

Evolving Markets, Sustainable Results

Risk management and financial reporting
for commodity trading



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Foreword

Trading commodities has been the foundation of human economic activity through the ages, fundamental for our survival as individuals and fundamental for the sustainability of our economic and social systems. It is understandable that the attention and interest of civil society in the way we manage these important resources is increasing.

With the sharply increasing demand from newly industrialized countries such as China and India, and uncertainty as to whether the supply of commodities may be under threat due to changing weather conditions and the depletion of natural resources, has come an awareness of the important role commodities play in many of today's challenges. A growing population and the aspiration of millions to access the lifestyles that drive consumption put a strain on scarce resources and exacerbate imbalances that already exist.

In re-issuing this guide, our ambition is to support the need for a better understanding of how trading commodities works; to unveil some of the activities, often misunderstood, but used by traders to manage risk and to explain how the financial results of these activities are put together and reported. In doing so KPMG wants to support the trend towards greater transparency and a better understanding of this industry.



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Commodity risk management

Risk management is not about avoiding risks; rather it is about prudent trade-off of risk and return. To that end, the various components of risk management should be integrated so that the company's results can be analyzed and understood.

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Understanding financial statements of commodity trading companies

To assess the financial statements of a commodity trading company, several aspects of the balance sheet and the income statement that are unique to commodity trading need to be understood. The main challenge is that the gross margin is generally made of different components that differ in nature and in their degree of uncertainty.

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Recognition and measurement of transactions and commodity inventory positions

Inventory positions of commodity companies normally consist of physical inventories, forward contracts and futures contracts. Different accounting standards apply to these positions, as such there is a need to carefully evaluate which of those standards should be applied, what an entity needs to recognize and how those positions should be measured. However, applying the various standards that deal with the different components of commodity inventory positions in isolation can lead to accounting mismatches, as some of these components may be on-balance sheet, while other components may remain off-balance sheet.

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Fair value measurement



Without high-quality market data, a commodity trading entity may not accurately measure its net asset value and may also misstate its risk exposure. Fair value measurement is the process of reporting commodity positions based on the current market price and other relevant market information.

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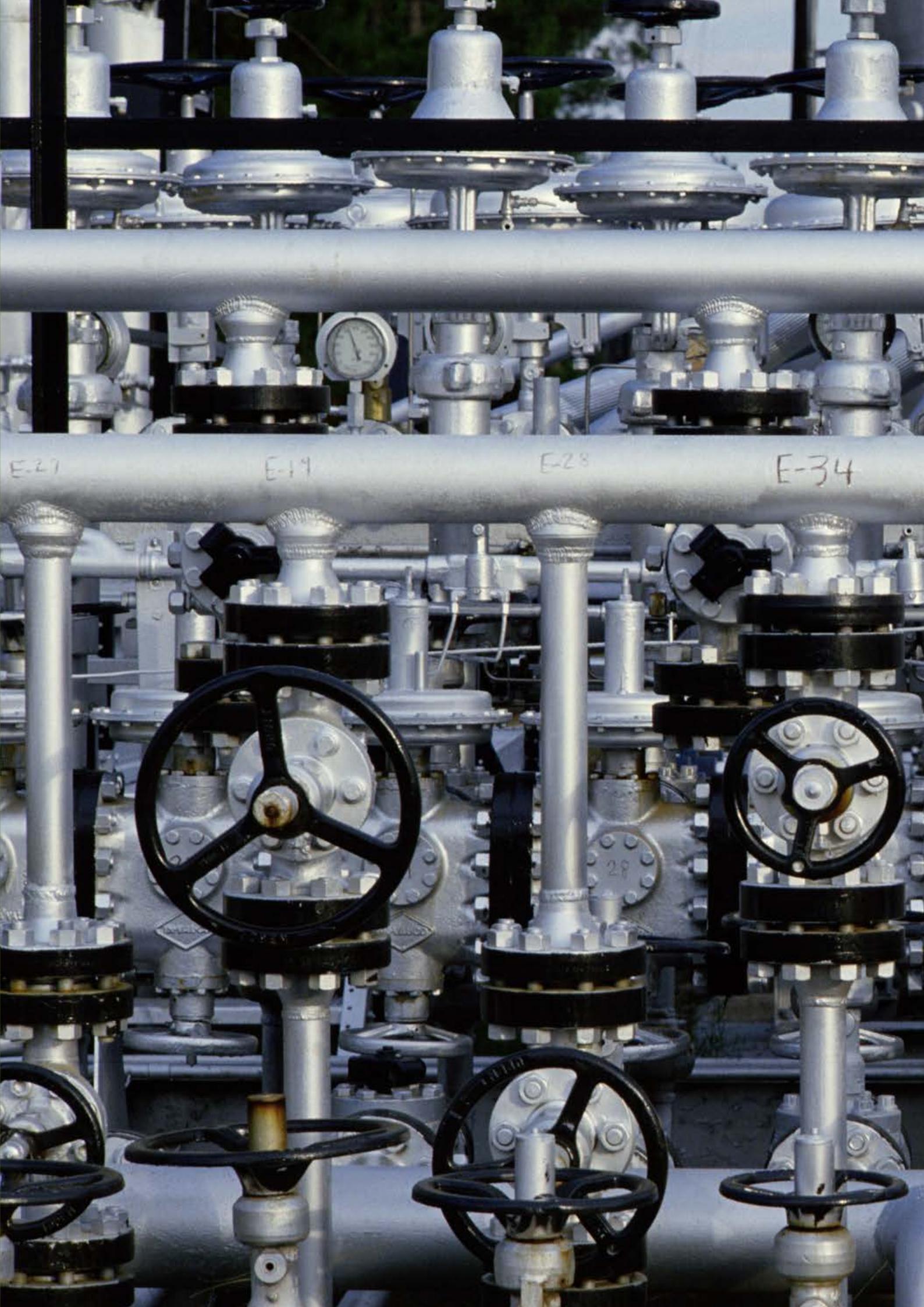
Derecognition of assets

Characteristics of commodity trading companies are their relatively low capitalization, and working capital funding requirements. Funding requirements are generally correlated with movements in commodity prices and the extent of business opportunities. Increasing commodity prices primarily lead to increased funding requirements. Commodity financiers facilitate the funding of commodity trading companies by taking over inventories and factoring or discounting accounts receivable. The issue that arises concerning these financing arrangements is whether to derecognize these assets.

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The evolution of commodity trading

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Introduction

Commodity trading has shown significant growth over the last century due to trade liberalization, urbanization and the opening-up and development of new markets. As a result of these developments, independent commodity traders with global operations have emerged. These trading companies have been able to generate exceptional results due to the availability of cheap funding, volatile markets and many arbitrage opportunities.

These developments have also contributed to a flatter world, with markets that are much more transparent than 25 years ago. Increased competition, complex supply chains around the globe, a growing sophistication of customers and investors and demand for value-added products and services have forced many organizations to examine the existing business processes associated with their commodity-related operations and to introduce more complex trading products and strategies in order to remain competitive.

The background to commodity trading

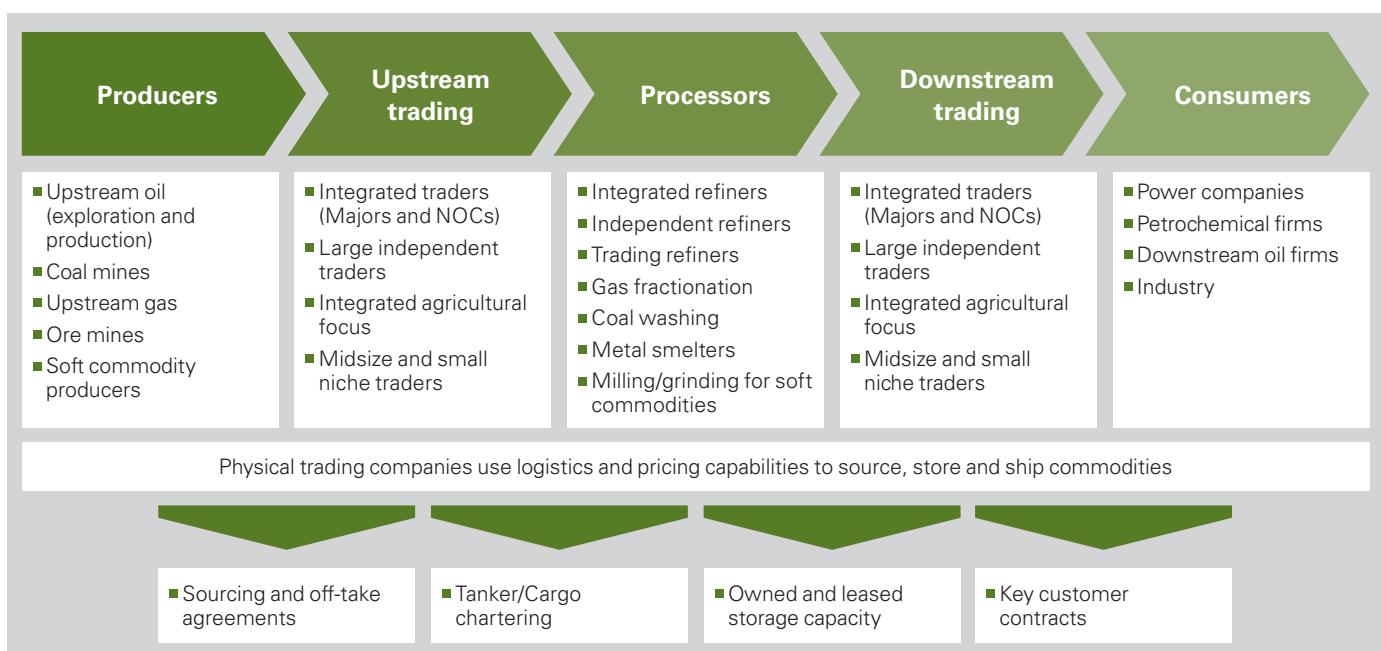
Commodity trading involves the optimization of the logistical axis through arbitration operations ensuring the transformation of stock as well as facilitating storage and transportation towards places of consumption. Arbitration relates to time, location, quality, lot size and logistics. Trading takes place in many different geographical locations, and many different commodities and grades of those commodities are traded. Traders need global coverage so as to see all of the options that may exist in a particular commodity stream, to be able to react to market events, and to extract value from various parts of the supply chain.

Industry structure change	Supply chain inefficiency	Exogenous market disruption	Energy policy shifts	New sources of supply
<p>Examples</p> <ul style="list-style-type: none"> ■ Major oil companies focusing on exploration and production ■ NOCS expanding beyond production ■ Electricity utilities switching energy source ■ Consolidation (e.g. coal mining) 	<p>Examples</p> <ul style="list-style-type: none"> ■ Demand shifting from developed to growth economies ■ Bottlenecks (e.g. pipelines) ■ Importers becoming exporters (e.g. location of ports in US) 	<p>Examples</p> <ul style="list-style-type: none"> ■ Fukushima ■ Weather (e.g. Sandy) ■ War (e.g. Libya) ■ Plant shutdowns and incidents (e.g. Texas City) 	<p>Examples</p> <ul style="list-style-type: none"> ■ Shift away from nuclear ■ US Shale ■ CO₂ caps ■ Geothermal ■ Renewable subsidies 	<p>Examples</p> <ul style="list-style-type: none"> ■ Deep water oil ■ Shale/fracking ■ Mineral deposits ■ Brownfield coal ■ Hydro, wind and solar

Arbitration opportunities have different sources and can occur because of changes in the industry structure, supply chain inefficiencies, market disruptions, governmental policy shifts and new sources of supply. An example is the impact of the shale gas discoveries in the US. As the result of the sudden increase in the US gas supply, gas prices in the US have reduced significantly compared to before, and have resulted in a decrease in the price of coal. As the price of gas in the EU is still relatively high, coal from the US is exported to the EU, making gas-fired power stations in the EU idle. This trend is reinforced by the very low price of carbon emission rights due to the economic crisis.

Given the market dynamics, commodity trading companies are continuously searching for new arbitration opportunities. Many commodity trading companies are expanding horizontally and integrating vertically to extend control over the supply chain and in search of higher profit margins. Commodity trading companies have acquired producing assets such as mines and oilfields, storage facilities, processing facilities such as refineries, and downstream trading assets. This development is reinforced by major divestment programs of the integrated oil companies providing opportunities for commodity trading companies to acquire these assets.

Recent examples are the expansion of Vitol in African fuel distribution through a 40 percent stake in Vivo Energy, the acquisition of the global food ingredients company Viterra by Glencore, the acquisition of assets from Petroplus by Vitol and Gunvor and the acquisition of the Australian retail and wholesale oil distributor Ausfuel by Trafigura's subsidiary, Puma Energy.



Implications

Integrating along the commodity supply chain can be financially rewarding. It brings with it challenges and complexities in terms of management, funding and corporate governance.

Management

Managing industrial assets requires a different skill set compared to commodity trading. Management needs to be aware of the conditions necessary to operate these assets profitably. If acquisitions are not managed well, then the company will lose its competitiveness and the acquired business will fail to live up to management profitability projections. The question is whether commodity trading companies are able to generate a higher return on capital by having better marketing abilities.

The acquisition of complementary businesses or assets entails a number of risks. These include the inability to integrate effectively the businesses acquired with existing operations (including the realization of synergies, significant one-time write-offs or restructuring charges, difficulties in achieving optimal tax structures and unanticipated costs).

Making successful acquisitions requires sufficient planning, legal advice and understanding of the market. Management must have a well-developed strategy and a solid acquisition plan.

Funding

As commodity traders are growing and entering into new businesses, their funding models are also changing. Investments in fixed assets require a different finance structure compared to financing trading operations, which is mostly short-term in nature.

Another element that changes the financing of commodity trading is the restructuring of the financial markets in response to the 2008 financial crisis. A central element in the financing of commodities leading up to the 2008 crisis was the increasing participation of major global investment banks. As a response to the crisis, banks are deleveraging and (especially European banks) have been pulling back from the commodities sector, both in terms of their lending to commodity traders and their own market-making and proprietary trading activities.

To address these developments, commodity trading companies are utilizing new sources of capital e.g. through public offerings, issuing bonds and selling minority stakes.

Examples are the listing of Glencore, and Vitol's sale of its 50 percent share in the terminal business. Other companies such as Trafigura and Mercuria have sold, or are considering selling, minority shares in their businesses.

Corporate governance

The increase in public financing and the opening-up of employee-owned traders will have a direct effect on corporate governance. External investors will request insight into business operations and performance in order to understand which risks have influenced the results. Other stakeholders such as customers, partners, employees and communities are demanding more disclosures on the inner workings of the companies and the impact on the environments in which they operate.

At the same time, corporate governance and financial reporting requirements demand the formalization of risk management, controls and financial reporting. Companies need to explain how they manage their risks, as the survival of a trading company is dependent on its ability to understand and manage its risks.

Companies that are not able to explain clearly how they generate profits can lose investor confidence and potentially lose access to capital markets.

Conclusion

The commodity trading industry is facing a significant transformation, for commodity traders are aiming to act on a larger part of the supply chain. This will have severe implications in terms of management, funding and corporate governance. Traders will need to ensure that they are able to attract the appropriate resources to manage the acquisition of assets and businesses. Without a well-developed strategy and solid acquisition plan, traders will most likely be unable to realize the synergies and arbitration opportunities envisaged. To fund the acquisition of assets and businesses, traders are tapping new sources of capital through public offerings, issuing bonds and selling minority stakes. This will force companies to open up and to become more transparent about their operations.

Commodities and commodity markets

Commodity markets can be used as vehicles for hedging and risk management. This chapter provides an introduction to the basics of commodities and commodity markets.



Introduction

Commodities are things of value and uniform quality that are produced or supplied in large quantities by many different producers, whereby the items from different producers or suppliers are considered to be equivalent and interchangeable.

For various commodities, active spot and forward markets have developed on which commodity prices are officially quoted – much in the same way as securities such as shares or bonds. These markets can be highly efficient and respond rapidly to changes in supply and demand to find an equilibrium market price.

Modern commodity markets have their roots in the trading of agricultural produce and livestock and are as old as written human history. Commodity markets have historically developed to mitigate risks rather than to take them.

Commodity markets are complex in several ways. There are spot markets and forward markets, organized exchanges, over-the-counter (OTC) markets, physical and financial aspects. Trading takes place in many different geographical locations and many different commodities and grades of those commodities are traded. There are also many players in these markets: producers, end-users, commodity trading companies, banks, exchange-traded funds (ETFs), investors and government agencies.

Etymology

The word commodity came into use in English in the 15th century and is derived from the French word "commodité". The Latin origin is "commoditas," which refers to either the appropriate measure of something, a fitting state, time or condition, i.e. a good quality, or an advantage or benefit.

Categories of commodities

Traded commodities are commonly categorized as follows:

- Agricultural produce & livestock – such as bio-fuel, cocoa, coffee, cotton, edible oils (e.g. palm oil), grains, pork bellies, soybeans, sugar and wheat;
- Metals & mining – aluminum, copper, gold, steel and silver;
- Energy – crude oil, gas, electricity and petrochemicals.

Although the above classification is common, it is by no means static or exhaustive. While trading in wheat, corn and livestock started in the 19th century, trading in soybeans is relatively new. Crude oil was the first form of energy widely traded, only recently to be expanded through the addition of electricity. Another recent development is the trading in carbon dioxide (CO₂) or sulfur dioxide (SO₂) emission rights – so-called "negative commodities".

Commodity markets are markets where raw or primary products are exchanged. These raw commodities are traded on regulated commodities exchanges in which they are bought and sold through standardized contracts. For a commodity market to be established there must be very broad consensus on the variations in the product that make it acceptable for one purpose or another.

Forward and futures contracts

A forward contract is a bilateral privately negotiated agreement to deliver a specified quantity and quality of a particular commodity at a specified future date and an agreed-upon price. These contracts are also commonly referred to as physical forward contracts. Their primary purpose is to result in physical delivery.

A futures contract is a standardized forward contract. Futures are traded on official commodity exchange markets such as the InterContinental Exchange (ICE) and New York Mercantile Exchange (NYMEX). Standardized terms are determined by the commodity market exchange rather than by the contracted parties, and include the contract size (unit of measurement), the delivery period, and quality criteria of the commodity. These contracts can also be referred to as commodity exchange futures. Their primary purpose is to hedge commodity price risk. Most commodity exchange futures do not result in physical delivery but are net settled in cash.

Commodity trading

Commodity trading is critical for bringing global commodity markets together. Trading provides liquidity to the commodity markets and helps to bring commodity prices in line with the fundamentals of supply and demand.

Net settlement of commodity exchange futures

All futures trades made on an exchange are cleared through a clearing organization (clearing house), which acts as the buyer to all sellers and the seller to all buyers. An entity buying or selling a commodity exchange futures contract is technically buying from, or selling to, the clearing organization. Since the entity effectively buys and sells from the same party, if it buys a futures contract and subsequently sells an identical contract (i.e. in the same forward period), it has extinguished its position and the contracts are netted. The physical forward market operates in a wholly different manner. If an entity buys and sells a physical forward contract, it ends up with two separate commitments: one to deliver and one to supply.

Mark-to-market and margin calls

When an entity enters into a futures contract, it is required to deposit an initial amount specified by the exchange or clearing organization (i.e. "initial margin"). The open futures position is "marked to market" on a daily basis. Commodity exchange futures traders do not collateralize the entire value of a contract. Rather, they are required to deposit a portion of the total value of the contract to ensure that their financial obligations can be met ("variation margin"). If the futures position changes in value, the amount of money in the margin account will change accordingly. If the amount of money in the margin account falls below the specified maintenance margin (which is set at a level less than or equal to the initial margin), the futures trader will be required to deposit additional funds.

Margin calls are much less common on physical forward contracts, although they do occur, particularly when dealing with relatively small counterparties with no credit rating. This is a discrepancy between the commodity exchange market and the physical forward market.

Dodd-Frank and European Market Infrastructure Regulation (EMIR)

The distinction between physical forward contracts and commodity future contracts will be reduced by the rules of Dodd Frank and EMIR. Based on these rules, standardized OTC derivative contracts should be traded on exchanges or electronic trading platforms where appropriate, and cleared through central counterparties. OTC derivative contracts would be reported to trade repositories under these rules .

Two main categories of counterparties to a derivatives contract are identified:

- "financial counterparties", which include banks, insurers, investment firms, fund managers, spread betting firms and pension funds; and
- "non-financial counterparties", which cover any counterparty that is not classified as a financial counterparty, including entities not involved in financial services.

Non-financial counterparties will only be subject to clearing and bilateral collateral requirements if their OTC derivatives positions are large enough and are not directly reducing commercial risks or related to treasury financing activity.

Commodity derivatives

The most common commodity derivatives are commodity futures. In addition to these, the commodity exchanges also trade commodity options and certain synthetic derivatives, combining multiple derivatives in a single transaction. For instance, energy exchanges offer “crack spread futures,” the trading of the difference between the crude oil price and that of the oil products resulting from the refining process (e.g. naphtha). This synthetic derivative can help oil refineries to hedge their processing margin. It can also be used as a speculative instrument by investors who believe that the base material is overpriced or undervalued against the refined products.

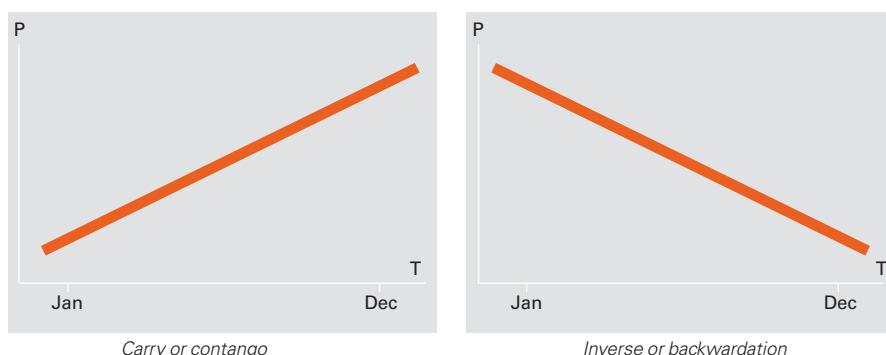
Market structures

Commodity markets consist of a range of prices – from spot to future prices. Two principally different market structures may prevail in commodity markets:

- “Carry” or “contango” – when spot prices are lower than forward prices; or
- “Inverse” or “backwardation” – when spot prices are higher than forward prices

A “carry” or “contango” market is generally a reflection of a stable market. The increasing forward prices are a compensation for the costs of holding stock (e.g. warehousing, insurance and interest). If the carry structure is steep, i.e. if forward prices are significantly higher than spot prices, it becomes financially beneficial to carry stock. This is because the carry offered by the market is higher than the actual costs for warehousing, interest and insurance.

An “inverse” or “backwardation” market is generally a market in turmoil; there is excessive demand for spot deliveries of the commodity. An inverse market may also offer trading possibilities for commodity entities. This will be explained in chapter 4.



Agricultural produce & livestock

Agricultural commodities include cocoa, coffee, cotton, frozen concentrated orange juice (FCOJ) and sugar. In addition to global consumer demand, the usual growing factors such as disease, insects and drought affect prices for all of these commodities. FCOJ prices are particularly sensitive to weather conditions. A frost or freeze in Florida or Brazil during the growing season can have a disastrous effect on both the current crop size and long-term production prospects. International exchange rates affect all of these global products, as well as factors like tariffs and geopolitical events in producing nations.

Grains and soybeans are essential to food and feed supplies. Prices are especially susceptible both to weather conditions in growing areas at key times during a crop's development, and to economic conditions that affect demand. The major futures contracts in this category are corn, soybeans, soybean oil, soybean meal and wheat. Agricultural reports are closely watched including key factors influencing supply and demand, current production and carryover supply from the prior season. Each product has its own unique fundamental factors, depending on its use for human or animal consumption, or for industrial needs.

Futures on live cattle, feeder cattle, lean hogs and pork bellies are all traded at the Chicago Mercantile Exchange (CME). Their prices are affected by consumer demand, competing protein sources, price of feed, and factors that influence the number of animals born and sent to market, such as disease and weather.

Metals & mining

The major metals futures contracts include copper, gold, platinum, palladium and silver. Their uses include industrial purposes, construction and jewelry. Geopolitical and economic factors in the dominant producing and consuming countries affect price developments, but each also has its own unique fundamental market drivers. In the copper market, building construction is the largest demand source. Copper is also used for electrical and electronic products, transportation and industrial machinery manufacturing. The price of copper is therefore sensitive to statistics related to economic growth. For that reason, participants in financial markets often look to price developments in copper futures as a gauge of general economic trends. In another example, gold has long been used as a hedge against political and economic uncertainties. Many central banks back their currency with gold reserves.

Energy

The popular energy futures contracts are crude oil, gasoline, heating oil, natural gas and electricity. Oil markets have become one of the most important gauges of world economic and political developments and are therefore heavily influenced by disruptions in producing nations. The value of the US dollar is significant because much of the world's crude is priced in dollars. US energy prices are also quite sensitive to statistical reports detailing production, imports, and especially stocks. These markets are also subject to seasonal fluctuations – mild weather may lessen the need for heating oil, while summer tends to bring greater gasoline demand for the driving season.

Electricity is still a very regional market. Differences between regions arise due to different methods used to produce electricity, weather patterns, demographics, local supply and demand conditions, etc. Links between regions help to reduce regional variations. The non-storability of electricity makes the electricity market different from the financial markets and other commodity markets. Shortages in electricity generation or peaks in electricity demand result in unparalleled jumps, spikes, and volatility in spot electricity prices.

Financing commodity markets

Commodity trading activities inevitably require financing. Traditionally, these activities were mostly financed in the form of syndicated bank lending secured by commodities inventories.

The restructuring of the financial markets in response to the 2008 financial crisis has introduced important changes to the financing of commodities trading. Financial institutions have to restore their balance sheets after the losses incurred during the crisis. New financial regulations aim to make the system more resilient. Under Basel III, the minimum amount of capital that banks must hold will increase. This has affected commodity trading, because banks have reduced their lending to commodity traders and their own market-making and proprietary trading activities.

To address these developments, commodity trading companies have sought new sources of capital e.g. through public offerings, issuing bonds and selling minority stakes. Commodity traders are also making greater use of innovative financing tools.

Conclusion

Commodity markets have existed for many centuries and are essential both for risk management and for bringing commodity prices in line with the fundamentals of supply and demand.

Commodity trading companies generally use two types of forward contracts: customized physical forward contracts with suppliers and customers, and standardized commodity exchange futures. The different characteristics of these two types of contracts impinge on commodity entities in a number of ways. Those impacts will be addressed in the following sections.

Commodity markets primarily exist to reduce uncertainty and mitigate risk. This does not imply that operating on commodity markets is not risky – quite the contrary. In the following articles, the risks that commodity entities face are further discussed, as are the measures that they could take to mitigate them.

Commodity risk management

Risk management is not about avoiding risks; rather it is about prudent tradeoff of risk and return. To that end, the various components of risk management should be integrated so that the company's results can be analyzed and understood.



Introduction

Commodity risk can be distinguished from, for example, interest rate risk or foreign exchange risk, primarily due to the price risks associated with the trading of commodities. Commodity prices tend to be more susceptible than traditional assets (e.g. stocks, bonds and currencies) to the imbalances between market supply and demand. As a result, commodity prices are generally more volatile and have wider price fluctuations than most other traded financial assets.

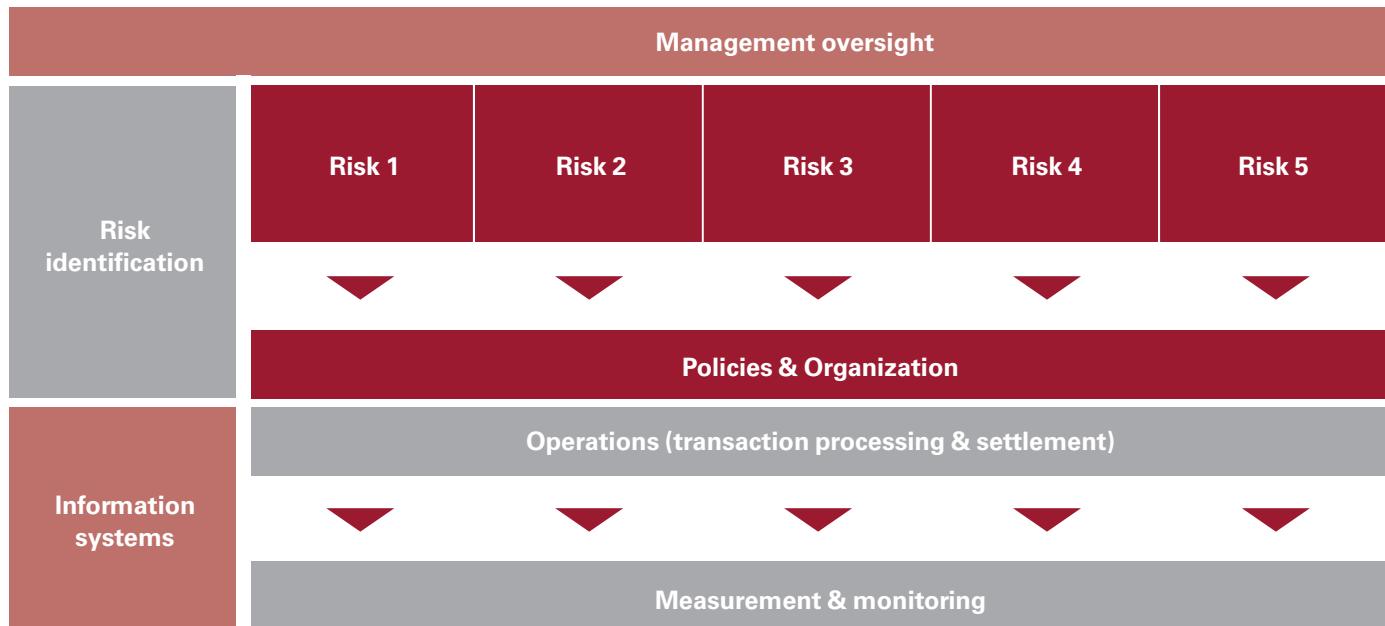
Increased competition, the growing sophistication of customers and investors, and the demand for value-added products and services have forced many organizations to examine the existing business processes associated with their commodity-related operations, and to introduce more complex trading products and strategies in order to remain competitive. Trading and marketing activities now include the purchase and sale of a wider range of commodity products and services, from the most liquid of transactions (e.g. futures) to the more complex derivative instruments (e.g. crack and spark spread options, weather options and swing options). With this increase in complexity comes an increase in the associated risk.

An organization's ability to accept and manage its commodity-related risk is impacted by the effectiveness of the business processes that have been established to identify, measure, monitor and control risk within the organization. Commodity risk management comprises the following elements:

- Management oversight;
- Operations;
- Measurement and monitoring;
- Information systems.

The challenge is to integrate these elements effectively into a risk management framework that forms part of an entity's daily course of business.

Elements of commodity risk management



Management oversight

Management oversight includes activities relating to the organization's trading strategy, the structure and effectiveness of its risk management oversight function, and the ethics, policies and procedures of the organization.

The primary goal of risk management oversight is to ensure that an organization's trading, position-taking, credit extension and operational activities do not expose it to material, unanticipated financial losses that could threaten the viability of the organization. The level of risk that an organization may reasonably assume through trading activities is determined by the tolerance for risk stated by the Board of Directors, the ability of senior management to manage these operations effectively, and the level of risk-capital available to the organization.

The Board of Directors and senior management should have a defined strategic vision that articulates the way in which the organization will operate and gain a competitive advantage using physical assets, financial instruments, products and services. Critical to the commodity risk management process is how both the trading and risk management functions are structured, and how decisions are made for the implementation and execution of the strategic vision.

The scope and complexity of the commodity-related risks faced by the organization will determine the number and nature of individual functions or committees required, as well as the roles and technical competence of the personnel responsible for risk management.

Commodity price risks

Outright price risk – this is the risk of the effect of price fluctuations on positions that are not, or not fully, hedged.

Basis risk – the basis is the premium or discount against futures for a specific time, location or quality.

■ *Time basis risk* – the exposure to changes in the commodity market structure, i.e. relative appreciations or depreciations of forward commodity prices at different periods against each other. Particularly for producers, time basis risks are generally unavoidable as they need to maintain physical inventories.

■ *Location basis risk* – can occur when positions are hedged on two different correlated commodity exchange markets. An example of this is the price difference on the markets for oil in London and New York.

■ *Quality basis risk* – also known as variety risk. This risk expresses the risk of autonomous price movements of a specific commodity variety, in comparison with the quoted commodity exchange price.

Counterparty exposure risk – this is the risk that a counterparty defaults and will not be able to fulfill its forward contracts. Counterparty exposure risk is measured as the amount of unrealized gains on a particular client or supplier. If the amount of unrealized gains becomes substantial, then the potential impact of counterparty default increases.

In addition to the commodity price risks mentioned above, many commodity entities will also have to consider foreign currency exposure risk. This is because sales and purchases are commonly conducted in a currency other than the entity's functional currency.

Policies and organization

A positive risk culture is one that promotes individual responsibility and is supportive of controlled risk-taking. In a positive risk culture, people are allowed to question everything. Not only does this approach result in the identification of improved processes and procedures, it also ensures that people understand and appreciate controls.

The success of policies and procedures depends critically upon a positive risk culture. Procedures are ineffective if no one follows them. The documentation of an organization's procedures should be comprehensive and should be updated on a timely basis.

Examples of procedures include:

- Lines of reporting: each individual in an organization should report directly to a single person.
The line of reporting should be explicit.
- Trading authority: a procedure should be established for granting authority and responsibility to any trader.
- Risk limits: market and credit risk limits should be defined. There should also be procedures for establishing and reviewing such limits in order to ensure that the system of limits remains effective.

The limits placed over market and credit risk are one of the most fundamental controls over the risks inherent in an organization's trading and marketing activities. Organizations should establish limits for risk that relate to their risk measures – expressed in both volumes and amounts – authorized by senior management and the Board of Directors. The established limits structure should apply to all risks arising from an organization's commodity trading and marketing activities.

Segregation of duties

Commodity trading operations are normally segregated into three independent functional units, commonly referred to as the front, middle and back offices. Every organization should have comprehensive policies and procedures in place that describe the full range of trading activities performed, in order to ensure that adequate segregation of duties exists between the trading, control and position settlement functions.

Segregation in trading responsibilities promotes accuracy and completeness in the reporting of positions and risks. It provides for an independent reconciliation of front office trades by the back office. This implies that daily trade statements from the commodity exchange need to be sent to and reconciled by staff independent from those that have executed the trades.

Sumitomo Corp.

Sumitomo's head copper trader disguised losses totaling USD 1.8 billion over a ten-year period. During that time he performed as much as USD 20 billion of unauthorized trades a year. He was able to hide his activities because he had trade confirmations sent directly to him, bypassing the back office.

Société Générale

Société Générale lost EUR 4.9 billion due to trading losses by the French trader Jérôme Kerviel.

Bank officials claim that, throughout 2007, Kerviel had been trading profitably in anticipation of falling market prices. However, they have accused him of exceeding his authority to engage in unauthorized trades totaling as much as EUR 49.9 billion. Bank officials claim that Kerviel tried to conceal the activity by creating trading losses intentionally to offset his early gains. When the bank uncovered the unauthorized trading it closed out these positions over three days, beginning 21 January 2008. After this period, the market experienced a large drop in equity indices, and losses attributed are estimated at EUR 4.9 billion.

Segregation of duties reduces the risk of losses from operational errors which could lead to contractual disputes, undocumented trades, or inaccurate settlement of contracts. It is a critical element in monitoring and controlling the potential for unauthorized or illegal trading activities.

Segregation of duties in a computerized environment is facilitated by passwords, inquiry-only access, logs, dual authorization requirements, and documented reviews of input/output.

Operations

The operating activities contain the trading and administrative functions performed by defined offices and personnel within the organization.

Transaction processing

It is critical that all trades are entered into the trading system accurately, completely and on a timely basis. The initial registration of a sale or purchase is an inherently weak part of the position management process, as it depends on the discipline and quality of the trader who conducted the trade.

Commodity trading entities have many contracts, and most of them have different terms and conditions such as quantities, qualities, prices, delivery months, and currencies. The sheer number of variables in play increases the risk that a transaction may not be properly reflected in the system. To mitigate this risk, the entity needs an auditable process of trade recording. This process should include reconciliation with the primary broker and over-the-counter (OTC) confirmations. All amendments to trades must be recorded and documented. Furthermore, additional controls such as a daily review of new trades and trade amendments may need to be considered.

Settlement

Settlement relates to the actual performance of obligations under a contractual agreement. Settlement may be either financial or physical: under an agreement that requires financial settlement, the trading organization disburses or receives cash as payment for an outstanding obligation. Physical settlement refers to the exchange of a physical commodity rather than cash payment.

Furthermore, the settlement process should ensure that receipts and disbursements are accurately recorded in the company's general ledger.

Measurement and monitoring

The activities contained within this group relate to the analytical methodologies used to measure and monitor the exposure that is faced by an organization as a result of its commodity trading and marketing activities. This information is useful for adjusting risk exposures and for taking corrective measures if necessary.

Required conditions

An important condition for the effective operation of monitoring controls is reliable data on open positions and fair value measurement. Whether commodity risks are properly calculated depends on how reliably the market values of the commodities can be determined. Without high-quality market data, a commodity trading entity may not accurately quantify its net asset value and may misstate its risk position. Fair value is highly important in this regard. How fair value has to be determined and which factors affect the valuation of commodity positions is described in chapter 6.

Monitoring techniques

Various techniques can be used for monitoring risk exposures. Using open positions or scenarios is a simpler process to quantify risk. Given that risk management is usually assigned to the commodities procurement department, these methods are applied more frequently. Quantitative processes such as value at risk, however, provide a comprehensive picture of a company's overall risk tendency and illustrate the impact on earnings. Value at risk (VaR) is more complex to apply and requires specialist knowledge.

Value at risk

Value at risk (VaR) is a measure of how the market value of an asset or a portfolio of assets is likely to decrease over a certain time period (usually over one day or ten days), under usual conditions. It is typically used by security houses or investment banks to measure the market risk of their asset portfolios.

Let us consider a trading portfolio. Its market value in US dollars today is known, but its market value tomorrow is not known. The investment bank holding that portfolio might report that its portfolio has a one day VaR of USD 4 million at the 95 percent confidence level. This implies that (provided usual conditions will prevail over the one day) the bank can expect, with a probability of 95 percent, that a change in the value of its portfolio would not result in a decrease of more than USD 4 million during one day. This is equivalent to saying that there is a less than 5 percent chance that the value of its portfolio will decrease by USD 4 million or more during one day.

Commodity entities should be hesitant to rely solely on VaR for measuring their commodity risk exposures. This is because the VaR approach does not account for events that fall outside historical correlation patterns. In view of the high volatility of commodity markets and their susceptibility to demographical developments, political turmoil or climate change, commodity risk management should also consider conducting scenario analyses ("stress tests") to simulate the effect of unprecedented market price fluctuations.

As VaR is mainly used for assets values, companies should also consider Cash Flow at Risk (CFaR). CFaR is analogue to VaR: a probabilistic estimate that normally distributed cash flows will not fall below a certain level. CFaR is particularly relevant for commodity trading companies with significant physical positions that are hedged by exchange traded futures that require margin calls. In periods with high price volatility, margin calls could significantly drag on a company's finance facilities, even though VaR stays within the company's limits.

It is important that an entity is able to categorize the gross margin into separate components of the different trading risks and strategies. It is also important to know how strategies contributed to the entity's results and whether the entity was profitable when adhering to its risk limits and trade strategies. A commodity trading entity with different trading strategies that consist of outright speculation and speculation on spreads or arbitraging positions must be able to explain the financial results of each strategy. Understanding the gross margin is further explained in chapter 4.

Composition of gross margin

Gains	In accordance with trade strategies
	Outside trade strategies
Losses	In accordance with trade strategies
	Outside trade strategies

If a company cannot explain the root cause behind its results, either positive or negative, the company will not be able to determine whether its trading strategies are effective. If a company monitors and understands its gross margin, then it can take corrective actions to ensure that resources are allocated to the profitable strategies.

Information systems

Risk management needs to be adequately supported by information technology to ensure that preventive and monitoring controls become an integrated part of daily business processes.

The trading system's security settings and authorizations should be established in such a way that organizational segregations of duties and user authorizations are enforced. Application controls, such as including mandatory fields, should limit the risk of the incomplete or inaccurate manual entry of trade data. All changes should be logged in order to provide an appropriate audit trail.

Reporting functionality is also pivotal. Reports should be set up to provide an overview of all trading activity, to analyze the entity's trading results, and to identify, on a timely basis, significant deviations from the risk management framework. For example, the system should be able to generate a list of all trades conducted on a daily basis as well as exception reports – e.g. a report that identifies any potential overruns in open contract positions. Specific reports should be developed to monitor the entity's economic inventory position, based on up-to-date market price information for commodity and currency exchanges. Ideally, the information system should also allow for scenario analyses, whereby the entity's risk management can input fictitious market prices or developments to simulate their potential effects ("stress testing"). Adequate information systems ensure that risk management activities are executed within the organization efficiently, continuously and consistently.

Conclusion

The primary goal of commodity risk management is to protect the economic value of a business from the negative impact of price fluctuations at the lowest possible costs. Companies must formulate a strategy in which the handling of commodity risks is defined.

Important elements of a risk management strategy are trading limits, segregation of duties and monitoring controls. It is pivotal that the company has an integrated view of risk and rewards in the sense that results are analyzed and broken down into the risk factors causing the results. This will prevent the celebration of lucky strikes and the penalizing of traders for losses resulting from consciously chosen trade strategies.

Companies that implement risk management in a consistent manner can expect to create long-term competitive advantages for themselves.

Understanding financial statements of commodity trading companies

To assess the financial statements of a commodity trading company, several aspects of the balance sheet and the income statement that are unique to commodity trading need to be understood. The main challenge is that the gross margin is generally made of different components that differ in nature and in their degree of uncertainty.



Composition of the balance sheet

One of the main characteristics of commodity trading companies is their relatively low capitalization, as significant working capital is required.

Funding requirements are generally correlated with movements in commodity prices and the extent of business opportunities. Increasing commodity prices primarily lead to increased funding requirements.

The assets of commodity trading companies are mostly short-term in nature, being financed by short-term and self-liquidating instruments. In essence, this means that a bank finances each transaction separately secured by the goods purchased, including the receivables created following the sale. The cash collected under those receivables is then used to repay the short-term financing.

Commodity inventories tend to be exceptionally liquid because their homogenous nature makes them truly fungible and thus easily hedged in the commodity market. These inventories also generally turn quite rapidly, supporting cash flows and diminishing the risk of an inventory write-down. This liquidity contributes to financial flexibility. Because of these characteristics, commodity inventories could be treated distinctly from other financial statement account captions for credit evaluation purposes.

Therefore, when assessing the debt of trading companies, net debt is defined as total current and non-current borrowing, less cash and cash equivalents and readily marketable inventory.

Composition of the income statement

Commodity trading companies trade high volumes with low margins. As commodity prices are often volatile, overall revenues are neither a reliable nor a relevant performance indicator.

The volume of commodities marketed is a key driver of the results of commodity trading companies. The volume of commodities marketed is dependent on the ability to source and finance the purchase of commodities and the ability to sell these commodities to new and existing customers.

Absolute gross margin and EBIT are normally a better reflection of business performance than turnover or gross profit margin as a percentage of turnover. Profitability is generally based on a dollar-per-barrel or metric-ton basis (rather than a percentage mark-up).

EBIT is a key measure of performance as it reflects the net margin earned by the trading activities. EBIT can also be used to determine a company's ability to service indebtedness and fund ongoing capital expenditure.

Net versus gross presentation of revenues

One of the issues concerning the presentation of revenues and cost of sales is whether an entity acts as a principal or an agent. An entity acts as principal when it has exposure to the significant risk and rewards associated with the sale of goods or rendering of services. An entity acts as an agent when it does not have this exposure. Although IFRS contains this general principle and a number of indicators to assist with the application of the principle, judgment is required to assess if the entity acts as a principal or as an agent. Indicators that an entity is acting as a principal include that it:

- has the primary responsibility for providing the goods and services to the customer or for fulfilling the order;
- has inventory risk before or after the customer order, during shipping or on return;
- has discretion in establishing prices (directly or indirectly); and
- bears the customer's credit risk for the amount receivable from the customer.

When an entity is acting as a principal, revenues will be presented on a gross basis. In an agency relationship, the amounts collected on behalf of the principal are not revenue. Instead revenue is the amount of commission.

Another issue relates to washout deals. In daily trading business, the same commodity is sometimes sold and purchased from the same business partner in separate transactions. These transactions can be offset based on a mutual agreement known as "washout." Washout is a financial settlement in which no delivery is performed. Transactions that are part of a washout are presented on a net basis in the income statement considering the offsetting criteria of IFRS are met.

Composition of gross margin

Understanding the gross margin, defined as sales less cost of sales, is pivotal for commodity stakeholders. The main problem is that the gross margin is generally made up of different components that differ in nature and in their degree of uncertainty. The main contributing factors influencing a commodity company's gross margin are:

- *Outright positions* – The part of the inventory position that is not hedged is susceptible to price changes on the commodity market.
- *Locked-in margin* – Locked-in margins, i.e. the price difference between physical forward purchases and physical forward sales, comprise part of the unrealized gains and losses reflected in the inventory position. Such unrealized profits remain susceptible only to counterparty risk, but not to any market price fluctuations. However, if market conditions substantially change, resulting in large unrealized gains on physical forward contracts, the inherent risk of counterparty default increases.
- *Basis risks* – Basis risks are all risks embedded in a position other than the outright price risk. Basis is the premium or discount against futures for a specific time, location or quality. Such risks cannot or cannot fully be hedged and, due to market price fluctuations, can lead to gains or losses.

- **Counterparty exposure risk** – this is the risk that a counterparty defaults and cannot fulfill its forward contracts. Counterparty exposure risk is measured at the amount of unrealized gains on a particular client or supplier. If the amount of unrealized gains becomes substantial, the potential impact of counterparty default increases.
- **Accounting mismatches** – Accounting requirements do not allow all types of inventory and forward contracts to be measured at fair value. Under both IFRS and US GAAP, certain physical forward positions are not recorded at fair value. However, commodity exchange market futures generally qualify as derivative instruments that are measured at fair value. Measuring commodity futures at fair value while keeping (some of the) physical forward contracts off-balance leads to an accounting mismatch. Similarly, accounting mismatches may also occur if (some of) the physical inventory is valued at the lower of historical cost or market. Both IFRS and US GAAP allow hedge accounting to manage certain accounting mismatches. However, the preconditions for hedge accounting are stringent and the related administrative burden can be severe.

Outright positions

An entity is exposed to movements in the commodity market prices if it has not (fully) hedged its inventory position. The unhedged position is referred to as the outright position. The outright position is susceptible to changes in the commodity's market price. It is highly uncertain whether unrealized gains can actually be converted into cash.

Case study #1 – outright price risk

A commodity trader has sold short 100 MT of commodity exchange futures at EUR 160 per MT. The commodity exchange price as at T=1 amounts to EUR 130.

At T=1, the entity has an unrealized gain of EUR 3 000. It has sold 100 tons at EUR 160, which it can purchase against the current market price of EUR 130.

On T=2 the commodity exchange price increases to EUR 190.

On T=2, the unrealized gain of EUR 3 000 has evaporated and turned into a loss for the same amount. Now the trader is obliged to purchase commodities at EUR 190 which it has sold at EUR 160.

It should be noted that outright positions are not always solely speculative in nature. They can consciously be taken to mitigate delivery or financing risks. Such outright positions are known as tail hedges.

Locked-in margin and counterparty exposure risk

The gross margin may include locked-in margins. Locked-in margin is the difference between the sales price and the purchase price. Under the assumption that forward contracts will be executed as contractually agreed, the conversion of the locked-in margin into cash is certain. Even if the gross margin is exclusively composed of locked-in margin, it may nonetheless include substantial risks due to counterparty exposures.

Tail hedging

Example 1: Tail hedging to reduce financing or liquidity risk

A commodity entity forward purchases against *variable* ("unfixed") prices. Its forward sales, however, are conducted against *fixed* prices. As a consequence, only the forward sales needs to be hedged by taking a long position on the commodity exchange market.

The entity is anticipating a substantial but temporary decrease of the commodity prices. When the commodity prices drop:

- The unrealized gains on the forward short sales do not result in any cash effect;
- However, the unrealized losses on the forward long futures position need to be prepaid (margin calls) and funded, thus exhausting the entity's borrowing capacity.

Hence the entity decides to not fully hedge the forward short position, but rather leaves part of this position open ("tail").



The "tail" leaves the entity partly exposed to commodity price fluctuations:

- If commodity prices increase, the unrealized loss on the forward sales would exceed the unrealized gain on the futures long position;
- If commodity prices decrease, the unrealized gain on the forward sales would exceed the unrealized loss on the futures long position. At the same time, the entity's borrowing capacity exhaustion and consequently its interest expenses are reduced.

Example 2: Tail hedging to reduce delivery risk

A commodity entity forward purchases from various suppliers. From past experience, it is reasonably certain that only 90 percent of the forward purchased volumes will actually be delivered. The entity thus proceeds by selling only 90 percent of the forward purchased volumes on the commodity exchange futures market.



The "tail" leaves the entity (partly) exposed to commodity price fluctuations only if all the forward purchase contracts are actually honored. If 90 percent is actually delivered, its outright position is fully hedged.

This type of tail hedging can be avoided by the use of commodity options. If a particular supplier is deemed to be unreliable, a put option can be bought against the forward purchase contract. Should the commodity prices decrease and the supplier executes the contract as agreed, the put option can be exercised (resulting in the sale of the commodities). If commodity prices increase and the supplier does not execute the contract as agreed, the put option is likely to expire out-of-the-money and will not be exercised. Should this position have been hedged with a future, the entity would have been left with an obligation to sell commodities which it does not have.

Case study #2 – locked-in margin and counterparty exposure risk

A commodity trader has sold forward 100 MT at EUR 160 per MT. It has hedged the position with a long forward contract of 100 MT at EUR 120. The commodity exchange price at balance sheet date amounts to EUR 130.

As per balance sheet date the total unrealized gain amounts to EUR 4 000. The forward sale has an unrealized gain of EUR 30 per MT and the long position a gain of EUR 10 per MT. The EUR 4 000 can also be computed by subtracting the purchase price of EUR 120 from sales price of EUR 160. As the entity's position is physically hedged, the commodity exchange price is irrelevant for the calculation of the unrealized result.

The commodity exchange price increases to EUR 250.

The total unrealized result remains the same: EUR 4 000. This amount continues to represent the locked-in margin. However, the composition of the unrealized result has altered significantly. Now the short contract shows an unrealized loss of EUR 9 000, while the long contract has an unrealized gain of EUR 13 000. This means that if the supplier is not able to execute the contract, the commodity trader is faced with a loss of EUR 9 000.

The main problem with counterparty exposure risk is that it is difficult to express in the unrealized results in a timely manner. Generally, its impact remains hidden until a counterparty actually defaults. With the recent increased volatility of the commodity markets, adequate monitoring and management of counterparty exposure risk has become more important. When markets substantially increase, the creditworthiness of suppliers needs to be closely monitored. In a sharply declining commodity market, the inherent risk moves to the commodity company's customers.

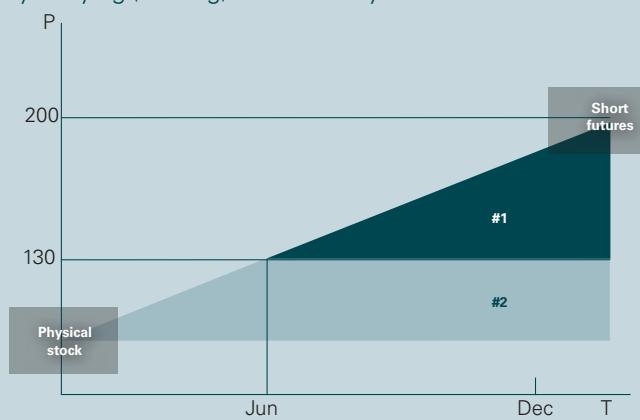
Time basis risk

Although the total outright position can be fully hedged, an entity may be forced, or consciously decide, to hedge the position in a different forward period. Entities carrying physical inventories (mostly processors) generally have an unavoidable time basis risk, as the physical inventory has to be hedged with forward short positions.

If an entity has time basis risk in its position, it is hedged against market price fluctuations of the commodity, provided that the commodity market structure does not change. The entity is, however, exposed to changes in the commodity market structure – i.e. relative appreciation or depreciation of forward commodity prices against each other.

“Cash and carry game”

An entity has forward sold its inventory on the futures market. If the market structure remains unchanged, the short futures position automatically yields a profit as the futures mature. If this profit exceeds the actual cost of warehousing, interest and insurance, the entity earns income simply by carrying (owning) the inventory.



In the graph, area #1 reflects the profit on the short futures position emerging until June, assuming the market structure remains unchanged. After six months, the December futures, which were sold at EUR 200, will have a market value of EUR 130 (the price of the December futures bought in June). This results in a profit of EUR 70.

Area #2 is the additional profit emerging as per December (again under the assumption that the market structure remains the same). After a year the December futures will have a value close to the spot price of EUR 100. This results in a total profit of EUR 100.

Realizing profits in a backwardation market

An entity commonly forward purchases at variable (“unfixed”) prices, while forward sales are conducted at fixed prices. Hence it needs to take a long futures position on the commodity exchange market to hedge its outright price risk. As the market is in backwardation, a December long futures position is acquired. If the market structure remains unchanged, the long futures position automatically increases in value, resulting in a profit.



In the graph above, area #1 represents the profit emerging as the long futures position mature to June and the market structure remains unchanged. After six months the December futures, which were bought at EUR 100, are now valued at EUR 160. This implies a profit of EUR 60. Area #2 represents the profit on the long futures position in December (again under the assumption of an unchanged market structure). After a year the December futures price approximates a price of EUR 200, resulting in a total profit of EUR 100.

Case study #3 – time basis risk

A commodity processor has sold short 100 MT at EUR 160 per MT for delivery in December. It has hedged the position with a long forward contract of 100 MT at EUR 140 for delivery in July. The commodity exchange prices upon inception of the contract are:

- July: EUR 140
- December: EUR 160

On $T=1$, the commodity market increases by EUR 10, i.e., the commodity prices are:

- July: EUR 150
- December: EUR 170

$T=1$	Qty * [Contract price -/- Market value]	Contract value
Short	100 * (160 -/- 170)	-1 000
Long	100 * (140 -/- 150)	1 000
	Unrealized gain	0

$T=1$ conclusion

The unrealized loss on the forward short contract is offset against the profit on the forward long. The entity is hedged against price fluctuations of the commodity exchange market. Both contracts need to be accounted for on-balance but the net impact on the gross margin is nil.

On $T=2$, the commodity market structure changes to:

- July: EUR 180
- December: EUR 150

$T=2$	Qty * [Contract price -/- Market value]	Contract value
Short	100 * (160 -/- 150)	1 000
Long	100 * (140 -/- 180)	4 000
	Unrealized gain	5 000

$T=2$ conclusion

Because the company has hedged its position in different forward periods, a change in the commodity exchange market structure (i.e. a depreciation or appreciation of forward prices against each other) means an unrealized result emerges. I.e. the hedge is only effective when the commodity exchange price changes affect all forward prices identically.

Depending on the market conditions, time basis risks can be used to generate additional income. Commodity processors carrying physical inventories are able to generate additional income if the market has a carry structure and the market carry exceeds the actual cost of warehousing, insurance and interest of the physical inventories. Carrying stock in a flat or backwardation market will unavoidably lead to losses. However, commodity companies not carrying physical inventories can also generate additional revenues from time basis risks in backwardation markets.

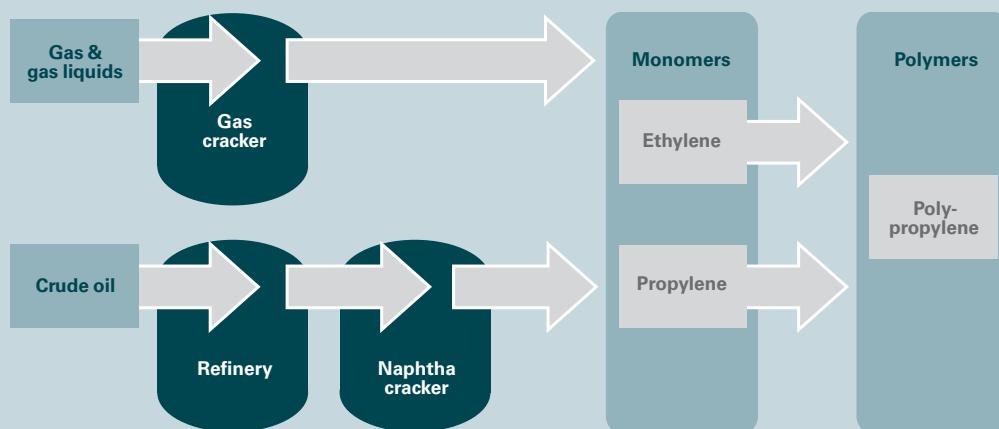
Quality basis risk

A standard variety is traded on the commodity markets. However, for some commodities specific varieties exist that trade at a premium or a discount ("differential") in comparison to the base variety. Differentials may change autonomously and uncorrelated with changes to the commodity exchange market price. Autonomous changes in differentials can generally not be hedged and thus result in unrealized results emerging from an otherwise fully hedged inventory position.

Make or buy?

The objective of commodity producers or processors is to produce and forward sell their finished products at an optimal margin. The gross margin largely depends on the processing margin, i.e. the difference between the sales price of the finished goods on the one hand (including revenue from by-products) and the cost of raw materials plus production expenses on the other. Different commodity markets have different jargon for the processing margin, ranging from crush spread (soybeans), spark, dark or clean spreads (electricity) or crack spread (crude oil).

If processors have economic and technical flexibility in utilizing their production facilities, they may be able to slow or shut down production and purchase finished goods to fulfill their forward sales commitments. These decisions become more complex for production processes with marketable semi-finished products and by-products. A further complicating factor may be the possibility of substituting raw materials. Monomers, which are gases used for making polymers (plastics), can be produced by using either natural gas or crude oil (subsequently turned into naphtha) as a raw material. In the US and the Middle-East, monomers are produced using natural gas, while in Europe and Asia crude oil (or naphtha) is the primary raw material.



In order to be able to take make-or-buy decisions continuously, commodity entities require a certain degree of economic and technical production volume flexibility. It must be technically possible and economically feasible to temporarily slow or shut down production. Commodity plants are generally highly capital-intensive, with high fixed production costs – making close-downs costly. Furthermore, temporarily shutting down production facilities can have strenuous technical consequences (e.g. due to solidification in pipelines).

In some commodity sectors, make-or-buy decisions have become part of daily routine. Deciding whether to generate or purchase electricity is a decision that market gardeners make on a daily basis. They commonly sell forward their generation capacity and later decide whether to generate electricity or to purchase it spot on the market.

Case study #4 – Quality basis risk

A coffee trader has forward purchased 100 MT of a specific brand ("Sumatra") of coffee at a differential of EUR +20. It has hedged the long position by selling short 100 MT at the commodity exchange market against the market price of EUR 100.

On T=0, the coffee commodity exchange price amounts to EUR 100.

On T=1, the coffee commodity exchange price increases to EUR 120. The differential remains at EUR +20.

	Qty * [Contract price -/- Market value]	Contract value
Long	100 * (100 + 20) -/- (120 + 20)	2 000
Short	100 * (100 -/- 120)	-2 000
	Unrealized gain	0

T=1 conclusion

The unrealized loss on the forward short contract is offset against the profit on the forward long. The entity is hedged against price fluctuations of the commodity exchange market.

On T=2, due to disappointing crop results, the coffee differential of Sumatra variety increases to EUR +50. The commodity exchange price increases to EUR 130.

	Qty * [Contract price -/- Market value]	Contract value
Long	100 * (100 + 20) -/- (130 + 50)	6 000
Short	-/- 100 * (100 -/- 130)	-3 000
	Unrealized gain	3 000

T=2 conclusion

The hedge is made for the standard variety traded on the official commodity exchange markets. The entity is not hedged against autonomous price fluctuations of the specific varieties.

Location basis risk

Certain commodity markets have multiple commodity exchange markets. Price arbitraging between the different markets is in some instances possible. This implies taking a short position on one market and a similar position on the other. Relative price appreciation or depreciation of the two commodity markets results in gains or losses. Arbitraging is possible, for instance, for cocoa (London versus New York), sugar and crude oil. The cocoa market in London trades in a standard variety of West African cocoa beans, while the New York market is linked to cocoa beans originating from Asia. The London sugar market trades in refined ("white") sugar; the New York market in raw ("brown") sugar. In the case of crude oil there are different commodity exchange futures for heavy sour crude oil (originating from the Middle East) and light sweet crude oil (North Sea and Texas). Although two separate commodity markets also exist for coffee (London and New York), no arbitraging is possible as the two markets each trade a different base variety of coffee (Arabica versus Robusta).

Arbitraging is also possible within a single commodity exchange. Polypropylene (PP) is quoted at the London Metal Exchange (LME) in three separate prices for Europe, Asia and North America. The different prices reflect the subtle variations in the trade and use of plastics around the world.

Accounting mismatches

Accounting mismatches occur as certain contracts, such as forward contracts meeting "own-use" exemption are not recognized in the balance sheet and income statement until the contracts are settled. IFRS requires that contracts entered into for the purpose of receipt or delivery of a non-financial item in accordance with the entity's "*expected purchase, sale or usage requirements*" should be kept off-balance whilst commodity exchange futures qualify as derivatives and should be measured at fair (market) value. In accordance with US GAAP, contracts falling under the "*normal purchases and normal sales*" exemption should be kept off-balance. Commodity exchange futures, however, qualify as derivatives that should be measured at fair (market) value.

In chapter 5 the accounting treatment of commodity positions under IFRS is explained.

Composition of EBIT

EBIT of a commodity trading company mainly consists of gross profit and selling, general and administrative expenses. Selling, general and administrative expenses represent costs that are primarily semi-fixed in nature, with the exception of the variable bonuses. Payroll expenditure is mostly the largest component, with the variable bonuses constituting a significant part of the payroll expenditure. The variable bonus pool is normally correlated with the profitability of the trading operations.

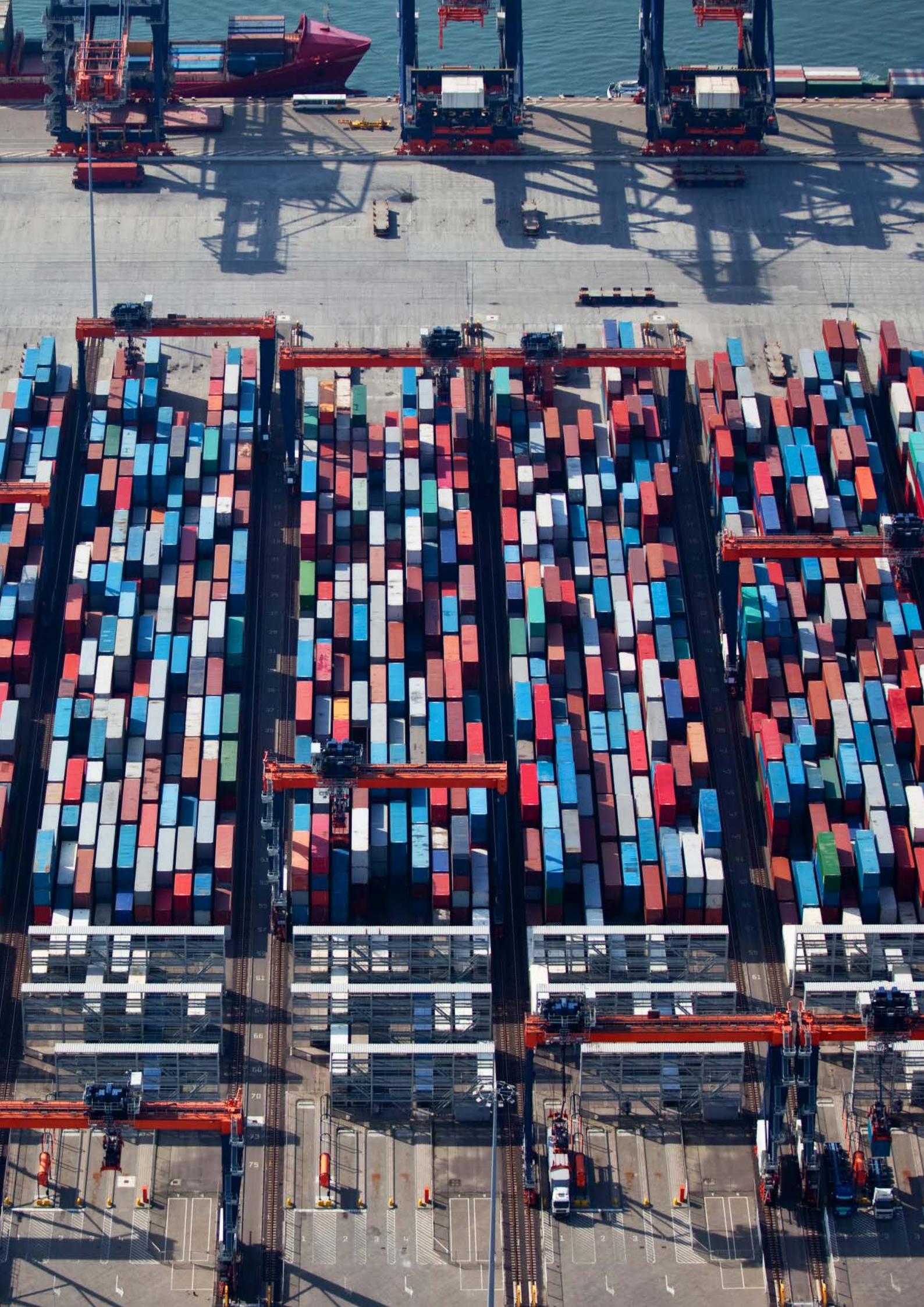
Conclusion

Although the financial statements of commodity trading companies show low trading margins, the return of equity of trading companies can be high, mainly due to their relatively low capitalization. To assess the debt of commodity trading companies and calculate the leverage ratios, commodity inventories are normally excluded due to their liquid nature, widely available markets, and because associated price risks can be hedged.

Understanding the income statement is pivotal for commodity companies' management, for financiers and other stakeholders. The main problem is that the gross margin is generally comprised of various components that differ in nature and their degree of uncertainty. The company should be able to analyze and break down its gross margin into the various risk factors that caused the gains or losses. Only then can the quality of the result be assessed and the company's performance be determined.

Recognition and measurement of transactions and commodity inventory positions

Inventory positions of commodity companies normally consist of physical inventories, forward contracts and futures contracts. Different accounting standards apply to these positions, as such there is a need to carefully evaluate which of those standards should be applied, what an entity needs to recognize and how those positions should be measured. However, applying the various standards that deal with the different components of commodity inventory positions in isolation can lead to accounting mismatches, as some of these components may be on-balance sheet, while other components may remain off-balance sheet.



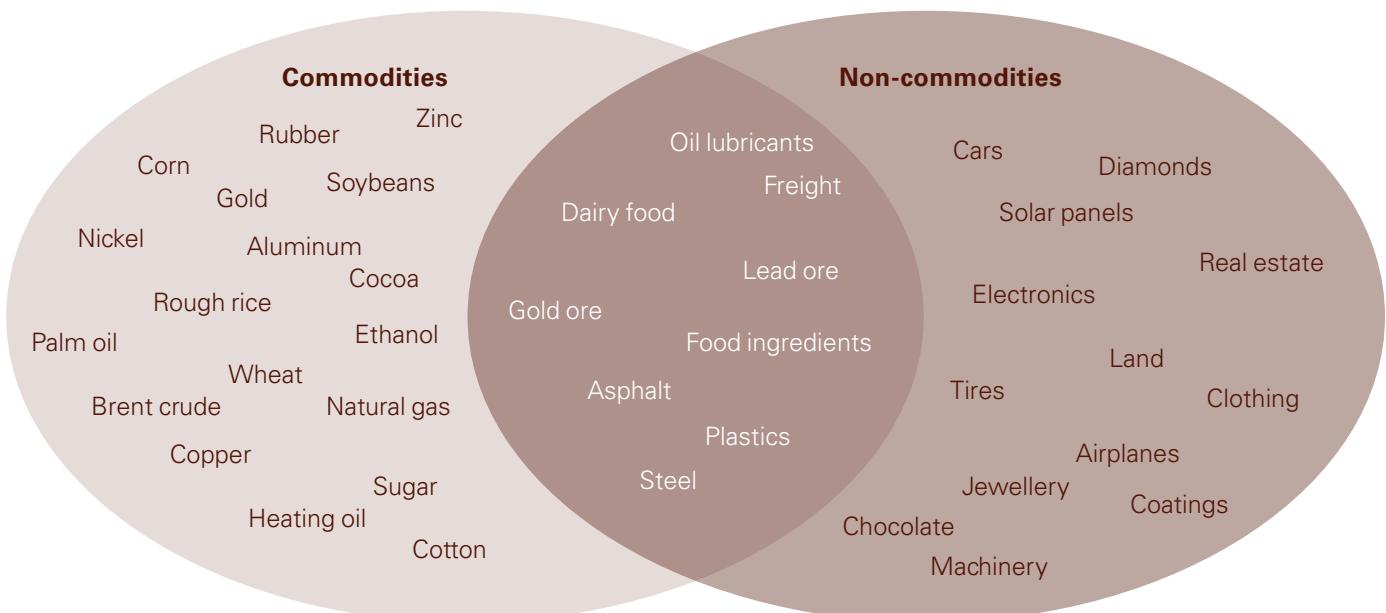
Introduction

Although IFRSs are not industry-specific, these standards nonetheless contain some specific references to commodities and are therefore highly relevant to the commodity sector. The accounting treatment of certain physical forward purchase and sales contracts with customers and suppliers, as well as exchange-traded futures positions, is governed by IAS 39, Financial Instruments: Recognition and Measurement ("IAS 39"). The accounting treatment for inventory is covered in IAS 2, Inventories ("IAS 2").

Definition of commodities

In chapter 2 a commodity was defined as: "things of value and uniform quality that are produced or supplied in large quantities by many different producers, whereby the items from different producers or suppliers are considered to be equivalent and interchangeable."

IFRS does not provide a definition of a commodity. IAS 2.3 mentions "agricultural produce after harvest, minerals and mineral products." IAS 39 states that "contracts to buy or sell a non-financial item that can be settled net in cash or another financial instrument, or by exchanging financial instruments, as if the contracts were financial instruments with the exception of contracts that were entered into and continue to be held for the purpose of the receipt or delivery in accordance with the entity's expected purchase, sale or usage requirements" are within its scope. If such contracts meet the definition of a derivative they are measured at fair value. This treatment applies to any non-financial item within the scope of IAS 39.



IAS 2 – Physical inventories

IAS 2 describes the accounting treatment for inventories. The general rule is to measure physical inventories at the lower of cost and net realizable value. However, the standard does not apply to the measurement of inventories held by both commodity broker-traders who measure their inventories at fair value less costs to sell and inventories held by producers of agricultural and forest products, agricultural produce after harvest and minerals and mineral products to the extent that they are measured at net realizable value in accordance with well-established practices in those industries.

Commodity broker-traders are allowed to measure their inventory at fair value less costs to sell, which means that the carrying amount of such inventories can exceed the original cost (IAS 2.3b). Fair value is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. Commodity producers may recognize their inventory at “net realizable value”, provided that this is in accordance with well-established practices in the industry (IAS 2.3a). Net realizable value is defined as the estimated selling price in the ordinary course of business less the estimated costs of completion and estimated costs necessary to make the sale. Net realizable value differs from fair value less costs to sell, in that net realizable value incorporates the entity’s own assumption of what it could receive in a sale, while fair value takes into account characteristics of the asset or liability that would be considered by market participants and is not based on the entity’s specific use or plans. Such characteristics may include the condition and location of an asset or restrictions on an asset’s sale or use. Another difference is that net realizable value is an amount after deduction of cost of completion. If commodity traders and producers measure their inventories at fair value less costs to sell or at net realizable value, changes in the value of physical inventories are recognized directly in profit or loss. The exemption in IAS 2 specifically made for the commodity broker-traders acknowledge that measurement of inventory at fair value less costs to sell is a well-established accounting practice in the industry.

There are certain limitations to the application of the exceptions described above. Application of IAS 2.3b implies that inventories are acquired with the purpose of selling them in the near future. In our view, such an assessment may vary from entity to entity and the factors considered in this assessment include the business model of the entity. The entity should consider the extent to which it provides additional services related to the underlying commodities, such as distribution, storage or repackaging services. For example, if an entity adds value by altering (e.g. repackaging) the inventories and these activities contribute significantly to the entity’s gross margin, it is not likely to be allowed to measure its inventories at fair value less costs to sell.

The exception within IAS 2.3a is limited to producers or to certain types of processors. Cocoa butter pressers or soy bean millers could make use of the exception. Processors or converters whose final produce is no longer a commodity, however, may not. This means that, for instance, chocolate producers should value their inventories of finished products under the general requirements of IAS 2 at the lower of cost and fair value less costs to sell.

IAS 39 – Forward and futures contracts

The standard on financial instruments (IAS 39) refers to the accounting treatment of physical forward and futures contracts. Futures on commodity exchanges generally qualify as derivatives and if so are recognized at fair value. Changes in the fair value are recognized in profit or loss. This treatment is irrespective of whether the company is considered as a broker-trader or a producer.

The accounting treatment of physical forward contracts is less straightforward. Rather than making a distinction between producers and traders, as is done in IAS 2, IAS 39 requires a different accounting treatment depending on how the forward is settled and the purpose for which they are held.

The general rule of IAS 39 is that if a contract to buy or sell a non-financial item can be settled net in cash or another financial instrument, and it has not been entered into and continue to be held for the purpose of the receipt or delivery of a non-financial item in accordance with the entity's expected purchase, sale or usage requirements, the contract should be accounted for as a derivative that is measured at fair value.

Contracts that are entered into and continue to be held for the purpose of the receipt or delivery of a non-financial item in accordance with the entity's expected purchase, sale or usage requirements ("own use" exemption) are excluded from the scope of IAS 39. Instead, they are treated as executory contracts, which are kept off-balance until physical delivery of the underlying assets.

This exception cannot be applied if the entity has a past practice of settling similar contracts net in cash or other financial instruments or by exchanging financial instruments, or of taking delivery of the underlying and selling it within a short period after delivery for trading purposes.

When an entity acts as a commodity broker-trader, generally the "own-use exemption" under IAS 39 will not be available.

Written options

IAS 39.7 excludes written options to either buy or sell a commodity (or any other non-financial asset) that is readily convertible to cash or can be settled without physical delivery from qualifying for the "own use exemption" because the entity cannot control whether the purchase or sale will take place. Physical forward contracts that offer counterparties flexibility in the volume that is supplied or sold could be split such that they would contain a written option which would not qualify as own-use contract, and a forward element which may qualify as own-use contract.

In summary, IAS 39 requires certain contracts to be recognized at fair value, while excludes others from its scope which means that they remain off-balance sheet. At the same time, exchange-traded futures are generally recognized and measured at fair value, thus potentially creating accounting mismatches with physical forward contracts that cannot be settled in cash or that are exempt from IAS 39. As discussed later in this chapter, some of these mismatches may be mitigated by applying hedge accounting.

Interpreting IAS 39.5 and 6

“Own-use exemption” In our view, the “own-use exemption” of IAS 39.5 to keep physical forward positions off-balance sheet can only be applied when certain preconditions are met. In our view entities should designate physical forward positions as being part of the expected purchase, sale or use requirements upon their inception in order to keep them off-balance sheet. Any regular or foreseeable events leading to net settlements or closing out of contracts would taint the entity’s ability to use the “own-use exemption” to similar contracts.

The practicalities of designation – an example

Holding commodity inventories generally implies incurring costs (“carrying costs”). Carrying costs include warehousing fees and interest forgone on money tied-up in working capital. Once the difference between forward price and the spot price exceeds the cost to carry, it becomes economically attractive to hold inventories (“cash and carry”). It can be argued that, as the entity varies the size of this position depending on the market structure, the excess long position is speculative in nature and that at least part of the long position falls within the scope of IAS 39 and should be measured at fair value. The entity could also argue that the economic long position falls under the “own-use exemption” as the physical deliveries and inventories are likely to be used eventually in the production process.

A further issue with interpreting IAS 39.5 is what should be regarded as an entity’s expected requirements. From an entity’s perspective the expected volumes are to a certain extent flexible, implying that the original designation of a contract can change from processing to trade and vice versa. This issue is of particular relevance for energy commodities like electricity. As electricity cannot be stored, electricity companies with a fully balanced position may be forced to sell excess power in the wholesale markets when forecast retail demand declines. Market developments can also force commodity companies to reconsider “make-or-buy decisions” and purchase finished products to fulfill forward sales commitments.

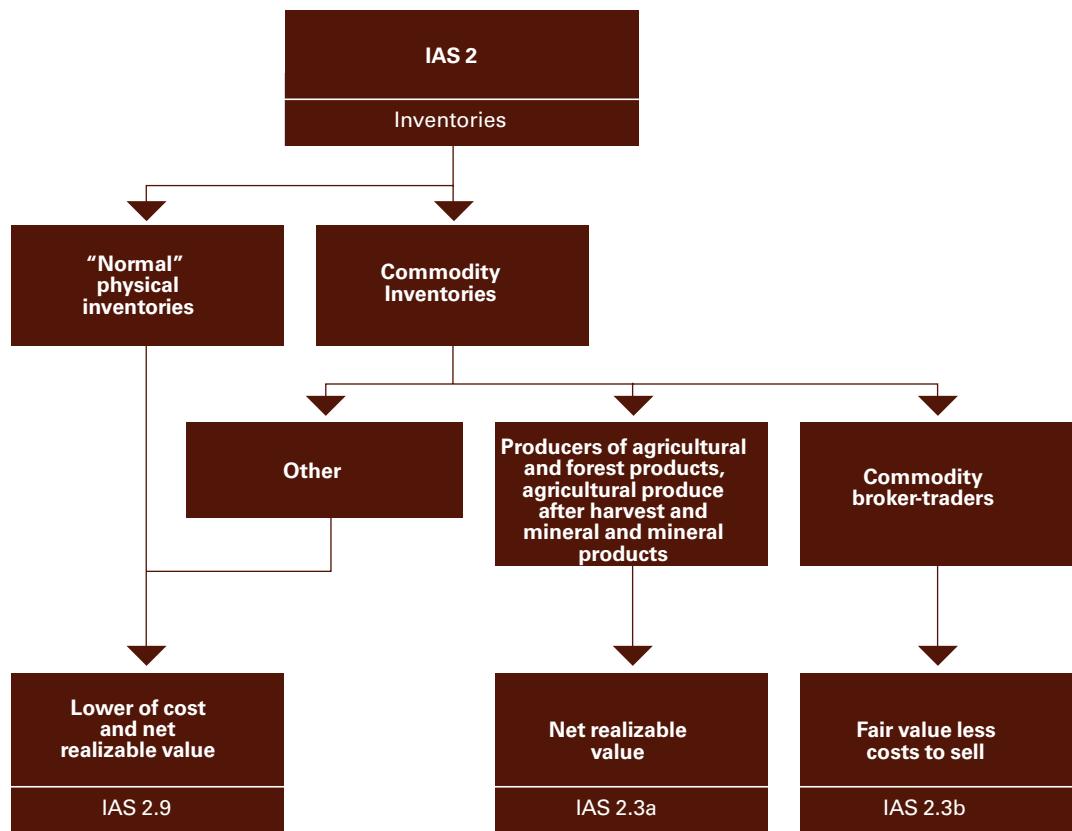
Make-or-buy decisions – an elaboration

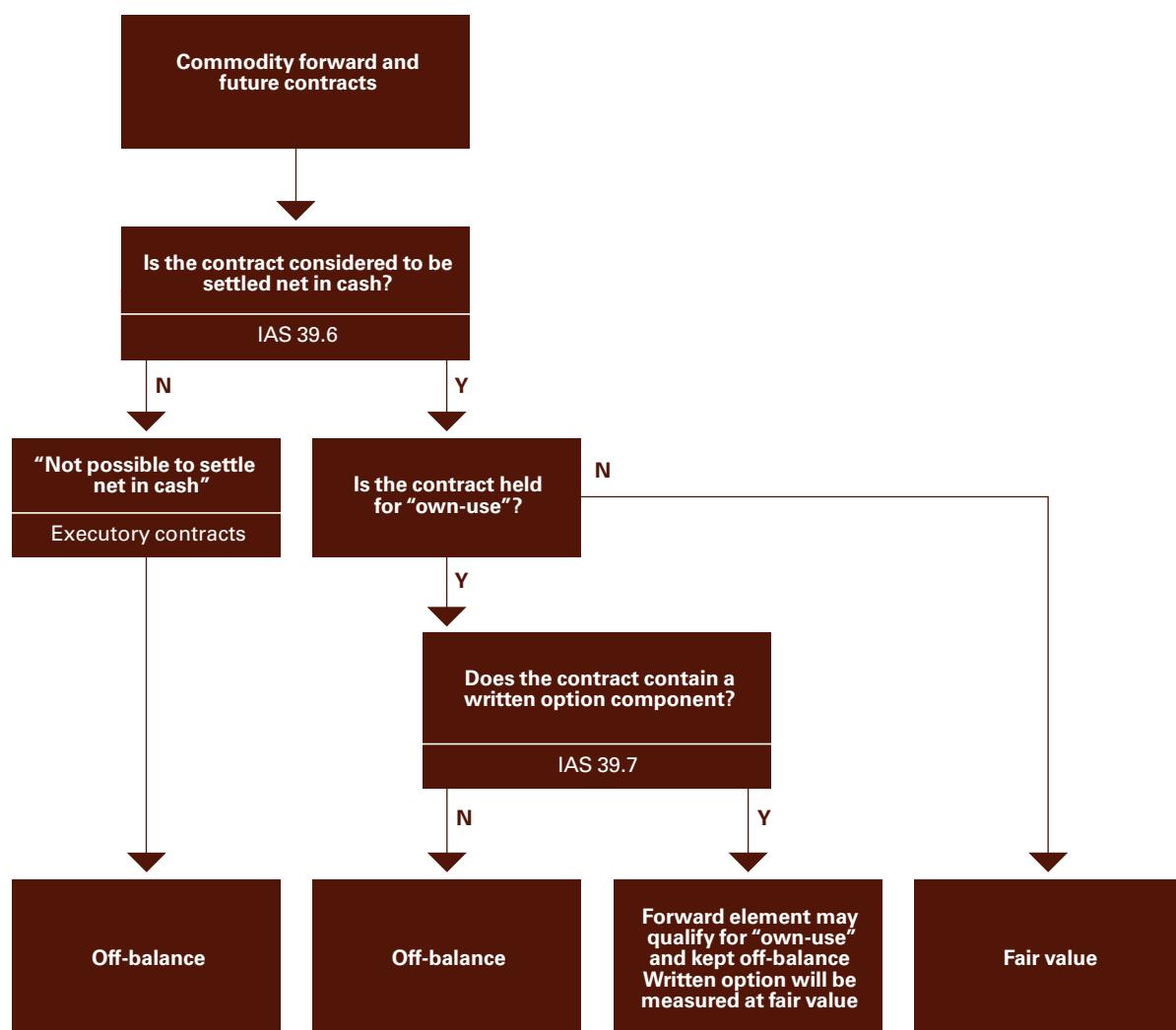
The objective of commodity producers or processors is to produce and forward sell their finished products at an optimal margin. The gross margin largely depends on the processing margin, i.e. the difference between the sales prices of the finished goods on the one hand and the cost of raw materials plus production expenses on the other. Different commodity markets have different jargon for the processing margin – ranging from crush spread (soybeans), spark, dark or clean spreads (electricity) or crack spread (oil). All commodity producers attempt to lock-in their processing margin at an optimal margin. However, market conditions may alter so dramatically that producing the finished product to fulfill forward sale commitments is more expensive than cutting back production and purchasing the finished product. This implies that forward purchases of raw materials originally intended for the own production process are settled in cash rather than result in physical delivery.

Similar contracts

In our view, the concept of "similar contracts" includes all contracts held for a similar purpose. For example, physical forward purchase contracts and long commodity exchange futures managed together to hedge forward sales contracts can be considered as being similar contracts. Hence the physical forward purchases would not qualify for the exemption of IAS 39.5 and should be measured at fair value.

Most commodity entities – traders and producers alike – manage physical forward contracts and futures together. They both form part of the economic inventory position. Forward sales contracts are initially hedged with long futures and later incrementally replaced by physical forward purchases. Similarly, physical forward purchases are initially hedged by selling futures, which are replaced by physical forward sales as actual customers are found. In other words, futures and physical forwards are commonly managed together from an economic point of view. Should an entity refrain from ring-fencing its forward positions for which the "own-use exemption" applies, it can lead to measuring all physical forward contracts at fair value.





Accounting for freight contracts

Physical commodity trading inherently incurs freight exposure. If, for example, a company buys 10 000MT of concentrates in Peru (FOB) and sells that same parcel in Japan (CIF), the company becomes exposed to the freight risk for that particular route.

To hedge freight exposure the following instruments can be used:

- Time charters: these are vessels rented for a period of time (compare to a rental car)
- Voyage charters: these are vessels rented for a specific voyage (compare to a taxi)
- Forward freight agreements (FFAs): these are exchange trade instruments that can be used to fix the freight rate for standard freight routes.

The time charter contracts give the right to control the use of the underlying asset for a defined period of time, the ability to direct the use of a specified asset included determining how, when and in what manner the specified asset is used. Based on these characteristics, time charter contracts could be considered operating leases.

Voyage charter contracts normally do not convey the right to control the use of a specified asset for an agreed period of time, but only for a specific voyage. Accordingly, these contracts should be considered transportation service contracts. These contracts are normally kept off-balance in accordance with an entity's expected purchase, sale or usage requirements.

FFAs are exchange traded instruments that can be used to fix the freight rate for standard freight routes. These instruments have the characteristics of a derivative, therefore these instruments are in scope of IAS 39 which determines the accounting treatment of derivative contracts. Based on IAS 39, derivatives should be recognized at fair value. Changes in the fair value are recognized in profit or loss.

Recognition of time charter contracts and voyage contracts as lease and service contracts on the one hand and recognition of derivative contracts at fair value on the other may result in accounting mismatches from a profit or loss perspective. Potentially, these accounting mismatches could be mitigated by the application of hedge accounting. However, in practice, hedge accounting may be difficult to achieve since the FFAs for standard freight routes do not exactly match the freight routes of the physical time and voyage charters, and there is often no liquidity in the FFAs.

Trading companies may have a greater preference to account for time charter contracts and voyage charter contracts as derivatives (managed on a fair value basis). Other companies keep these contracts off-balance by considering them leases or service contracts, if they do not prefer volatility of earnings due to fair value movements and are not trading in these contracts.

Accounting mismatches and hedge accounting

Accounting mismatches may occur when certain contracts are not in scope of IAS 39 or are part of the "own-use exemption" while other contracts are in scope of IAS 39 and measured at fair value.

An example of this would be a chocolate producer who purchases cocoa beans (a commodity) and sells chocolate (not a commodity). In this example, the chocolate producer may measure its long position (comprising both commodity exchange futures and physical forward contracts) at fair value, while the short position is kept off-balance sheet. Should the commodity exchange market drop, the company is forced to report losses, while compensating profits (if any) remain off-balance sheet.

For traders, such mismatches are unlikely to occur under IFRS as it is likely that the entire inventory position is measured at fair value (less costs to sell for physical inventory positions). A processor measuring its physical inventories at the lower of cost or fair value less costs to sell is faced with an accounting mismatch if it has hedged the inventories with short futures or physical forwards that do not qualify for the "own-use exemption".

Applying hedge accounting

IAS 39 offers the possibility of mitigating accounting mismatches between the hedging instrument and the hedged item by applying hedge accounting. Under strict conditions, hedge accounting allows an entity to selectively assets, liabilities and firm commitments on a basis different from that otherwise stipulated by IFRS. For the commodity sector, the hedged item is usually non-financial. IAS 39.82 points out that a non-financial asset can only be designated as a hedged item "in its entirety for all risks" (or for foreign currency risk only). This is because of the difficulty of isolating and measuring the appropriate portion of the cash flows or fair value changes attributable to specific risks. For physical commodity contracts there are more price risks than just the price fluctuations of the commodity exchange market. The different varieties, expressed in differentials, are subject to autonomous price fluctuations that cannot be hedged with commodity exchange futures.

Only to the extent that the hedge is demonstrated to be highly effective can hedge accounting be adopted. A hedge is deemed to be highly effective if the hedge covers between 80 and 125 percent of the fair value movements of the underlying exposure (IAS 39.AG105). Therefore it can be difficult to apply hedge accounting for commodity contracts with implicit risks other than the outright price risk.

Example

A producer of commodities uses traded commodity futures to hedge committed future sales of commodities. The contract price for the physical sale of the commodities is split into two components, which are specified in the contract terms: the standard commodity price based on the index underlying the futures contract; and a discount or premium for the specific quality, delivery location, timing and payment terms for the specific delivery. This clearly enables the separation of the appropriate portion of the cash flows of the physical contract attributable to changes in the price of the standard commodity. However, given the outright prohibition in IAS 39, the entity would not be allowed to designate as the hedged item only the portion of cash flows under the sales contract that are linked to the standard commodity price or designate all the cash flows in the contract but for the risk of the changes in standard commodity price only.

Instead, the actual sales price should be designated as the hedged item. However, because of the difference between the hedging instrument (futures contract based on the standard commodity) and the hedged item (actual fair value/price of the product to be sold), hedge ineffectiveness may arise. Additionally, it may be difficult to demonstrate on a prospective basis that the hedge relationship is expected to be highly effective in achieving offsetting changes in fair value or cash flows attributable to the hedged risk throughout the hedging period.

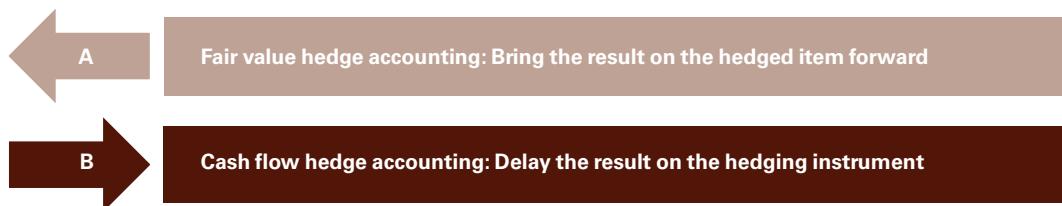
The problem of ineffectiveness can be addressed partly by designating the hedging instrument and hedged item in a relationship using a hedge ratio of other than one. While the futures contract based on a standard commodity and the actual purchase or sale differs in some respects, it may be possible to identify a correlation between the price of the standardized commodity and the actual commodity. This may be done using statistical models such as regression analysis. The slope of the resulting regression line can be used to establish a hedge ratio that maximizes hedge effectiveness. For example, an entity might hedge its future purchase of Brazilian coffee with a commodity future whose underlying is the price of Colombian coffee. Assuming that there is a valid statistical relationship between the two prices, and a regression analysis identifies a slope of 1.02 for the regression line, a derivative with a notional amount of 1.02 tons of Colombian coffee could be designated as a hedge of the purchase of one ton of Brazilian coffee. While some ineffectiveness inevitably will result, using a hedge ratio of other than one may help to keep this within an acceptable range such that hedge accounting can be continued.

Fair value versus cash flow hedge accounting

The objective of hedge accounting is to mitigate accounting mismatches. This implies that gains and losses on the hedging instrument (e.g. the commodity exchange future) are recognized in profit or loss in the same reporting period as gains and losses on the hedged item (e.g. the physical forward contract qualifying for the "own-use exemption"). This can either be achieved by:

- Fair value hedge accounting – measuring the hedged item in respect of the risk being hedged and the hedging instrument at fair value. By applying fair value hedge accounting, physical forward contracts that qualify for the "own-use exemption" and which are hedged with commodity exchange futures can be measured at fair value in respect of the risk being hedged. Fair value hedge accounting can only be applied to physical forward contracts if these qualify as "firm commitments". IAS 39.9 defines a firm commitment as "a binding agreement for the exchange of a specified quantity of resources at a specified price on a specified future date or dates" (comparable to US GAAP).
- Cash flow hedge accounting – deferring certain gains and losses on the hedging instrument and recording them in "other comprehensive income" rather than "profit or loss". Physical forward contracts qualifying for the "own-use exemption" would be kept off-balance sheet, while the portion of fair value fluctuations of the futures contracts that relate to the hedged risk and when effective would be recorded in "other comprehensive income" and recycled to "profit or loss" when the hedged physical forward contract affects' profit or loss'.

	Period		
	T=1	T=2	Cum
Hedged item	0	20	-20
Hedging instrument	20	0	20
	20	-20	0



New on the horizon

In December 2012 a new draft IFRS on general hedge accounting was issued by the IASB (IFRS 9) as part of the multi-phase project to replace IAS 39 to improve and simplify reporting for financial instruments. The proposals present a more principle-based approach that more closely aligns hedge accounting with risk management. Companies that have to manage significant commodity price exposures are likely to benefit from proposals to permit hedge accounting for risk components of non-financial items. And by removing the "bright line" for assessing hedge effectiveness, the proposals will also allow for a more flexible, principle-based approach to hedge accounting. The IASB proposals would not change the types of hedging relationships (e.g. fair value and cash flow hedging).

The draft provides a new election whereby an entity can mitigate measurement mismatches that would otherwise arise from certain contracts to buy or sell a non-financial item without using hedge accounting. This election allows an entity to irrevocably designate a contract that meets the own-use exemption to be measured at fair value through profit or loss. An entity may make the designation only if it eliminates or significantly reduces an accounting mismatch.

Under the draft, an entity may hedge a risk component of a non-financial asset or non-financial liability. When determining if a risk component is eligible for designation as a hedged item, an entity would evaluate whether a risk component is separately identifiable and reliably measurable. The assessment would be made in the context of the particular market structure to which the risk relates and in which the hedging activity takes place.

The evaluation may require judgment. If a component is explicitly specified in a contract (e.g. a pricing formula that uses a reference to a benchmark commodity price), then concluding that it is separately identifiable will be straightforward. If the component is not contractually specified, the entity will need to consider factors such as whether it is a physical component or a price component of the entire item (e.g. cocoa is a physical component of a chocolate bar whereas crude oil is a price component of a jet fuel price). There is no requirement that the component be the main or largest component, or that the movement of the fair value of the component be in the same direction as the value of the entire item.

Example – Contractually specified risk component

An entity has a long-term supply contract to buy natural gas. The contract is priced using a contractually specified formula that references gas oil, fuel oil and transportation charges. The entity's risk management strategy is to hedge 100 percent of its exposure to gas oil price risk. The contract completely specifies how the gas oil component is determined. In addition, there is a market for gas oil forward instruments that extends to the maturity of the supply contract. Thus, the entity determines that the gas oil price exposure is separately identifiable and reliably measurable. Therefore, the gas oil price exposure is an eligible risk component for designation as a hedged item.

To complement a more principle-based approach, additional disclosures would be required to inform users of how an entity is managing its risks.

The current effective date for the new hedge accounting requirements is for the annual periods beginning on or after 1 January 2015, although this date may be delayed.

Conclusion

For commodity broker-traders that are exposed to commodity price risks, application of IAS 2 and IAS 39 can be relatively straightforward. Under certain conditions, all elements comprising the economic inventory position can be measured at fair value.

In most commodity industries, it is becoming rare for companies to engage solely in trading activities. Many commodity companies have developed hybrid activities whereby trading is combined with production, processing or conversion activities. IAS 2 requires the physical inventories of commodity producers to be measured at net realizable value to the extent that such measurement is a well-established practice in the industry. Entities whose finished products can no longer be regarded as commodities do not qualify for this exception and have to measure their inventories at the lower of cost and net realizable value. Physical forward positions related to production or processing activities may qualify for the "own-use exemption" of IAS 39.5.

The exception to keep physical forward contracts off-balance sheet should only be applied when certain preconditions are met. The fact that commodity entities should be able to distinguish and designate contracts that qualify for "own-use" based on their purpose appears to offer commodity entities – to some extent at least – a choice as to whether they actually designate net settled forward contracts at inception to qualify for the exemption. This could imply that commodity entities could opt for measuring their entire physical forward position at fair value, thus avoiding any potential accounting mismatches.

Accounting mismatches that do arise as a result of keeping certain physical forward positions off-balance can be avoided by adopting hedge accounting. However, it is uncertain whether commodities subject to a substantial degree of basis risk can qualify for the strict conditions under IAS 39 for applying hedge accounting. This may change by the adoption of IFRS 9 on general hedge accounting which allows for a more flexible, principle-based approach to hedge accounting, closely aligned with how companies actually manage risk.

Embedded derivatives

An embedded derivative is defined by IAS 39.10 as “a component of a hybrid (combined) instrument that also includes a non-derivative host contract – with the effect that some of the cash flows of the combined instrument vary in a way similar to a stand-alone derivative.” In accordance with IAS 39.11, embedded derivatives need to be separated from the host contract and accounted for as a financial instrument if and only if:

- the economic characteristics and risks of the embedded derivative are not closely related to the economic characteristics and risks of the host contract,
- a separate instrument with the same terms as the embedded derivative would meet the definition of a derivative; and
- the hybrid (combined) instrument is not measured at fair value with changes in fair value recognized in profit or loss (i.e. a derivative that is embedded in a financial asset or financial liability at fair value through profit or loss is not separated).

For physical forward contracts, the assessment as to whether they contain embedded derivatives is primarily relevant for contracts that qualify for the “own-use exemption”. Contracts that do not qualify for this exemption are by default measured at fair value with gains and losses recognized in profit or loss and hence any embedded derivative is not separated.

The accounting for embedded derivatives under US GAAP is substantially the same as that under IFRS and few differences are expected to arise in practice.

Embedded foreign currency derivatives

Physical forward contracts qualifying for the “own-use exemption” can be denominated in a currency other than the entity’s functional currency. If this is the case, the exposure to changes in the foreign currency exchange rate may meet the definition of an embedded derivative. However, if the foreign currency exposure is closely related to the physical forward commodity contract, separate accounting treatment is not required.

IAS 39.AG33 explains that, if commodities are routinely denominated in a particular currency in commercial transactions around the world and if this currency deviates from an entity’s functional currency, the foreign currency exposure can be deemed to be closely related to commodity forward sale or purchase providing it is not leveraged.

In our view, commodities can be considered to be routinely denominated in a particular currency in commercial transactions around the world, if a large majority of transactions that are traded in international commerce around the world occur in that currency. This implies that commodities cannot be routinely denominated in more than one currency. However, we believe that the existence of a relatively small proportion of transactions denominated in a local currency in one or two markets, or particular jurisdictions, does not preclude a commodity from meeting the definition of “routinely denominated in commercial transactions around the world”.

Various, but certainly not all, commodities can be considered to be routinely denominated in US dollars. Crude oil, gold, and silver are all examples of commodities that are presently routinely denominated in US dollars. Cocoa, however, is commonly traded in US dollars as well as British pounds and, to a lesser extent, Euros.

Other embedded derivatives In addition to foreign exchange embedded derivatives, commodity forward contracts may include other embedded derivatives. For instance repurchase options, volume flexibility or price caps could all be indications of an embedded derivative.

Fair value measurement

Without high-quality market data, a commodity trading entity may not accurately measure its net asset value and may also misstate its risk exposure. Fair value measurement is the process of reporting commodity positions based on the current market price and other relevant market information.



Introduction

In order to monitor risk exposure, commodity entities measure commodity positions against market values for internal management reporting purposes. When applying fair value accounting for external reporting, companies value open commodity or other derivative contracts (either assets or liabilities) on the balance sheets at fair value and changes in fair value are recognized in “profit or loss”. This chapter explains the concept and complexities of fair value measurement of commodity positions.

General issues for applying fair value accounting relate to the existence of active markets and how fair value accounting should be applied to forward contracts for commodities for which no quoted prices are available. When valuing forward contracts, the availability of forward curves and differences between the terms of forward contracts and the standardized terms of futures contracts should be considered.

Preconditions of applying fair value accounting

Fair value is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date, i.e. it is an “exit price”. Fair value takes into account characteristics of the asset or liability that would be considered by market participants and is not based on the entity’s specific use or plans. Such characteristics may include the condition and location of an asset or restrictions on an asset’s sale or use.

IFRS includes a fair value hierarchy concept that prioritizes the inputs to valuation techniques that are used to measure fair value. When determining the fair value of an asset or a liability, an entity selects those valuation techniques that are appropriate in the circumstances and for which sufficient data is available to measure fair value. The most reliable evidence of fair value is a quoted price in an active market for an identical asset or liability. When this is not available, entities use a valuation technique that maximizes the use of relevant observable inputs and minimizes the use of unobservable inputs.

Observable market inputs

Observable inputs are developed using market data, such as publicly available information about actual events or transactions, and that reflect the assumptions that market participants would use when pricing the asset or liability.

Observable market inputs should be readily available and distributed to participants in that market. In addition, observable market inputs should include a level of transparency that is reliable and verifiable. Observable market inputs are typically a by-product of having sources that are knowledgeable and active in the particular market. Management will have to use its judgment to evaluate whether market inputs are "observable".

The range between bid-and-ask prices may indicate the extent to which the market is liquid. A more liquid market will generally dictate narrow ranges between the bid-and-ask quotes with more illiquid markets having larger spreads.

In an active market transactions for the asset or liability take place with sufficient frequency and volume to provide pricing information on an ongoing basis.

Specific types of commodities normally trade with a premium or discount (the price differential) versus the benchmark. The premium or discount versus the benchmark determines the relative value of a specific commodity. It will involve judgment to evaluate whether these premiums or discounts are "observable".

For example, when producers sell oil, they take the price of the benchmark (e.g. dated Brent) as a starting point. They analyze how similar grades trade versus the benchmark and then identify the appropriate differential for their grade. Differentials between a benchmark price and a specific grade of crude can vary over time. Over time, crude with a consistent quality will establish a relatively constant average versus a benchmark. A host of market factors can push the price to differ from the average in ways that disregard, at least temporarily, the quality differences among grades.

Oil price firms such as Platts and Argus provide the price of a specific crude oil traded on the physical market, or the bids and offers made if oil was not traded. They assess the spot prices of crude oil by talking to traders. Judgment should be applied into this reporting, as some traders could choose to mention a higher or lower price to influence the reporting.

Fair value measurement assumes that the transaction to sell the asset or transfer the liability takes place in the principal market for the asset or liability, i.e. the market with the greatest volume and level of activity. In the absence of a principal market, the transaction is assumed to take place in the most advantageous market. This is the market that maximizes the amount that would be received to sell the asset, or minimizes the amount that would be paid to transfer the liability, after considering transaction costs and transport costs. In many instances, the principal market and the most advantageous market would be the same. In either case, the entity must be able to access the market in which the transaction is assumed to occur at the measurement date. The concepts of principal market and most advantageous market are considered from the perspective of the entity, allowing for differences between entities with different activities and between different businesses within an entity.

An entity is not required to undertake an exhaustive search of all possible markets to identify the principal market or, in the absence of a principal market, the most advantageous market; however, it should take account of all information that is reasonably available. If there is no evidence to the contrary, then the principal (or most advantageous) market is presumed to be the market in which an entity normally enters into transactions for the asset or liability.

IFRS makes a distinction between financial assets and liabilities and non-financial assets and liabilities. Exchange traded commodity future contracts are generally considered financial assets and liabilities. Depending on their settlement features commodity forward contracts are either financial assets and liabilities or non-financial assets and liabilities. Commodity stocks are non-financial assets. In measuring the fair value of non-financial assets the principle of "highest and best use" applies. The fair value measurement considers the ability to generate economic benefits by using a non-financial asset or by selling it to another market participant who will use the asset in its highest and best use. Highest and best use refers to the use of a non-financial asset by market participants that would maximize the value of the asset, or the group of assets and liabilities with which the asset would be used.

Which factors affect fair value accounting for commodities?

The majority of commodity trades are done over the counter (OTC), with contracts traded through a network of brokers. Consequently, since OTC data is not available through exchanges, fair valuing positions requires judgment. In such circumstance, valuation may be carried out with reference to arm's length market transactions between market participants, reference to the current fair value of another instrument that is similar, discounted cash flow analysis, and option pricing models.

Future markets such as the ICE and NYMEX provide forward curves. Those forward curves are used to determine the basis, which is the difference between the futures price and a specified cash-market spot price. For example, let us suppose it is August. The December London cocoa contract is trading at GBP 1 050 per MT and the spot price in London is GBP 1 000 per MT. In this case, the basis is GBP 50 futures over cash. The basis can be affected by a number of factors, including interest rates and the cost of storing the commodity. If an entity buys a futures contract rather than the commodity itself, it does not pay the total value of the contract, but instead posts a margin deposit that is typically a small fraction of the total value of the contract. The basis is, in part, determined by the fact that the entity is able to collect interest on the difference between the margin deposit and the total value of the contract. The basis is also, in part, determined by the fact that by not holding the actual commodity, the entity saves on warehousing and insurance expenses.

In certain circumstances it may appear that forward curves are not available. This may be the case when the duration of a forward contract substantially exceeds the duration of futures contracts traded on the commodity exchange market. If forward curves are not available, it may be possible to construct a forward curve based on interest rates and the cost of storing the commodity (the main factors that affect the basis). The spot price of a commodity is often considered the most important factor driving the whole forward curve. The influence of the spot price becomes greater as the future contract approaches maturity, culminating in the convergence principle that on maturity date the price must coincide with the spot price. However, there are markets where the spot price is rather opaque, or unreliable or non-existent, for instance in electricity markets. In such cases the convergence principle does not necessarily hold.

For seasonal commodities such as natural gas, electricity, or agricultural commodities, future prices are largely governed by seasonal demand or supply. This results in a seasonal premium on future contracts maturing during periods of high demand or low supply.

Other factors that have to be taken into account when valuing commodity positions mainly relate to differences in the terms of forward contracts compared to the standardized terms of futures contracts. Futures contracts have standardized terms that are determined by the exchange rather than by market participants. Standardized terms include: the amount of the commodity to be delivered (the contract size), delivery months, the last trading day, the delivery location or locations and acceptable qualities or grades of the commodity.

Differences between the terms of forward contracts and futures contracts mostly relate to differences in quality or grades and differences in storage locations for the commodities. Differences in quality or grades can be expressed in a differential that represents the premium paid for a grade better than the basis grade and the discount allowed for a grade lower than the basis grade.

Spot and future prices normally take into consideration the fact that commodities are stored at a location determined by the exchange. When the commodities of a commodity trader are stored at, or have to be delivered to, a location that differs from the location of a nominated warehouse specified by the exchange, the commodity trader has to take into consideration the cost of freight to bridge the difference.

Fair value at initial recognition

Measuring physical commodity forward contracts at fair value raises the question: how should day one profits and losses be accounted for?

When an asset is acquired (or a liability assumed), the transaction price paid for the asset (or received to assume a liability) normally reflects an entry price. IFRS requires fair value measurements to be based on an exit price. Although conceptually different, in many cases the exit price and entry price are equal and therefore fair value at initial recognition generally equals the transaction price.

A day one gain or loss may arise when the transaction price for an asset and/or liability differs from the fair value used to measure it at initial recognition. The transaction price is normally the best evidence of the fair value of a financial instrument on initial recognition.

However, to determine whether fair value at initial recognition equals the transaction price, an entity takes into account the factors specific to the transaction and to the asset or liability. Based on such an assessment there may be cases where the fair value at initial recognition is different from the transaction price. If the entity's fair value measurement is evidenced by a quoted price in an active market for an identical asset or liability or is based on a valuation technique that uses only data from observable markets, then the entity immediately recognizes a gain or loss. This gain or loss is equal to the difference between the fair value on initial recognition and the transaction price. If the entity determines that the fair value on initial recognition differs from the transaction price but this fair value measurement is not evidenced by a valuation technique that uses only data from observable markets, then the carrying amount of the financial instrument on initial recognition is adjusted to defer the difference between the fair value measurement and the transaction price. This deferred difference is subsequently recognized as a gain or loss only to the extent that it arises from a change in a factor (including time) that market participants would take into account when pricing the asset or liability.

Enron

Enron incorporated “fair value accounting” for the energy trading business in the mid-1990s and used it on an unprecedented scale for its trading transactions.

For liquid trading activities, fair value accounting is appropriate and conceptually superior to cost accounting. In Enron’s case it was not always appropriate. Traders who were performing trades had considerable influence in how the deals were marked-to-model.

For a company such as Enron, under continuous pressure to beat earnings estimates, it is possible that valuation estimates might have considerably overstated earnings. Furthermore, unrealized trading gains accounted for slightly more than half of the company’s \$1.41 billion reported pre-tax profit for 2000 and about one-third of its reported pre-tax profit for 1999.

Conclusion

Applying fair value accounting for valuing commodity positions can be a complex exercise. The majority of commodity trades are done over the counter. For those contracts for which no quoted prices in an active market are available, the entity has to establish fair value by using another valuation technique. The chosen valuation technique should incorporate all factors that market participants would consider in setting a price and must be consistent with accepted economic methodologies for pricing assets and liabilities. In the case of commodities, these factors are the basis, which is affected mainly by interest and storage costs, differences in quality and grades, seasonality and freight costs.

Derecognition of assets

Characteristics of commodity trading companies are their relatively low capitalization, and working capital funding requirements. Funding requirements are generally correlated with movements in commodity prices and the extent of business opportunities. Increasing commodity prices primarily lead to increased funding requirements. Commodity financiers facilitate the funding of commodity trading companies by taking over inventories and factoring or discounting accounts receivable. The issue that arises concerning these financing arrangements is whether to derecognize these assets.



Introduction

Commodity financiers have been offering structured lending products to their clients for some time. These comprise the financier taking temporary legal ownership of their clients' physical inventories and factoring or invoice discounting accounts receivable. One of the motives for commodity trading companies to use these products is the possibility of keeping assets off-balance and hence of improving balance sheet ratios and reducing the utilization of the entity's lending capacity.

The accounting treatment of these structured finance products needs to be assessed on a case-by-case basis, taking into account all relevant facts and circumstances. These accounting requirements comprise overriding principles and generic guidance which leave room for interpretation.

Framework

IFRS includes specific requirements for the derecognition of financial and other assets. In addition, the IFRS framework established a general requirement to account for transactions in accordance with their substance, rather than their legal form only. Application of the substance over form principle implies that finance products offered by financiers tend to be regarded principally as financing arrangements rather than sales transactions. This does not imply, however, that finance products can never qualify as a sales transaction. It means that the specific contractual form of the finance product has to be analyzed against the underlying purpose of the transaction – its substance.

Inventories

In accordance with the framework's criteria for recognizing assets, inventory should be recognized in an entity's balance sheet from the date that the entity obtains the significant risks and rewards related to the ownership of the inventory.

Legal principle establishes when the risks and rewards of ownership transfer. For example, when goods are shipped Free On Board (FOB), the risks and rewards of ownership pass to the buyer on the date that the goods are loaded onto the ship. In case of DDU (Delivery Duty Unpaid), the risks and rewards are transferred to the buyer when the goods are placed at the disposal of the buyer – e.g. delivered to the port of the buyer.

The concept of risks and rewards of ownership is further detailed in IAS 18.

IAS 18 – Revenue

IAS 18 covers revenue recognition of the sale of goods and the provision of services. With the sale of goods, the recognition of revenues is directly linked to the derecognition of physical inventories. I.e., when the seller recognizes revenue, it simultaneously has to derecognize physical inventories. IFRS contains criteria for establishing whether a “true” sale has occurred and, consequently, whether inventories are derecognized from the seller’s balance sheet.

IFRS states that there should be no continuing managerial involvement over the goods to the degree usually associated with ownership. Moreover, the significant risks and rewards of ownership should have been transferred to the buyer with no effective control over the goods remaining with the seller. With sales of commodities, the transfer of the significant risks and rewards will most commonly correspond to the transfer of the legal title in accordance with Incoterms.

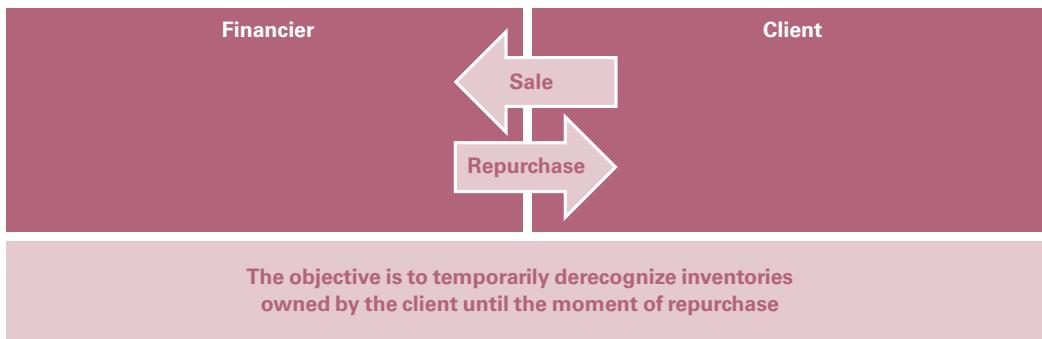
If an entity retains only an insignificant risk of ownership, the transaction is a sale and revenue is recognized i.e. where a seller retains the legal title to the commodity inventories solely as collateral to cover the risks of counterparty default, this does not delay the transferal of the significant risks and rewards of ownership. In such a case, the transaction should be regarded as a sale, revenue should be recognized and inventory derecognized.

Finance products commonly comprise multiple contractual arrangements. An example is products which include the obligation or option for the commodity entity to repurchase the goods from the financier. In such a case the two transactions should usually be assessed together because the repurchase obligation or option could effectively negate the substantive effect of the original sale. A repurchase obligation – or even an option – could imply that the significant risks and rewards remain with the seller. In that case, the transaction does not qualify as a sale but is accounted for as a financing arrangement.

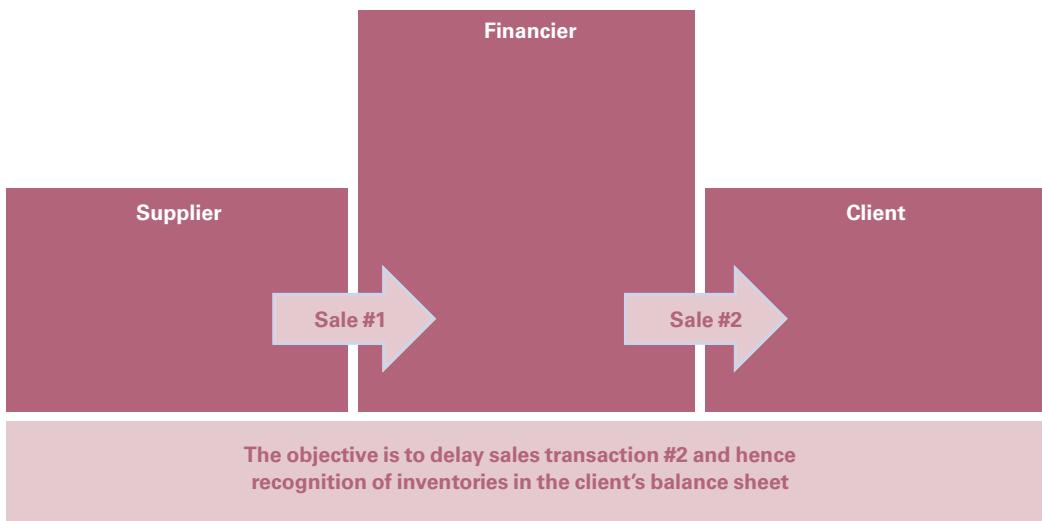
The essence of structured finance products

In the commodity sector, different finance products are common. Structured finance products that relate to inventory financing mostly comprise either:

- An arrangement whereby the financier acquires commodity inventories from the commodity entity – generally to be subsequently repurchased by the latter. The repurchase agreement can have various forms – varying from a legal obligation to priced or unpriced repurchase options

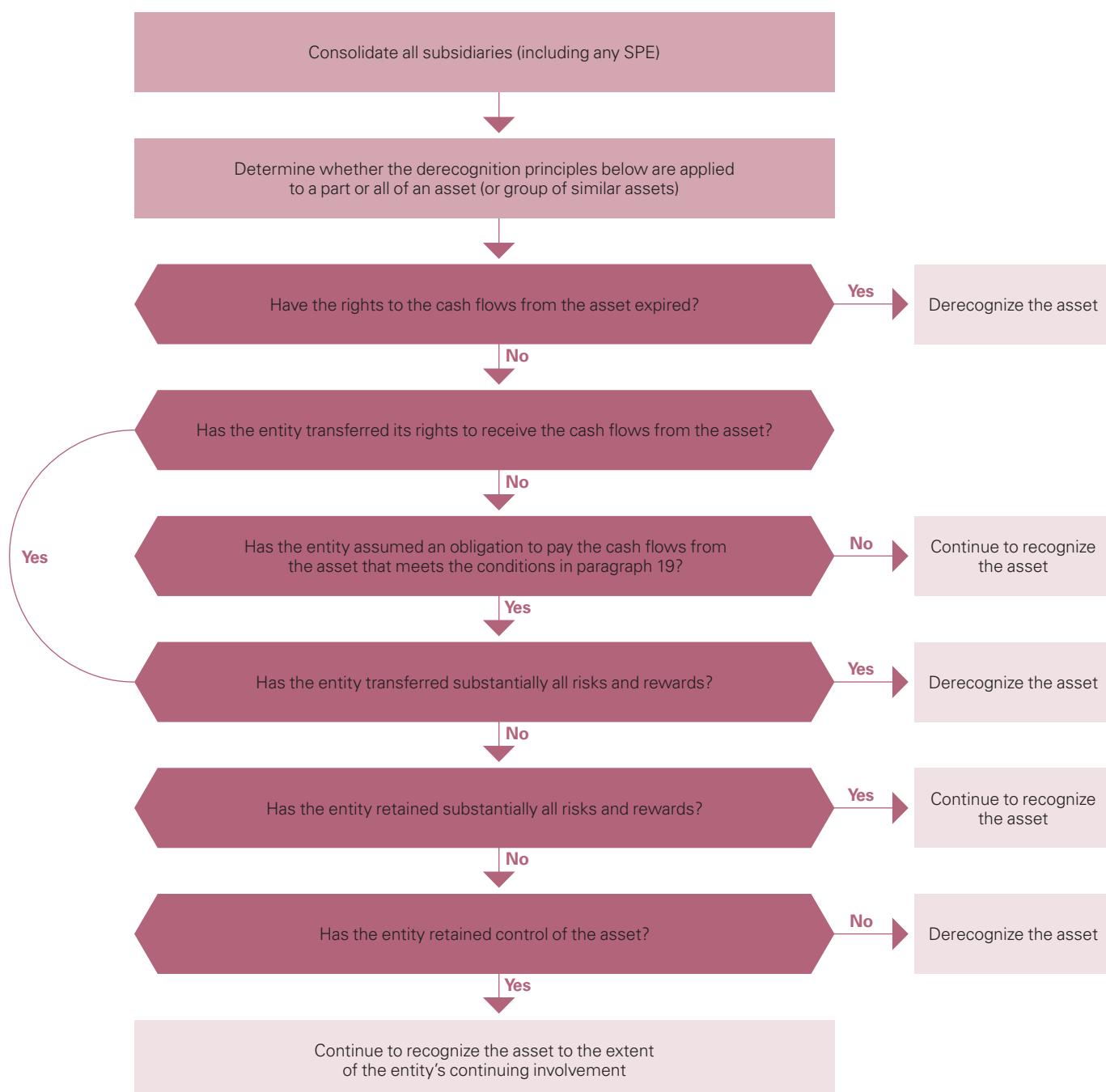


- An arrangement which involves a third party whereby the financier acts as an intermediary between the client and its supplier. The financier acquires the inventories from the supplier, to resell them later to the client (figure 2). This arrangement can also have many different legal forms.



Factoring or invoice discounting of accounts receivable

For derecognition of financial assets IFRS has a detailed set of requirements to be considered. We refer here to the flowchart for derecognition of financial assets for the criteria in question.



Before evaluating whether and to what extent derecognition is appropriate, an entity needs to determine whether the analysis should be applied to an eligible part of a financial asset or a financial asset in its entirety. For commodity trading companies this could be an issue when part of an account receivable is not transferred – for example, when a company makes an agreement with a bank for factoring 90 percent of the account receivable.

A common issue for the analysis is whether the assessment of derecognition should be applied on part of the asset and whether such part is eligible for derecognition, for example because it comprises only a fully proportionate (pro rata) share of the cash flows from the asset.

When agreements specify that payments received from the financial assets will first be allocated to the bank, the cash flows received on the financial assets are not allocated proportionately and, accordingly, the derecognition assessment should be applied to the entire financial asset. For example, if an entity transfers the rights to the first 80 percent of cash receipts on an account receivable, then the derecognition assessment is applied to the financial assets in its entirety and not only to the part that the entity has transferred. This is because the entity has not transferred a fully proportionate share of the cash flows, but rather a portion of the cash flows.

The main steps in the assessment of whether a financial asset or an eligible part of it is derecognized are: whether there is a transfer, whether the entity has transferred substantially all risks and rewards, and possibly whether the entity has retained control of the asset.

An entity transfers a financial asset if, and only if, it transfers the contractual rights to receive the cash flows of the financial asset or it enters into a qualifying pass-through arrangement. A pass-through arrangement is when an entity retains the contractual right to the cash flows of a financial asset, but also assumes a contractual obligation to pay the cash flows to the transferee. A pass-through arrangement is considered a transfer if and only if:

- the entity has no obligation to pay amounts to the transferee unless the entity collects equivalent amounts from the original financial asset;
- the entity is prohibited from selling or pledging the original financial asset under the terms of the pass-through arrangement; and
- the entity is obliged to remit all cash flows it collects without material delay.

If the entity transfers the financial asset, the next step in the analysis is determination whether it has transferred substantially all the risks and rewards. Normally, the most significant risk associated with accounts receivable is credit risk. When an entity provides a guarantee to compensate the bank for credit losses, the entity remains exposed to risk and usually has not transferred substantially all risks and rewards.

In the situation that an entity has neither transferred nor retained substantially all the risk and reward, an entity needs to consider whether it lost control. An entity is considered to have lost control if the transferee has the practical ability to unilaterally sell the transferred financial asset in its entirety to an unrelated third party without needing to impose additional restrictions on the sale. For example, if a company sells accounts receivable to a bank and simultaneously enters into a call option under which it has the right to repurchase the accounts receivable, the company may have retained control over the accounts receivable and will have to consider accounting them under continuing involvement.

Generally, a measurement based on continuing involvement requires the net carrying amount of the financial asset and the associated financial liability to reflect, depending on the measurement basis of the financial asset, either the amortized cost or the fair value of the rights and obligations retained by the entity.

Example – Continued recognition based on continuing involvement

Company P transfers short-term receivables of 100 to Company Q. P provides a credit loss guarantee of 2. Expected credit losses are 4 and historically have varied between 1 and 5. Q is not permitted to sell or pledge the receivables. In our view, P has retained some, but not substantially all, of the risks and rewards of ownership associated with the receivables. In addition, Q is not permitted to sell or pledge the receivables and there is no market for such receivables. Therefore, P has not given up control and continues to recognize the receivables to the extent of its continuing involvement. The maximum extent of P's continuing involvement is 2 (the amount of the guarantee). Therefore, P should derecognize 98 and continue to recognize 2, which is the lower of (1) the carrying amount of the financial asset; and (2) the maximum amount received in the transfer that P could be required to repay.

General considerations

The starting point for an assessment should be a thorough understanding of the finance product's contractual terms as well as its economic substance. This paragraph contains a number of important considerations to be taken into account when assessing the accounting treatment of finance products.

Issue	Considerations
Complexity and size of the contractual arrangements	Substantial and complex arrangements that deviate from regular purchase and sales documents. Complex contractual arrangements may be drafted to achieve certain accounting results.
Pricing	Pricing may provide indications that the financier's client is effectively paying interest, particularly when pricing is dependent on, or includes, interest and duration.
Financier's nature of business and exposure	Is the financier offering financing arrangements or is it acting as a commodity broker-trader?
Price risks	<p>A main risk related to commodity inventories is the price risk. The price risk may include several components:</p> <ul style="list-style-type: none"> ■ Outright price risk (or terminal price risk) ■ Basis risks (time basis risk, location basis risk and quality basis risk) <p>Commercially, bearing the outright price risk can be less important than bearing the basis risks. This is because:</p> <ul style="list-style-type: none"> ■ Outright price risk can be hedged by futures. ■ Basis price risks cannot (fully) be hedged. The entity bearing these risks is unavoidably exposed to price risk fluctuations.
Quality control, handling, storage and claims	<p>A main risk attached to commodities (particularly soft commodities) is the responsibility for quality control, handling, and storage of the physical inventories. Also an issue to be considered is which entity handles any quality claims to the original supplier.</p> <p>These will provide an insight into which entity has managerial involvement and effective control over the physical inventories.</p>
Insurance risk	<p>Which entity is responsible for insuring the physical inventories? Although certainly an indication to be considered, insurance risk should be treated with some caution as it can be irrelevant which party actually takes out the insurance.</p> <p>A specific detail to be considered includes whether the financier is able to recover interest on outstanding claims from its clients.</p>
Legal terms (e.g. Incoterms) may impact revenue recognition	<p>Contract fulfillment under Incoterms can be a deciding factor to determine when the risks and rewards of ownership transfer – rather than mere physical delivery.</p> <p>E.g. significant risks and rewards can be deemed to be transferred when:</p> <ul style="list-style-type: none"> ■ The goods are loaded onto the ship (in case of FOB and CIF) ■ The goods are delivered to the port of the buyer (in case of DDU).

Issue	Considerations
Retaining legal title as a security	<p>If legal title of the commodity is not transferred to the buyer solely to protect the collectability of the amount due, this fact is deemed to be insignificant: the transaction should be regarded as a sale and the inventory derecognized.</p>
Products that comprise various components (or "transactions")	<p>Indicators to assess whether transactions are linked:</p> <ul style="list-style-type: none"> ■ The transactions are entered into at the same time or as part of a continuous sequence and in contemplation of one another ■ The transactions, in substance, form a single arrangement that achieves or is designed to achieve an overall commercial effect ■ One or more of the included transactions, considered on its own, does not make commercial sense, but they do when considered together ■ The contracts include options or conditional provisions for which there is no commercial possibility that the options or conditional provisions will or will not be exercised or fulfilled ■ The occurrence of one transaction is dependent on the other transaction(s) occurring.
Repurchase options	<p>The following factors may indicate that the seller has transferred substantially all risks and rewards of the ownership to the buyer even if a repurchase right or obligation is retained:</p> <ul style="list-style-type: none"> ■ Commodity price risks – including variety (or basis risk) are borne by the buyer ■ The repurchase price is equal to the market value at the time of buy-back (i.e. is a floating price) ■ The insurance risk is borne by the buyer. However, if the seller retains the remaining risks, the risks and rewards are unlikely to be transferred ■ The period from sale to repurchase is for the major part of the economic life of the asset.

The impact of Basel III on Commodity Trade Finance

Basel III was implemented in the aftermath of the financial crisis of 2008 to strengthen capital requirements for the banking industry. Basel III requires more assets to be of a high quality liquid nature and more of the funding to be of a long-dated and stable nature, to minimize the risk of having to renew at times of stress. These requirements will result in higher capital and funding costs. The potential effects of Basel III include the transfer of proprietary trading to hedge funds, a reduction of less liquid assets, reduced volumes in OTC derivatives, and migration to clearing houses.

The requirements of Basel III raised fears that Commodity Trade Finance (CTF) would become more expensive, since off-balance-sheet instruments such as derivatives, guarantees and letters of credit should be included in the calculation of leverage ratios.

This approach does not seem to acknowledge the low risk nature of CTF products which are generally fixed, short-term and self-liquidating. While it seems to make sense tightening the treatment of risky off-balance sheet instruments, there is less sense in stricter regulation of LC and similar documentary credits.

As a result, banks may become more selective in their criteria for credit entry as CTF will become less profitable and banks may shift to corporate finance. Especially for small and medium sized traders with less developed corporate finance structures, access to funding might be harder to obtain.

Conclusion

The accounting treatment of each financing product should be assessed on a case-by-case basis. The starting point for an assessment should be a thorough understanding of the finance product's contractual terms and commercial substance.

For derecognition of inventories, IFRS states that there should be no continuing managerial involvement over the goods to the degree usually associated with ownership. Moreover, the significant risks and rewards of ownership should have been transferred to the buyer with no effective control over the goods remaining with the seller.

For derecognition of financial assets, IFRS requires consideration of a detailed set of requirements. An entity needs to assess whether transfer has occurred, whether substantially all risks and rewards have been transferred, potentially, whether the entity has retained control of the asset. In addition, an entity needs to determine whether the analysis should be applied to an eligible part of a financial asset or a financial asset in its entirety. If financiers want to facilitate their clients in keeping inventories and financial assets off-balance, they have to be prepared to bear substantial risks related to the ownership of those assets. These are risks for which financiers will want to be compensated – and for which clients will have to be prepared to pay. As a consequence, finance products that allow off-balance sheet treatment tend to be more costly for commodity companies.

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