

Managing rough waters

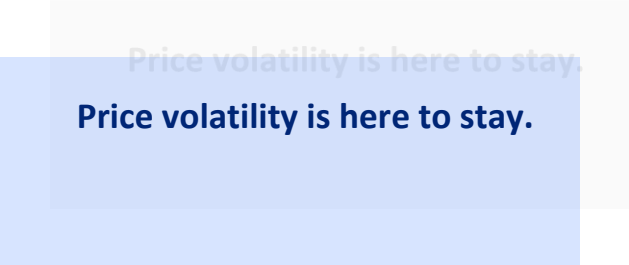
How to steer a course to stability with commodity price volatility as the new norm



Sharp price swings in commodities from coffee to crude oil are creating a significant challenge for businesses trying to manage such fluctuations now and in the future. This can drive uncertainty in company costs, product pricing, earnings, and credit availability — factors that can affect a company’s competitiveness. It can also test the abilities of businesses to invest and plan for the future. Price volatility is not only affecting their short-term profitability and performance, but possibly their very survival.

Several forces are at play here. While some commodity price fluctuations are cyclical, other factors — political tensions, natural disasters, and erratic weather events — have contributed to rapid price changes throughout history. More recently, globalization-related issues have complicated the picture. Emerging markets in Asia and South America are creating demand for certain materials, which are hiking prices. Recent threats to downgrade the credit ratings of several European nations have been affecting costs of raw materials. Meanwhile, speculators have also jumped into this mix — they don’t use or produce the raw materials that they trade in, but they can affect commodities markets as they seek profits from the price volatility.

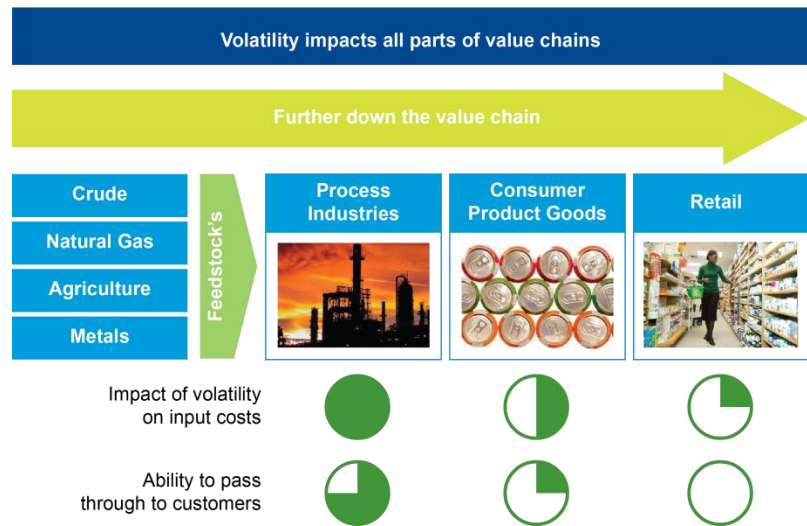
While many organizations understand that volatility is rising and here to stay, few have found effective strategies to weather this day-in, day-out unpredictability. Some avoid doing anything because they think it’s beyond their control to make an impact — but it’s not. In this article, we’ll examine how companies can develop an effective commodity management strategy to mitigate price volatility using several strategies and also potentially profit from it by employing various techniques. Business leaders should understand not only what’s driving these changes, but measure their risk exposure and determine the impact of volatility on their input costs, earnings, and working capital. From there, they can develop a commodity management plan using different tactics to help strengthen their position in the market and outperform their competitors.



No place to hide

There are varying degrees of price volatility across a value chain in a given industry (see Figure 1). How much and when companies can pass through their costs to customers varies by industry and the price impact along the value chain. In other words, no matter where you lie along the value chain, you will likely have to deal with price volatility — that's a given. For example, process industry companies normally see higher input price volatility, but they are also able to pass through a larger portion of this change to their customers (although, it may take a few weeks to a few months before these companies can pass through these costs). On the other hand, retailers typically don't see as much volatility in input costs, but they are greatly limited on how much they can pass through to their customers.

Figure 1 Illustrative: Commodity price management is an issue across many industries



Several strategies can be used to mitigate the price volatility of a particular commodity. Examples include, but are not limited to, using hedging tactics, repositioning yourself along the value chain, or working on internal mechanisms to reduce commodity usage. For example, a leading airline company effectively hedged fuel costs for more than a decade, gaining a significant competitive advantage over rival carriers with improved margins via lower fuel costs. An international restaurant company managed its spending on raw materials through a hedging program to offset what it believed would be higher commodity prices in the future, which included the use of market-traded proxy commodities to address volatility in inputs that lacked liquid markets. As a result, it curbed the use of financial reserves that would otherwise be needed to cover any price volatility. In the process, it freed up capital to invest in other ventures. As another example, a large chemical company took a different approach and entered into separate partnerships with identified suppliers to gain access to competitively priced feedstocks and achieve a degree of supply security.

Eventually, a company should decide on a commodity management strategy based on its risk appetite and its perception of its ability to manage risk — even if its choice is to do nothing, or very little.

Price volatility: The new norm

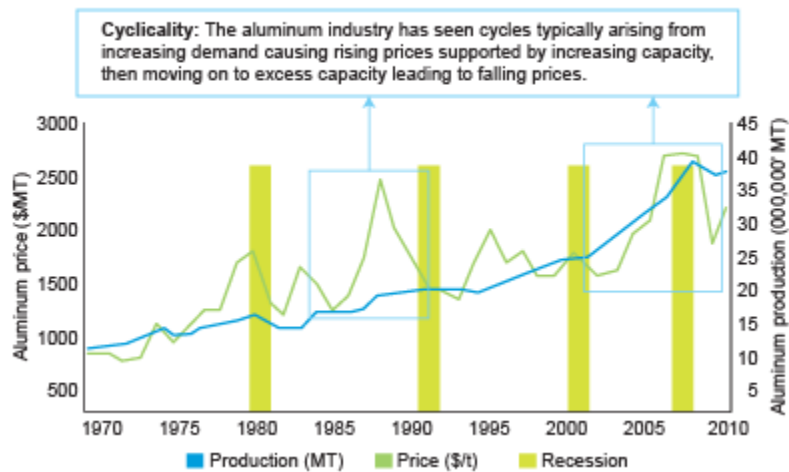
Business leaders should expect the current environment of price volatility to last for years. But before they can even begin to create a commodity management strategy to address volatility, they should understand what's driving these rapid price changes. If companies can better identify and analyze key drivers in a given situation, they can measure how these drivers will affect their commodities and help

them anticipate future scenarios. This is important because companies can then choose from several available tools or methods to tailor a response to a given situation. But, first, leaders should understand the three types of price volatility among commodities:

- **Short-term volatility.** In this case, price fluctuations in commodities occur within a short time period, usually a few months. This volatility is driven by real or perceived supply-demand imbalances and recent events in the marketplace.
- **Business cycle volatility.** This type of price volatility occurs over a time period specific to the commodity, usually a few years, depending on how long it takes to build capacity. Volatility is triggered by a supply-demand balance that accompanies building new production capacity and/or a significant change in demand.
- **Strategic shifts.** In this situation, certain factors significantly alter the supply-demand balance of a given commodity, which result in a sustained price change that can last several years — although it may not be permanent. One factor could be a significant and continuous demand for a commodity over a sustained period of time. The discovery or development of a significant supply source, or a new technology, or a major political event that affects the supply-demand balance of a commodity could be other factors.

While short-term volatility may be unpredictable, companies can often anticipate price volatility resulting from business cycle effects and strategic shifts. Figure 2 shows an example of business cyclicity (and short-term volatility) in the aluminum market from 1970 to 2010. Between 1985 and 1990, a tight supply-demand balance of aluminum resulted in a price spike. The aluminum industry

Figure 2: Business and short-term cyclicity in aluminum market during the 1990s.



Source: USGS Minerals data for price and production volume year over year – www.usgs.com

responded with greater production capacity, which relieved the supply-demand tightness and subsequently led to falling prices. A similar phenomenon was seen starting around 2003 with increasing prices driven by a tight supply-demand balance. This was followed by a drop in price between 2008 and 2010, which coincided largely with the economic downturn. It should be noted that business cycles change over time (the duration of a cycle and the price delta from peak to trough) in response to various factors (technology, usage pattern, alternatives, etc.). These can provide valuable insights when analyzing key factors that affect the price changes of a particular commodity.

Understanding likely events that could cause a strategic shift are critical to a sound understanding of a commodity landscape and an ability to create an effective commodity management approach. Consider

a classic example of two strategic shifts in oil that's shown in Figure 3. The first shift occurred in the early 1970s, when a rise in supplier influence drove prices to a new baseline. The second shift took place during the late 1990s and early 2000s and was driven by a growing demand in Asia. It is worth noting that higher volatility accompanied both shifts.

Another notable example of a strategic shift was in the ethanol and corn markets, which occurred from the early- to mid-2000s. The shift in ethanol was driven by a sustained incremental demand for the commodity, spurred on by legislation that banned the additive methyl tertiary-butyl ether (MTBE) and created minimum renewable fuel

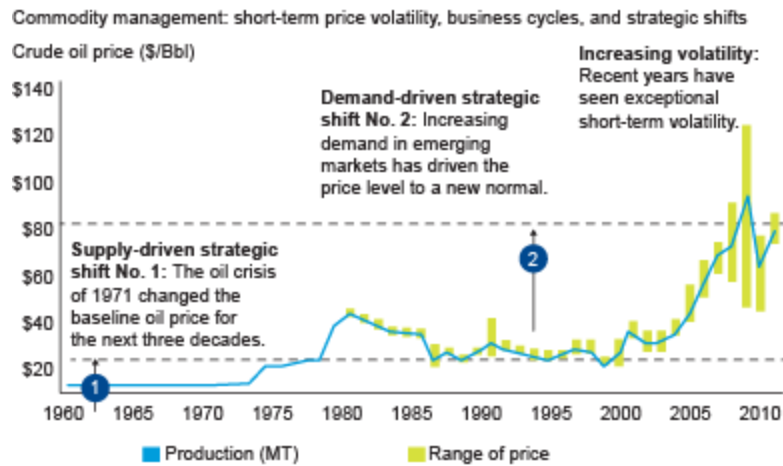
requirements. Prices for corn, which is a major input for ethanol production, showed a similar shift during the same time period, due to the linkage in the two markets.

By recognizing the differences between short-term volatility on one hand and business cycles or strategic shifts on the other, companies can start to understand their challenges and apply relevant commodity management strategies. To start, a company should first measure the exposure of its commodities to price volatility and understand the markets of those commodities. It can then formulate and implement a response plan using a mix of tools and methods that can be measured against a set of business objectives.

Sizing volatility's punch

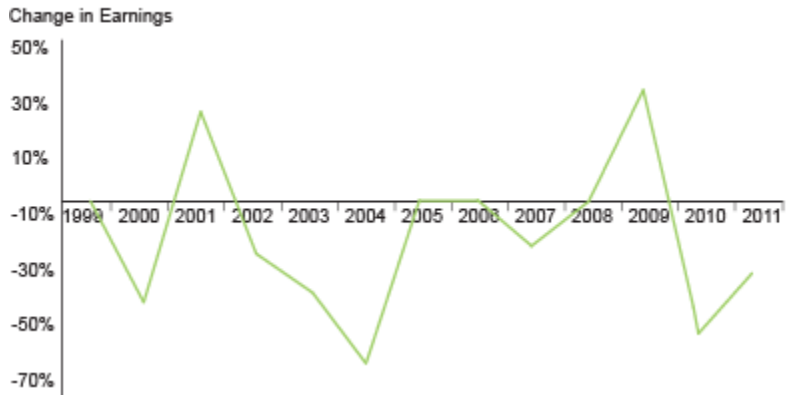
Today, business leaders should understand that price volatility in this new environment is not just a procurement issue, but a corporate finance one. In this new norm, rapid price changes can result in unpredictable earnings for a company from quarter to quarter. Earnings could rise and fall as much as 10 percent to 30 percent and affect share prices. Moreover, price volatility might not only affect a company's financial reserves, but also its ability to raise capital. Price volatility can pose significant challenges to both a company's margin and working capital:

Figure 3: Short-term price volatility, business cycles, and strategic shifts in crude oil



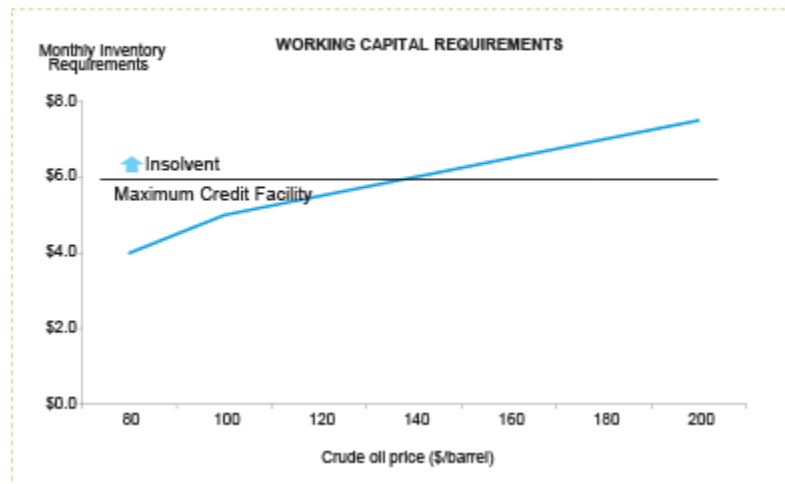
Margin. Increased volatility presents a challenge for companies with significant levels of commodity spend. It may affect earnings without any potential countermeasures, driving significant variation in earnings per share and other key shareholder value metrics. Figure 4 illustrates, for example, the potential earnings fluctuations caused by commodity price volatility for more than a decade for a \$5 billion (revenue) company with \$3 billion in input purchases comprising a mix of chemicals and materials, mostly derived from crude oil or natural gas.

Figure 4 Illustrative: Earnings can fluctuate with commodity price volatility



Working capital. Price volatility can significantly affect a company's available credit levels due to fluctuations in inventory or working capital. In some cases, the price of a key input commodity can rise to a level where capital requirements associated with operating the company result in a serious threat to cash flows. The example in Figure 5 shows how increases in crude oil price can affect an independent refiner's working capital and whose inventory is directly linked to crude oil prices. The impact of potentially large changes in crude prices constitutes a real threat to solvency that should drive a discussion about managing cash flow.

Figure 5 Illustrative: Affect of higher crude oil prices on a refiner's working capital.



Framework to manage commodity price volatility

An effective commodity management strategy involves a flexible, holistic approach — one that is aligned to business objectives and can be tailored to a given situation. There is no single strategy that can consistently enhance performance. In other words, companies should select a mix of tactics to effectively mitigate price volatility and create a long-term competitive advantage. For example, if your objective were to get the lowest costs in the marketplace, you would use a different set of strategies than if your goal were to achieve margin stability. How companies apply these strategies depends on their business objectives and risk appetite. To move this forward, you need buy-in from top executives to support any commodity management plan — it can't just be left up to a company's procurement professionals.

Figure 6 illustrates a framework with several key elements. This framework could help companies develop and deliver a consistent response, giving them multiple levers to choose from, depending on the particular problem. Any response needs to be preceded by a clear understanding of a company's commodity exposure and a perspective of the forward-price landscape of its key commodities. These are important inputs for defining commodity management objectives and determining risk appetite.

Figure 6 Illustrative: Deloitte's perspective: The most effective organizations show strong capabilities across the Commodity Management Framework



Understanding your exposure

Organizations need a clear understanding of the magnitude and nature of their commodity exposure to help them design and develop an effective response to price volatility (for example, a low net exposure may imply employing a different strategy versus one that may be suitable for high exposure, with different objectives). Exposure is the net impact of this volatility after both input costs and customer pricing (that is, the structure of customer contracts or the ability to change pricing in response to input costs) are considered. Some volatility is inherently passed through to customers — whether through contracts or a company’s pricing power in the marketplace.

Understanding your
Understanding your exposure is key to an effective response.

Tracking the exposure provides company leaders insight into their commodity risk resulting from market movements. Since companies may purchase several commodities, and given that many of these commodities are not openly traded in the marketplace, it can be difficult to monitor and measure exposure. In these scenarios, organizations can identify, track, and measure the exposure via a few proxy commodities that are traded in the open market. Proxy commodities can be identified by regression analysis that correlates the price of a given commodity to the price of potential proxies, or combinations of proxies, noting that correlations may include time lags (i.e., one commodity’s price may correlate with the price of a proxy commodity a few months in the past or in the future). As a result, organizations can roughly gauge the exposure of the various commodities that it purchases via these few proxy commodities. The detailed analysis can provide valuable insights when done correctly. Company leaders need to understand every commodity that they buy, how their contracts are structured, and what they can pass through to customers. This can help companies determine how much of an effort they need to put in to manage their exposure.

Beyond the horizon

Once a company has a sense of its commodity exposure, it needs to ask itself a key strategic question: What is the forward-price view of the commodities that it purchases? In other words, a company should try to develop a perspective on the direction that commodity prices could take in the future. With this view, a company can better manage price volatility, minimize earnings surprises, and even profit from it. This strategy cannot only help companies effectively manage price volatility but can also help gain a competitive advantage over its competitors.

A forward-price model, based on supply-demand balancing, basically analyzes and forecasts supply and demand to determine the price behavior of a commodity over several years or decades. These models factor in inputs such as cost curves for producers/manufacturers and demand curves for consumers/customers and can also account for variables that affect these basic inputs — whether they’re within or outside the ecosystem of a given commodity.

Forward-price models can help companies in many ways. Commodity managers typically spend a great deal of time every day managing — or firefighting — price volatility. If they can think more like traders as they critically evaluate commodities markets and consider available financial instruments, such as options or futures contracts, they’re likely to obtain lower prices and better manage price volatility down the line. But potential actions are not limited to financial instruments. The insights that managers can obtain from a forward-price model also helps them select and apply a range of other levers available to a company for commodity management, which we discuss next.

Figure 7: Different types of volatility can be managed via the Commodity Management Framework

Commodity management levers		Short-term volatility	Business cycles	Strategic shifts
Contract management	Contract/Spot	✓	✓	
	Optionality	✓		
	Interregional arbitrage	✓		
Financial instruments	Options and futures	✓	✓	✓
	Cross-hedging	✓	✓	✓
Supply chain management	Balancing sales and supply contracts	✓	✓	✓
	Value chain positioning		✓	✓
	Product development		✓	✓
	Sustainability		✓	✓

Once a company has defined its commodity management objectives and risk appetite, there are three broad ways — contract management, financial instruments, and supply chain management — to manage the different types of price volatility. Typically, a given commodity management situation consists of a mix of the three different types of volatility, resulting in varying business objectives (e.g., smoothing of earning or costs, increased profit), and application of different levers within the Deloitte Commodity Management Framework. Figure 7 describes the application of the different levers within the Deloitte Commodity Management Framework to the different types of volatility. A company can then formulate a broad, overall coherent strategy that uses a tailored selection of the different levers.

Effectively managing
Effectively managing commodities can help you profit from price volatility.

Contract management can better address short-term volatility, while supply chain management is more suitable for dealing with business cycle and strategic shift challenges. Financial instruments can be applied to any type of volatility, within the structure of a company's objectives and risk appetite definition. Of the three, supply chain management may be the most difficult strategy to employ, but it could also provide the most effective response. We describe how these tactics can be applied to manage volatility.

Contract management

Mix and save. By understanding the direction, degree, and duration of future prices, companies can move between the spot market and existing contracts to help them save money on raw material purchases. For example, if you expect a commodity's price to go up in the future, you can concentrate more of your spend on contracts rather than buy through the spot market. Alternatively, if prices are expected to decline, you would move more spend into spot and away from contracts.

Shift and gain. Contract optionality is a strategy that can allow you to use your commodities contract as an asset. Through this strategy, you can create flexibility in terms of how much raw material you can buy at a given time. For example, if the price on the spot market has suddenly risen higher than what's in your contract, then you can buy more raw material than you need through your contract. You keep what you need and sell off the excess raw material on the market to gain a profit. If the price on the spot market goes down, you can buy fewer units through your contract and then buy whatever else you need on the market, which saves you money.

Shop and save. Another opportunity that commodity markets typically present is regional arbitrage. This strategy emerges when regional imbalances in supply and demand force price volatility across the marketplace. In other words, you shop around for the most favorable or preferred price that's being offered for a particular commodity across different regions. Companies can take this a step further and also profit from the differences in prices across regions. For example, they can purchase a commodity with a lower price in one region and sell it for a higher price in another. But to find these opportunities, companies should constantly monitor commodity markets and understand the supply-demand balances in the regions and the logistics differentials that may partially drive price differences.

Financial instruments

Options and futures. Through a futures contract, a company can buy or sell a certain amount of a commodity at an agreed-upon price and date. It's a way to either reduce the price risk or set prices for commodities they will trade in the future. Similarly, an options contract provides the buyer the right — but not the obligation — to buy or sell a commodity at a specified price at a future date.

Cross-hedging. This is another technique to hedge the price risk of a commodity through a different, but economically related commodity. Some companies may buy dozens of commodities that are not traded in the open market. In such case, it's much harder to manage price volatility of these purchased raw materials. Cross-hedging allows companies to map these commodities, which are not traded in the marketplace, to a basket of two or three related or linked commodities that are openly traded. Consider

the example of a company that managed the price volatility of diesel fuel, which is not traded in the commodity market, through a substitute product — heating oil. Company planners settled on heating oil after it studied the 10-year, five-year, and weekly patterns for various petroleum products. Through regression analysis, planners found a relevant, statistical correlation between the two commodities. As a result, it saved \$3 million in one year.

Supply chain management

Balancing sales and supply contracts. Typically, commodity supply terms and product sales terms are not completely synchronized within a company. For example, a company may buy a commodity under monthly fixed-price terms and then convert it into a product that it sells to customers under six-month fixed-price terms. So, if the prices of your commodities go up every month, you may be unable to pass through this volatility to your customers for several months. You'll get squeezed. One potential technique to manage this volatility is to create commodity contract structures with pricing mechanisms and terms that clearly mirror the supply side. You can do this by having similar price-stability periods — that is, both suppliers and customers have 30- or 60-day price stability, or both supplier and customer prices are based on the movements of the same index — which require alignment between sales and procurement. This could significantly reduce an impact to earnings since much of the price volatility is passed through to customers. In an ideal world, this would be true across a portfolio of suppliers and customers. But, since the supplier and customer fall on different points in the value chain, achieving 100 percent pass-through is usually not feasible or applicable. But this technique can address some of the volatility.

Repositioning sourcing. In this practice, companies can source a given commodity at several points along the supply chain before it converts the material for use in its own production. In other words, companies sometimes may be better off buying the raw material that they can then convert into the product they want. It may be cheaper because the price volatility of actually buying the product they need is too great. For example, a food manufacturer can take advantage of the supply-demand balance and market prices between raw and refined sugar. The manufacturer can source either the refined or raw sugar, giving it the ability to manage cost and determine a steady supply of the commodity for its end product.

Product strategy. A revised product strategy — designing and manufacturing products to minimize the dependence on certain commodities — is often an effective response to commodity price hikes. For example, neodymium is a rare earth metal that's used in magnets to power cell phones, wind turbines, and hybrid cars. To counter the rising prices of neodymium, the electric car industry developed other products without that particular rare earth metal. Similarly, a spike in copper prices led some companies to reengineer and redesign products to use less of that metal.

Doing more with less. Companies can improve their supply chain management by reducing resources consumed to make the target product and by using a life cycle analysis approach. For example, the price of lanthanum — another rare earth element that is used in vehicle and aircraft engines — soared in recent years, affecting companies' margins. In response, some companies are collecting used parts,

extracting the lanthanum, and recycling it as a way to save money. In another case, a DVD case manufacturer reduced its consumption of raw materials and energy. As a result, more units were produced with 13 percent less raw materials, while less waste was generated.

Risk management process

Companies also need to place a stronger emphasis on risk management on a portfolio basis. Leaders in this area tend to make better decisions if they view individual commodity price volatility and risk in the context of all purchased commodities. Consider a commodity manager who may choose to aggressively lock in prices while managing an individual commodity. However, if that manager were to take a broader, cross-commodity review, the manager could craft a more tempered strategy based on the performance and risk of other commodities in the broader portfolio.

Price volatility isn't just a procurement or corporate finance issue — it can also affect marketing strategies, new product introductions, and sales tactics. In this context, organizations should implement a cross-functional, formal review board — with representatives from purchasing, finance, accounting, sales, marketing, and research and development — to periodically review commodity risk exposure. The board's responsibility would be to preview and accept commodity strategies as it relates to the overall portfolio and adjust other strategies to compensate for market volatility. This forum can allow commodity managers to quickly take advantage of rapid market changes without requiring time-consuming reviews.

Ready, set...

As industries experience even greater commodity price swings, companies should leverage a mix of new pricing and supply management strategies that go beyond traditional methods to lessen the effects of such volatility. More and more, these price swings will likely affect a company's bottom line and its long-term investment strategies.

An effective commodity management strategy is going to take time to develop and implement and, once in place, will need to be constantly monitored and adjusted from a portfolio standpoint. This requires that companies take a deeper look at how their business units and various functions share data and collaborate on strategies. If they're working in silos, they may not be getting data that could help them make informed choices that are in the company's overall interest.

With this backdrop, companies need a category management structure that supports cross-commodity and cross-functional collaboration and risk management. In this framework, category managers should begin to act more like business managers for a commodity. They need to take a holistic approach — understanding input costs, customer contract terms, financial instruments, and supply chain management techniques — in ferreting out opportunities. Managers also need additional skill sets, such as analytics capabilities to develop a forward-price view and an understanding of the commodities markets. While the objective is to manage rapid price changes, leading organizations look to profit from

this volatility. A commodity Center of Excellence, for instance, could help them bridge these gaps and improve information sharing.

Today, you cannot afford to sit back and think these situations are beyond your control. Your company's very survival may be at stake. It will likely take more than the procurement officer or financial staff to implement a broad, overall, effective strategy to manage these rough waters. The whole executive team should be on the hook to help implement an effective commodity management strategy into their daily operations. Companies that get a head start on managing volatility can gain a competitive advantage, even as markets become more uncertain.

The role of commodity

**The role of commodity
managers is evolving
through analytics and
other needed skills.**

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