstable economy, the Commission has consistently removed administrative burdens on the industry and called for modernisation and innovation. Allowing for extensive use of indices in contracting would further the FMC's goals of modernisation and innovation.

Regardless of whether a stable US index rises to the fore, players in the US shipping market will see the effects of the debate ripple through to their businesses. As with all major regulatory changes, adjustments will begin with small tweaks and targeted rules as regulators attempt to balance and solidify the new market. Remaining informed is crucial to survival in the new and changing container freight derivatives market.