



Section C

COMMODITY TRADING, RISK AND FINANCIAL MARKETS

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Commodity Trading and Financial Markets

INTRODUCTION

This guide sets out to present a thumbnail portrait of commodities trading. The aim is to inform readers about the specialist nature of the business and the services it provides, as well as to dispel some of the myths that have grown up around trading over the years.

It makes clear that this is at its core, a physical and logistical business, and not the dematerialised, speculative activity that is sometimes suggested.

The Trafigura Group, one of the world's largest independent commodity traders, with a focus on oil and petroleum products and metals and minerals, is at the centre of the narrative.

The company focus is designed to provide concrete case studies and illustrations. We do not claim that this is a definitive guide to all facets of the industry. Other firms than Trafigura will have their own unique characteristics, which are not

reflected here. Deliberately and inevitably, we have focused on energy, metals and minerals trading, and have made only passing reference to trading agricultural products.

We have tried as far as possible to capture factors that are generic to commodity trading firms and their basic functions and techniques.

This section drills into the more challenging details of risk management, price-hedging and finance.

Chapter 10

MANAGING RISK

Risk management is a core competence for trading firms. They store and transport physical assets across the globe and earn slim margins on high-value, high-volume transactions. They use sophisticated risk management techniques to link revenues to costs and operate effectively in volatile markets.

Trading firms can only stay in business as competitive, low-risk operations

Major traders have annual turnover that dwarfs their own capital resources and puts them firmly in the ranks of the world's largest companies. They rely on sizeable infusions of short-term capital to buy the commodities they need to trade. This would not be available to them were they not able to demonstrate to financial institutions the sustainability of their business models.

Managing financial risk effectively is therefore an absolute priority for trading firms. They use derivative markets to hedge against absolute price (also known as flat price) risk. They also take out commercial credit risk and political risk policies in the insurance market.

Diversification and integration reduce risk

Global trading firms handle a variety of commodities and manage processes across the supply chain.

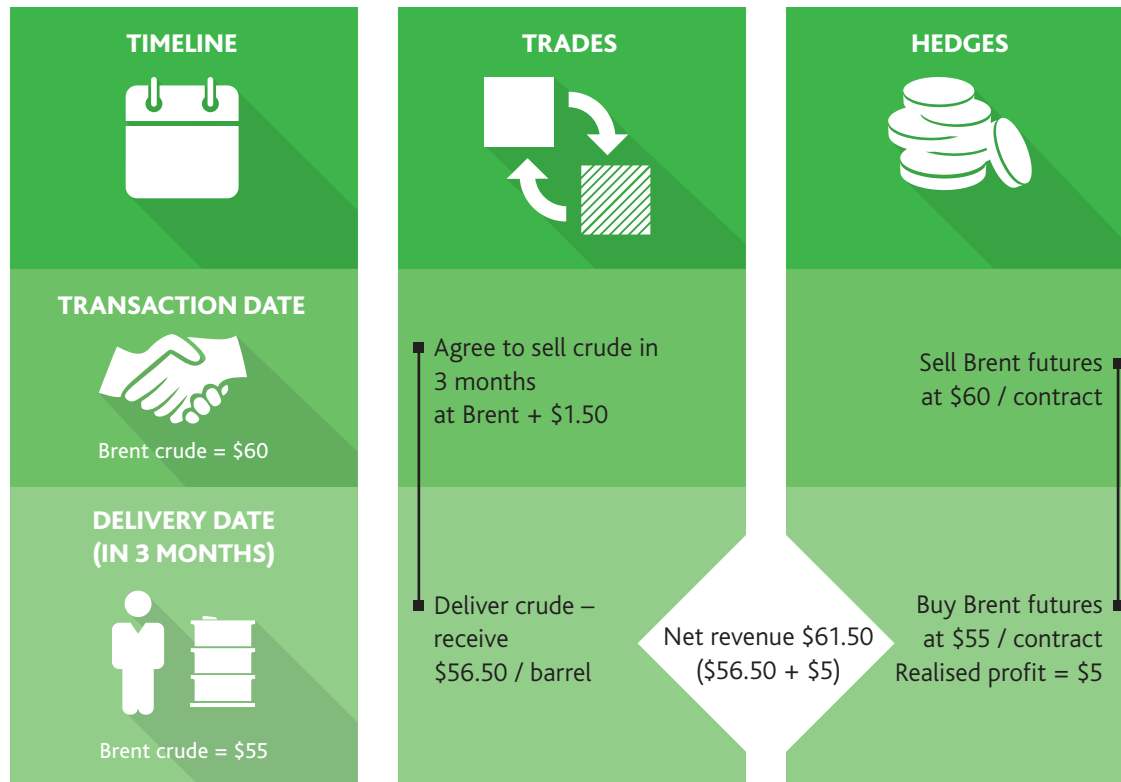
As diversified operations they enjoy limited natural protection from commodity price changes. Different price pressures in various commodity markets will be offset by the breadth of their activities. Most are trading both primary and secondary commodities and will usually have their own storage facilities.

The integrated nature of their operations provides another natural hedge within the overall business. In the copper market, for instance, a decline in end-demand for the refined metal may or may not lead to reduced smelter production and lower demand for concentrate. It all depends on market dynamics. Either way, the demand for storage (either of concentrates or refined copper) is likely to increase.

In an integrated trading operation, lower demand for shipping a commodity is offset by increased demand for storing it.

But diversification and integration provide little protection in the event of a systemic change in market sentiment. Both the global financial crisis and the economic slowdown in China would have been catastrophic for any trading company that took no additional steps to hedge its activities.

HEDGING AGAINST FLAT PRICE RISK FROM THE SALE OF CRUDE



Managing flat price risk

The practice of hedging is fundamental to commodity trading. Trading firms like Trafigura systematically eliminate their flat price exposure – the risk of a change in the benchmark price for a barrel of oil or a tonne of copper concentrate.

In a typical transaction, a trader will agree purchase and sale prices with two different counterparties to lock in a profit margin. The transaction is agreed before shipment and the convention is that final prices are not fixed until the commodity is delivered. So on the transaction date, the parties agree both trades at fixed margins against a benchmark index price. For crude, for instance, the purchase price might be set in advance at 50 basis points over the Brent index on the day the trader takes delivery and the sale price at 150 basis points over Brent when the shipment is delivered.

Left like this the transaction leaves the trading firm exposed to fluctuations in the actual price of Brent crude. It clearly has to take delivery of the crude before it can ship it, so if the Brent price is higher on the earlier date it could make a substantial loss.

It can avoid this by simultaneously taking out futures contracts against both parts of the transaction. It fixes the purchase price in advance by buying futures on the transaction date and selling them back when it collects the shipment. At the same time, it fixes the sale price by selling futures on the transaction date and buying them back when the crude has shipped. The simplified example above illustrates how traders use futures to remove flat price risk when selling a physical commodity.

Hedging flat price risk does not eliminate price risk altogether because physical price and futures prices don't stay completely aligned, but it does leave the trading firm with a smaller, much more manageable market risk. This is known as basis risk.

Managing basis risk

Basis describes the difference in the price behaviour of the physical commodity and its underlying hedging instrument. Managing basis risk is core to the trader's skill set. Understanding the dynamics of basis behaviour is the source of profitable trading opportunities.

There is no such thing as the perfect hedge

Basis risk arises because, in practice, the price behaviour of a hedging instrument will never exactly correspond to that of the physical commodity.

Traders typically use futures contracts to hedge physical transactions. These are notional, standardised commodities with specific delivery dates, delivery locations and quality characteristics. Standardisation makes futures much more tradeable, which reduces transaction costs and execution risks associated with hedging, but also differentiates them from physical commodities.

When trading firms buy and sell physical commodities they are acquiring specific assets at particular locations on precise dates. The physical nature of the asset makes it unique. A Brent futures contract, based on a notional specification of light North Sea oil delivered at a precise location, will never be an exact match for, say, a cargo of heavy Middle East crude. Both prices move roughly in tandem so basis risk is considerably lower than flat price risk. But because they are priced in linked but distinct markets, technical factors and supply and demand differences result in fluctuations in the differential between their prices.

In global commodities markets, basis relationships provide profitable trading opportunities

Global trading firms take advantage of these fluctuations to maximise their profit margins. With around half of all international crude priced off the Brent benchmark contract, there is ample opportunity to take advantage of these changing differentials. The global nature of the crude oil market makes global arbitrage, with oil cargoes circling the world seeking the best price, a profitable activity for traders.

But not every market enjoys the global pricing, internationally agreed benchmarks and active derivative sector used by crude oil traders. Gas markets, for instance, are still linked to regional pricing factors. In East Asia, gas prices are indexed to oil or oil products. In Europe, Russian pipeline gas is still nominally linked to the oil price, although this link is rapidly weakening as gas-on-gas competition increases in fast-developing trading hubs in the European Union. And in North America, it is simply the interaction between the supply and demand for gas that determines prices.

As LNG develops, gas may be traded internationally in sufficient volumes to offset regional price differences, but a global gas price has not happened yet. For now, LNG traders have more limited arbitrage opportunities. In practice, they must decide on the final destination for their LNG on the transaction date and establish the relevant regional hedge.

Physical markets and financial markets

The futures market provides valuable information about expected future supply and demand on which producers, consumers and traders can act today. The market is reflecting today's environment, with a futures contract priced according to the opportunity cost of storing the physical commodity until its delivery date.

Events change perceptions, so futures should not be seen as an accurate guide to changes in the physical market. However, over time the price of a futures contract will always converge with the physical market price. This is because on the day the future contract expires it becomes physically deliverable. Physical delivery almost never happens in practice, but the fact that it is possible imposes a price discipline on futures contracts.

So, for example, the closing price for a monthly futures contract for Brent crude for delivery in June is the same as the spot Brent price in the physical market in June. If the prices differed, traders would buy in the cheaper market and sell in the market with the higher price. Supply and demand would quickly eliminate this arbitrage opening.

The possibility of delivery or receipt is an essential feature of almost all futures contracts, and most stipulate a specific geographic delivery point. For WTI crude, the delivery point is a small town in Oklahoma (Cushing), for US natural gas it is Henry Hub which is, notionally at least, at a small town in Louisiana (Erath). Brent crude is deliverable at various locations around the North Sea (amalgamated in what is called the Brent-Forties-Oseberg-Ekofisk or BFOE basket). Metals contracts at the London Metal Exchange (LME) are deliverable at any of the 650 LME-accredited warehouses around the world.

The possibility of physical delivery imposes a price discipline on financial markets because of the threat of arbitrage

Where physical delivery is not practical, a cash alternative is specified. Steel is not easily deliverable, because delivery involves storage, and steel, unlike other base metals, rusts over time. It therefore cannot be stored for extended periods. Shipping freight is also cash deliverable as this is a service not a physically deliverable good.

FUTURES CONTRACTS, SPOT PRICES AND THE LINK BETWEEN THEM

Crude oil futures	Size	Density	Sulphur content
WTI	1,000 barrels	Light	Low
Brent	1,000 barrels	Light	Low
Dubai	1,000 barrels	Medium	Medium
Shanghai (planned)	1,000 barrels	Medium	Medium
Physical spot market prices	Daily assessments of spot markets by Price Reporting Agencies – chiefly Platts and Argus.		
Relationship between futures and physical prices	Oil contracts can be priced according to a premium / discount to either Platts or Argus spot prices or to the futures benchmark prices. But hedging can usually only be done by taking out one of the futures contracts. Futures and spot prices will tend to move up or down together, and will converge when futures contracts become deliverable.		

This raises the question of how the market determines reference prices in the physical markets for energy and metals. In the main, the market relies on prices published by two Price Reporting Agencies. Platts and Argus are private companies that perform a vital public role. They report daily on a vast array of markets trading different physical commodities as well as some specially tailored derivative contracts.

The development of oil spot markets, in parallel with that of the futures markets, created a need for price assessments, first as a contribution to transparency but gradually for use in trade. The spot market in oil is still a small fraction of the world oil market, but it sets prices for a much larger volume of trade. Most energy trade is still conducted on a long-term basis, but often at prices in contracts that are set at an agreed differential to a Platts or Argus benchmark. This in turn is based on the prevailing spot market price.

Hedging an aluminium transaction on the LME

Trading firms use futures to protect themselves against the risk of adverse market movements. To hedge aluminium sales, they will often use LME futures.

By way of example, take a physical transaction where a trader contracts to sell 10,000 tonnes of aluminium a month to a manufacturing counterparty. The two parties agree to trade at the prevailing LME Official Settlement Price at the end of each month. At the time the physical transaction is agreed, the price of aluminium is \$1,500 a tonne. The trader hedges his exposure with an LME 'monthly average'

futures contract. He places an order with his broker to open futures contracts to sell 10,000 tonnes of aluminium a month at \$1,500 a tonne.

The LME requires margin payments on all futures contracts to minimise its risk in the event of default. On opening the futures contract, the broker lodges initial margin, underwriting the trader's ability and willingness to honour the contract. In normal trading times on the LME, this initial margin is around 5-8 percent of the underlying physical transaction (higher at times of high volatility). This is usually funded with a credit line from a bank.

Variation margin payments are also required to reflect the daily fluctuations of the aluminium price. At the end of each trading day the futures position is marked to market, with profits posted to the broker's account and losses met with additional funds. For instance, if the price drops by \$50 to \$1,450, the trader, as the party that is short on aluminium, would post a variation margin of \$50 a tonne.

The trader can now make physical deliveries of aluminium each month, with changes in the market price having no effect on its net cash flow. If prices go above \$1,500 a tonne its gains in the physical market are offset by equal losses on the financial transaction. If prices fall, the opposite occurs.

Hedging freight

Traders cannot just look at their gross margin on trades (the difference between the sale price and the purchase price of the commodity). They must also consider the cost of sourcing, transforming and transporting the commodity to meet the purchaser's specifications. Where commodities need to be shipped overseas, the cost of chartering a suitable vessel is a key contributor in determining trade profitability. The lower the gross margin, the more material this becomes.

The price of freight varies according to the supply and demand for shipping. Traders use FFAs to fix their costs in advance

Charterers pay freight rates according to supply and demand conditions at the time. Depending on the commodity being shipped, the quantity, timings and locations, freight prices can vary markedly. Traders will generally fix chartering costs in advance to protect against the risk of a rise in freight costs.

This is normally done through freight forward agreements (FFAs). Commodity trading firms are charterers and are therefore natural buyers of FFAs. They use FFAs to protect themselves against rising future freight rates. Ship owners are natural sellers. They seek to protect themselves against lower freight rates in the future.

If a commodity trader who wants to charter a tanker in 15 days to carry his cargo of crude for 30 days to a certain destination fears that shipping rates will rise, he buys an FFA locking in the current freight rate of \$19,000 a day.

Suppose his fears prove justified and the average rate over that following month is \$22,000 a day, then this is what he pays the ship owner. However, the FFA comes to his rescue. In this example, the FFA contract settles above the agreed price and the FFA buyer is paid the price difference, multiplied by the length of the contract. The FFA buyer receives:
 $\$22,000 - \$19,000 = \$3,000 \times 30 \text{ days} = \$90,000.$

For the charterer, the FFA has offset the rise in the freight rate he had to pay. For the counterparty on this contract, probably a ship owner, the exact opposite has occurred – a gain on the physical freight rate is negated by a loss on the FFA. But neither party is worse (or better) off. The derivative stabilises the cash flow of both parties. Changes in the other main cost of shipping – that of the price of bunker ship fuel – can also be hedged.

Assessing risk and evaluating trade profitability

Hedging allows traders to fix flat price risk in advance, mainly through futures contracts. They can also control the cost of transporting the commodity, using FFAs to fix the chartering cost. The cost of financing the purchase of the commodity and of any variation margin on their futures positions can be estimated in advance. However, any trade will involve taking on basis risk as well as credit, political and operational risks.

They must also consider the opportunity cost of any trade. Ultimately, trading firms' logistical resources and access to capital are limited. They will also have global risk management rules in place that limit their exposure to particular markets and regions as well as overall restrictions imposed by the size of the balance sheet.

There has to be enough profit in a trade to justify the risks and the capital it employs

By using hedging tools, they can determine which trades are likely to be most profitable no matter what happens to price, and lock into that profitability.

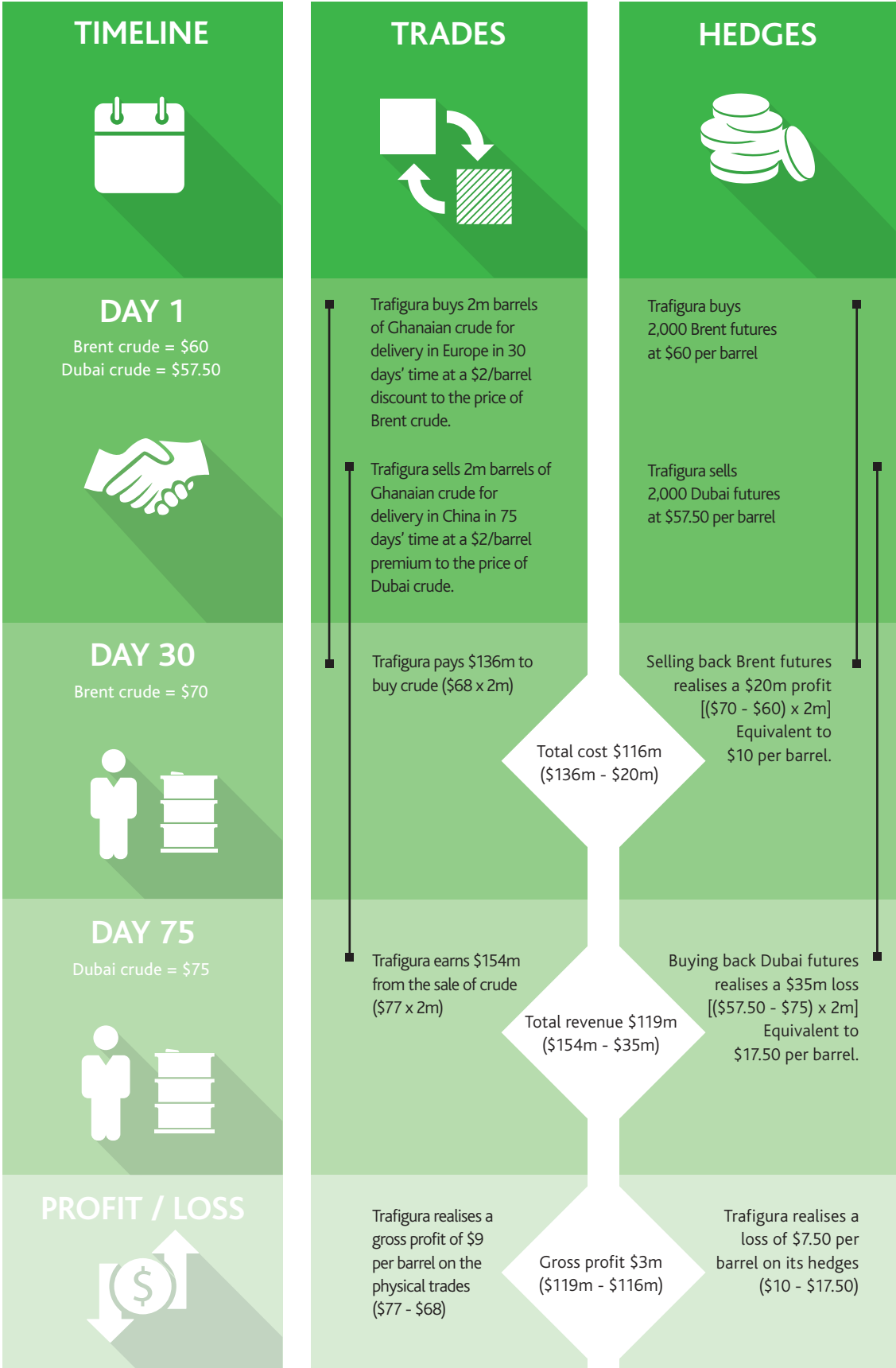
Hedging a crude oil transaction priced off different benchmarks

There are hundreds of grades of crude oil. The physical characteristics and the location of each shipment will determine its pricing. Prices are set against three main benchmarks, depending in part on the location of the shipment and in part on the type of crude being traded. WTI is used in North America; Brent is the benchmark for Europe and the Dubai benchmark is popular in the Middle East and Asia. This can mean that traders buy and sell crude against different benchmark prices depending on where the product is acquired and shipped. The trading firm can still hedge the transaction so long as there are financial instruments for each benchmark.

In the example on the next page, Trafigura is analysing whether to buy two million barrels of Ghanaian oil for sale to a customer in China. It estimates its delivery costs, including freight, ship-to-ship transfer cost and losses due to water and sediment in the cargo, will be \$1 per barrel. It estimates its hedge financing costs, covering hedge finance, insurance and trade credit, will be 35 cents per barrel.

This transaction earns Trafigura a gross profit of \$3 million, which equates to a gross margin of \$1.50 per barrel. But after taking in to account its financing and transportation costs, its net margin is 15 cents per barrel ($\$1.50 - \$1 - \$0.35$), a net profit of \$300,000. It will undertake the transaction if it decides that the projected profit outweighs the associated operational and financial risks, in particular basis and demurrage risk.

MANAGING PRICE RISK



Volumes and trading profitability

Commodity traders are largely indifferent as to whether markets go up or down. Successful hedging removes most of the risk and reward of changes in absolute prices. What they do care about is the margin between their purchase and sale prices. A trade is only profitable when this margin is greater than the unit cost of doing the business. Net margin is the critical metric for profitability.

Traders focus on margins not market prices

For trading firms, volumes, not prices, are the key factor for profitability. Professor Craig Pirrong highlights “the danger of confusing the riskiness of commodity prices with the riskiness of commodity trading”. He points out that the metric to judge riskiness in commodity trading operations should be the level of commodity shipments, not commodity prices.

While it is the case that large trading firms have more at stake by virtue of the large volumes they ship, they also have more opportunities to reduce risk through flexible management of their trading system. Larger businesses tend to be more diversified and therefore their risks are less concentrated.

It is true too that margins and volumes tend to rise and fall together, because both reflect demand for the transformation services that commodity merchants provide. Net margins also increase as volumes increase, because this is an industry with substantial economies of scale. The unit cost of delivery can fall dramatically as volumes grow, because of logistics savings.

The link between margins, volumes and prices is more indirect. There is a correlation between margins and price volatility. Managing price risk is not a core competence for producers and consumers. In volatile markets, the value added by traders is more evident and their services are in demand. This is reflected in the higher margins that are generally available in more volatile market conditions.

As it happens, the surge in oil and metals prices until 2014 was also good for margins and volumes. But when prices collapse, margins and volumes do not always follow. The sharp fall in oil prices between 2014 and 2016 did not stem from a fall in oil demand. It was simply that more was being produced than being consumed. Price rather than demand took the hit from an excess of production over consumption and unused supply was placed in storage. Inventories cannot rise forever though. As the saying goes, ‘the cure for low oil prices is low oil prices’. This proved the case in 2016. OPEC reintroduced quotas and shale suppliers pared back production; this helped to set a floor on prices.

Managing operational risk

Global trading firms encounter many different kinds of risk. They are active around the world. They operate in multiple jurisdictions. Their counterparties include governments, state agencies, banks, and private and public limited companies.

One liability that looms large for any company transporting, loading and offloading big volumes of oil and petroleum products is the danger of an oil spill. Oil, by definition, is a hazardous chemical. There is the potential for injuries, fatalities and extensive environmental damage; and rightly, as Exxon, Total and BP have all discovered in recent decades, that brings massive financial penalties and huge reputational damage. Trading firms mitigate this risk through best practice operations in their own procedures and by ensuring their commercial partners comply with similarly high standards. For instance, when chartering ships, most insist on double-hulled, certified tankers. Many also impose an age limit on the ships they charter.

Trading firms apply best practice and invest in modern equipment to manage operational risk

More generally, operational effectiveness is a critical business attribute – and not just to avoid the potentially calamitous liability incurred through an industrial accident.

Global traders depend on forging strong, sustainable trading relationships. They themselves are under scrutiny as many of their commercial partners have their own reporting and regulatory requirements. To do business with these organisations, they need, as a minimum, to be meeting internationally accepted health, safety and environmental standards.

Responsibility and reputational risk

Minimising harm to people and the environment is a basic tenet for any responsible business. For commodity traders, this is a critical area of focus. The reputational fallout should anything go wrong would be very damaging. They store toxic, flammable and hazardous materials and transport them by land and sea across large distances. They are active in remote parts of the world with widely varying levels of governance.

Responsibility is a commercial imperative for commodity trading firms in their day-to-day activities, not least because of their reliance on strong banking relationships. Trading firms typically earn slim margins on high-volume transactions. Their profitability relies on continuing access to low-cost capital. Banks provide much of this in the form of short-term, collateralised facilities.

Society and stakeholder activists monitor international banks' activities closely. Their lending and investing decisions have to meet high ethical standards. Accordingly, banks' due-diligence teams assess counterparties against responsibility as well as commercial criteria. Trading firms have to meet their responsibility thresholds to retain access to funding.

Trading responsibly is not just about avoiding accidents. Firms need to make a positive socio-economic contribution to maintain their social licence to operate. This is especially true in remote regions and underdeveloped economies.

There is continuing debate about the scope of a trading firm's responsibility. Traders collaborate with many partners in a highly complex supply chain. This necessarily restricts their ability to control systems and influence behaviour. Yet they are still expected to mitigate the negative consequences of all of their activities, even when these arise indirectly. They must tread a fine line.

Credit risk and political risk

Trading firms take numerous steps to protect themselves from credit risk (i.e. non-payment by companies) and political or country risk (i.e. action by governments to block payment or seize assets). But not every risk can be managed directly.

Insurance is a critical business enabler.

Traders cannot afford not to insure their operations. The loss of a single cargo, quite apart from the social and / or environmental cost, could cost tens or even hundreds of millions of dollars.

Having insurance allows trading firms to deal with a range of counterparties, operate in challenging environments and compete more effectively worldwide.

If trading firms cannot satisfy themselves, through their own internal checking process, of the creditworthiness of a counterparty, then they can usually take out a guarantee or insurance on the counterparty from a bank. This transfers the credit risk to the bank, though this comes at a cost to the trading firm.

Insurance against political risk, as well as credit risk, can be taken out on the Lloyds market in London. One widely used policy known as CEND provides cover against confiscation, expropriation, nationalisation and deprivation.

Some commodity traders, notably those with global operations, spend a lot of money on political and credit risk insurance. For the largest firms, self-insuring most of their operations through a captive insurer is a viable alternative. A captive insurance company takes on the risk of each transaction, but just like an external insurer it spreads the cost across multiple transactions. The largest traders have sufficient volume to make this possible internally, with the captive insurer using the reinsurance market to protect the business against worst-case outcomes. ■

They take out insurance to cover business risks they cannot manage internally

Chapter 11

FUNDING COMMODITY TRADING

Trading firms buy and sell commodities with an aggregate value that far exceeds their own capital resources. They achieve this by attracting funding from financial institutions. Banks are willing to lend because their loans are secured against commodities.

Financial institutions are critically important stakeholders for commodity trading firms. Trading firms are significant short-term borrowers; they depend on substantial and continuing financial support to sustain and grow their businesses.

Traders' activities require substantial capital resources. They source, store, blend and deliver commodities around the globe. They may invest in terminals, logistics and physical infrastructure to improve the operational efficiency of their trading operations.

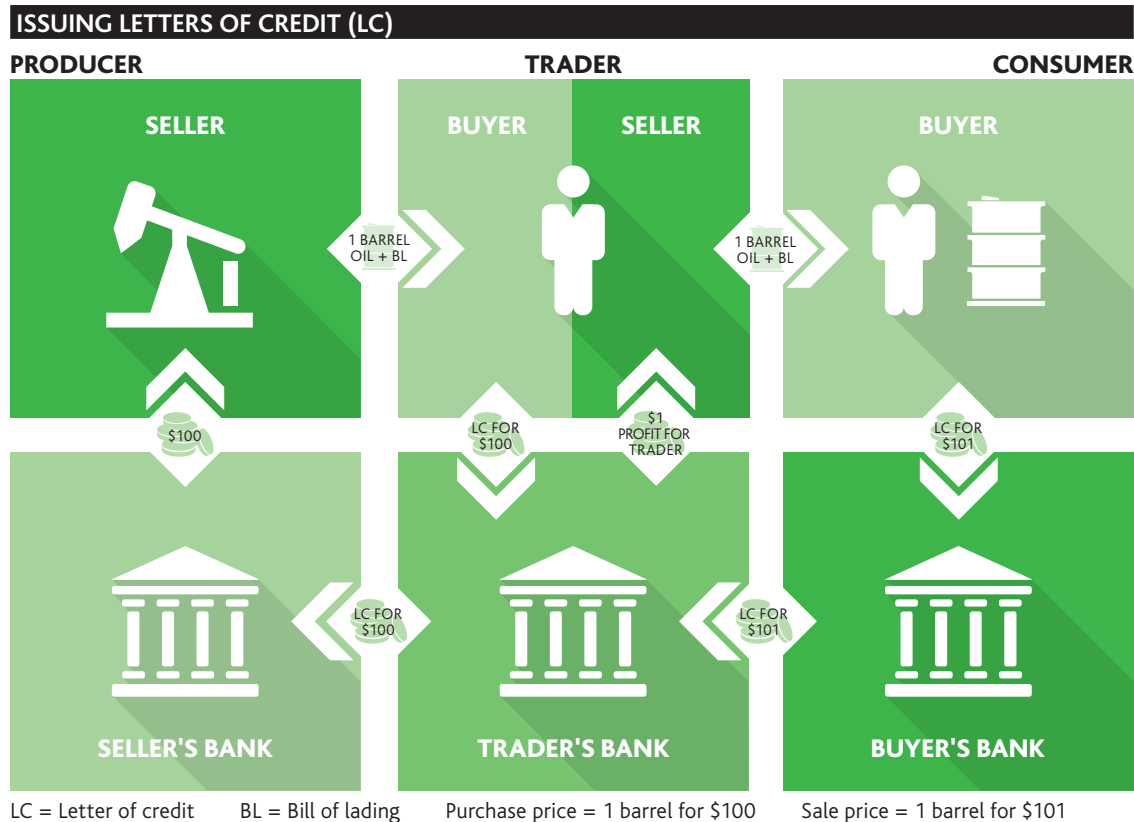
They need funding models that will help them to operate effectively in all market conditions. Larger trading firms, like Trafigura, typically diversify both the sources and the structure of their financing, raising capital in different regions with a range of repayment schedules.

Financing trade

Traders rely on short-term secured lending facilities to support their commodity purchasing activities. Commodity traders are heavy users of traditional trade finance tied to specific commodity transactions.

Banks provide short-term credit facilities secured by the commodity in the form of letters of credit, which are made available to the seller. These facilities are self-liquidating in the sense that debt is repaid immediately from the proceeds of the sale of the commodity being financed.

Repayment of the debt comes from the transaction itself, and is therefore not dependent on the creditworthiness or cash flow of the trading firm as intermediary or that of the final buyer of the commodity. Banks providing trade finance know that in the event of any default, they can use the underlying commodity as collateral to ensure they get repaid. The size of the facility is marked to market at least weekly to keep it aligned with the value of the underlying commodity.



Traditional trade finance uses letters of credit (LCs) with bills of lading as collateral

Banks facilitate a trade by providing a letter of credit (LC) to the seller on the buyer's behalf. This document is a bank-backed guarantee that the seller will receive payment in full so long as certain delivery conditions are met. The seller has the assurance that should the buyer be unable to make payment on the purchase, the bank will cover the outstanding amount. In some emerging markets, sellers are legally required to demand letters of credit from buyers to register sales and make transactions more transparent.

One of the conditions that must be satisfied for the LC to be honoured, and payment made, is presentation of a bill of lading (BL). The BL is a formal document that confers title of ownership to goods in transit to the holder. It acts as receipt that the goods have been loaded on board and delivered to the buyer.

Bilateral trade finance

- **Step One.** The trader or trader's bank issues an LC to the seller via the seller's bank. The precise sequence of events is that the seller puts the goods on a ship. When these have been checked

by the carrier, the seller receives a BL, which he then presents to his bank to get paid. So the seller does not rely for payment on the creditworthiness of the trader, but on that of his own bank, which in turn relies on the creditworthiness of the trader's bank.

- **Step Two.** A copy of the BL passes to the trader, giving him title to the cargo in question.
- **Step Three.** The buyer issues a LC to the trader. This gives the trader the security that the buyer is able and willing to pay. The trader presents the BL to the buyer's bank and gets paid.

This system works well. It suits the seller. He knows he will get paid once the BL is presented and he does not have to depend on the creditworthiness of either the trading firm or the importer. It also allows commodity trading firms to hold far more bank debt on their balance sheet than a normal company could, because this trade finance debt is dependent on another counterparty. But arranging this kind of bilateral finance for individual cargoes with LCs and BLs is very labour-intensive. So trading firms also use other techniques to fund commodity trades.

Pooled collateral

In regions where they do sizeable and regular trades, some trading firms, including Trafigura, have established a borrowing base. At regular intervals, the trading firm provides a bank or banks with an overview of all its inventory and receivables, against which it negotiates a line of credit. Trafigura has one such arrangement with a number of banks in Mexico, where it buys and stores a lot of copper, lead and zinc concentrates, and operates similar borrowing bases in other parts of the world.

Trading firms use a range of techniques to finance commodity trades

Repurchase agreements

Repurchase agreements involve the trading firm selling a commodity to a bank, and simultaneously agreeing to buy it back a week later. The operation, usually involving LME-grade metals, is repeated week after week, because the banks find it more attractive (in terms of the return on equity) to own the material rather than to finance it. This is because banks' regulatory capital requirement for asset ownership is lower than that for lending activities.

Syndicated pre-payment deals

Once trading firms have negotiated pre-payment deals, they will often go to the wholesale market and offer this as security to negotiate a syndicated lending agreement with a group of international banks. There has been a general retrenchment in the wake of the 2008 global financial crisis. Many banks have ceased direct lending to emerging market countries, but they remain comfortable to do so indirectly, with a commodity trading firm acting as intermediary.

Financing hedging costs

Since the global financial crisis, regulators have become much more alert to the credit risk associated with derivatives. They have introduced stricter capital requirements to guard against systemic breakdown led by derivatives trading. This has increased the cost of over-the-counter (OTC) derivatives.

This has helped to fuel a global trend in favour of trading on regulated exchanges.

As a result, hedging, even of freight derivatives, is increasingly conducted on cleared markets. With this kind of hedge, a clearing house stands between the counterparties to every trade on the market. This ensures that even if one party to a transaction defaults, the transaction will go through.

Hedging via the big electronic exchanges with heavily-traded futures contracts is an efficient, low-risk mechanism for managing flat price risk, but it comes at a cost.

Clearing houses need to ensure they have sufficient collateral to protect themselves against the cost of default. They manage this by requiring anyone with an open position to post margin, which can be drawn on in the event of a default.

Clearing houses require traders to post daily margin on loss-making futures positions

Traders are required to post an initial margin on opening the trade. At the end of each trading session all positions are marked to market and profits and losses from that day's trading are transferred between counterparties. Those with loss-making positions must place additional funds, known as variation margin, before the start of the next trading session to avoid an automatic default.

Commodity trading firms must maintain variation margins to prevent their accounts being closed, and their physical transactions becoming unhedged. In volatile market conditions, these variation payments can run into hundreds of millions of dollars.

Trading firms may need to borrow funds to cover timing mismatches on hedged positions

Since these are hedging profits and losses, they are ultimately offset by payments and receipts from their associated physical transactions. But there can be a mismatch in the timing of cash flows from the physical and financial positions, which may have to be financed.

Ironically, this mismatch is most acute when the value of their underlying physical assets are increasing.

For example, if a trader buys an oil shipment and the oil price rises, the cargo rises in value, but that additional value is not realised until the end of the voyage. The trader will have already hedged his position by selling oil at a fixed price using the futures market. This futures position incurs daily losses as the oil price rises. Every day the futures position suffers a loss, the trading firm must make a variation margin payment.

To cover these sudden liquidity needs, trading firms maintain sizeable credit lines from their bankers. Many of the largest traders negotiate short-term syndicated facilities to meet this requirement.

It is vital that these facilities include substantial headroom. The greatest potential hedging costs will be incurred at times of greatest volatility. Traders must be able to operate successfully in all market conditions if they are to maintain the confidence of their financial backers.

Corporate finance

Transactional trade finance provides commodity traders with the financial fuel for their daily bread-and-butter business of buying, shipping and selling commodities around the world. But this is short-term credit and it does not put banks under any ongoing obligation to continue to lend.

Trading firms are capital-intensive operations; they need the assurance that they will have access to capital across the longer term. They want the flexibility to cope with sudden liquidity crunches so they can keep trading in difficult market conditions. They may also want the financial headroom to expand their logistics base by, say, buying or building a new port facility.

For those commodity trading companies that have gone public or are prepared to do so, long-term finance can come in the form of equity. But most of the big trading firms prefer to remain private partnerships. They therefore have to consider other ways of attracting longer-term financial support.

Access to long-term finance supports investment in infrastructure and provides protection in case of a liquidity crunch

UTILISING SPECIAL PURPOSE VEHICLES FOR SECURITISATION FINANCE



1 Trader purchases oil from producer, payment terms = 30 days after bill of lading

2 Bank issues letter of credit to producer and makes payments as per agreed payment terms

3 Once the bank makes payment on letter of credit, a bilateral loan is created

4 Trader agrees to sell oil to customer and issues an invoice on 30-day payment terms creating a trade receivable

5 Trader sells encumbered trade receivable to SPV

6 SPV repays bilateral loan

7 Customer pays the invoice directly to an SPV account

Securitisation

Several trading firms have set up special purpose vehicles (SPVs) that issue long-term bond facilities backed by trade receivables. Institutional investors acquire these asset-backed securities. This in a sense is a hybrid between a capital market operation and trade finance. It works in the following way.

When a trading firm sells a cargo, it gets an invoice promising to pay it in, say, 30-60 days. Instead of waiting that long for payment, the trading firm sells the invoice immediately to its securitisation vehicle. The special purpose company uses the funds raised from its bond facility to acquire these receivables. In turn, these receivables support a revolving bond facility giving the trading firm longer term credit. The mechanism shortens the trading firm's liquidity cycle, enabling it to trade more.

Some trading firms have become active in the corporate syndicated bank market and in the capital markets, and have issued bonds of up to five years. However, the price for soliciting investors in the bond market is the regulatory requirement for greater transparency of private commodity trading firms' finances. Trafigura passed a milestone in 2013 when it issued a perpetual bond, which has no repayment date and is classed under generally accepted accounting rules as equity. The company was only allowed to issue this type of bond after a binding commitment to issue financial statements twice a year.

Asset sales

In today's more competitive landscape, the profitability of arbitrage-led transactions has declined. Commodity trading firms depend increasingly on strategic assets that lower their overall cost of delivery, reduce storage costs, enhance channels of distribution or provide preferential access to sources of production.

Control of such assets confers long-term competitive advantage, which can be extremely valuable for a trading firm. Trafigura, for example, has invested over a billion dollars to improve Colombia's transportation infrastructure. It has built a new terminal by the country's main river and developed a fluvial transportation system. With improved logistics it will be able to transport goods far more cost-effectively than its competitors. The expected larger share of the country's international trade coming from this competitively advantageous position will more than outweigh this substantial initial investment.

Trading firms don't have to own assets to benefit from controlling logistics

Control does not necessarily imply ownership. Trafigura has a track record of buying underperforming assets, developing them and then divesting without relinquishing control. For instance, it acquired an oil terminal complex in Corpus Christi, Texas in 2011 just as shale production was gathering momentum. Three years later, with Trafigura having developed the complex, Corpus Christi had become a major hub for oil products. It sold a majority interest to a professional terminal operator. Critically, it retained a minority stake and exclusive commercial rights to use of the terminal. The sale released over \$800 million for reinvestment.

Another popular mechanism for trading firms wanting to extend control over strategic assets is through participation in joint ventures. Many firms have strategic partnerships with asset-rich institutions, such as sovereign wealth organisations. Typically, trading firms contribute a share of the financial resources and manage operational issues in return for shared ownership.

Balance sheet management

Ultimately, the quality of the trading firm's balance sheet will dictate its ability to compete effectively. Concerns about leverage increase yields on its bond debt, impacting its ability to borrow in capital markets. The cost of insuring its debt is also likely to rise.

More immediately, maintaining its debt within investment grade parameters determines whether it is able to continue to trade competitively. Trading firms depend on a strong credit profile to access the funding essential for the shipment of millions of tonnes of oil and metal. ■

They need to maintain a strong credit rating to trade effectively