

Strategic Hedging for Oil Producers

*African Oil and Gas Summit
Paris, 21-22 April 2010*

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 **KOCH**

KOCH SUPPLY & TRADING LP

Outline



- ◆ Koch Group of companies
- ◆ Budgetary Process, Market participants
- ◆ Instruments – Documentation and Credit
- ◆ Framework



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KOCH SUPPLY & TRADING LP

1: Who are we?

From Koch Industries..... to

..... Koch Supply & Trading

Koch Industries - Overview

- ◆ Koch Industries is among the world's largest private companies. Founded in 1940, it is owned and managed by Charles and David Koch. Koch companies operate in nearly 60 countries and employ about 70,000 people.
- ◆ Koch has interests spanning involvement in commodities (metals, petroleum, minerals etc.) trading through to owning and operating refining and manufacturing facilities. Our global refining throughput is currently 800,000 bpd.
- ◆ As evidence of its financial strength Koch Resources, LLC maintains a long-term S&P A+ and Moody's Aa3 credit rating, unaffected during last year's financial turbulences.
- ◆ Trading operations located in London, Geneva, Singapore, Houston, New York, Wichita, Kansas (Corporate Headquarters), Rotterdam and Mumbai.
- ◆ Information: www.kochind.com www.ksandt.com www.kochmetals.com
<http://derivatives.kochind.com> www.kochsteel.com www.kochbullion.com



Diversity of Industry Areas



Polymers and Fibers



Minerals



Process and Pollution Control Equipment and Technologies



Ranching

A Diversity of Industry Areas
Koch companies supply communities with energy to heat and cool buildings, fibers for superior carpets and garments, chemicals used in manufacturing, process and pollution control equipment, fertilizer, forest and consumer products, financial services and more.



Refining and Chemicals



Commodity and Financial Trading and Services



Forest and Consumer Products



Fertilizers

Koch
Industries:

in stores
near you...



EUROPE, THE MIDDLE EAST AND AFRICA BRANDS



Koch Business Groups

Koch Industries owns a diverse group of companies that exercise capabilities in trading, operations excellence and investments on a global scale in core industries that include: trading; petroleum; asphalt; natural gas; gas liquids; chemicals ;metals, plastics and fibers; chemical technology equipment; minerals; fertilizers; ranching; pipelines; pulp; securities and finance, as well as a range of other ventures and investments. Some of the principal companies include:

Koch Supply & Trading, LP

Koch Supply & Trading, Sàrl

Koch Metals Trading Limited

Flint Hills Resources

Koch Mineral Services, LLC

Koch Capital Markets

Koch Ventures



Koch Financial Corporation

Koch Materials Company

Koch Chemical Technology Group

KoSa

INVISTA

Georgia-Pacific

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KOCH SUPPLY & TRADING LP

Koch Supply & Trading - Overview

- ◆ Koch Supply & Trading, LP (KS&T) is a global supply, marketing, trading and risk management group conducting business in crude oil, refined petroleum products, petrochemical feedstock, freight, base metals, steel and other commodities.
- ◆ Today KS&T is among the world's top five crude oil traders and actively trades about 50 types of crude oil around the world.
- ◆ KS&T trades in physical commodity markets and is also an active market-maker of innovative risk management solutions for a wide range of customers, including several large oil producers
- ◆ KS&T emphasizes a disciplined, strategic approach, with a focus on customer needs, market analysis and risk-management capabilities.
- ◆ **Information:** www.ksandt.com <http://derivatives.kochind.com>

Koch Supply & Trading: Activities

- ◆ Worldwide trading and risk management activities in crude oil, refined petroleum products, metals and other commodities:
 - ◆ Global Crude Oil (trading some 50 different types of crude)
 - ◆ Light Products and Chemicals
 - ◆ Natural gas and gas liquids
 - ◆ Heavy Products (e.g. industrial and bunker fuels)
 - ◆ Base Metals (Al, Cu, Zn, Pb, Ni, Sn and brass) incl. online trading
 - ◆ Steel (hot and cold rolled coils)



- ◆ For additional information see: www.kochmetals.com



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Koch Supply & Trading – Contacts

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2. Why do Sovereign decide to hedge?

Budgetary Process

Revenues are tied to oil prices whether directly by being physically allocated a portion of the oil production (in kind) or through earning royalties and taxes corresponding to dollar amounts paid when oil prices are in excess of a given threshold.

In both cases, it leaves the income fully exposed to the wide variation of oil prices. What do you do when you plan for the next year after oil hits successively \$147 then \$35 within a 6-month period?

Mexican hedging program part of 3-part public finance strategy

- ◆ Guaranteeing Sustainability
- ◆ Ensuring adequate Liquidity Management
- ◆ *Financial risk management*

Mitigate the effect of negative shocks, such as oil price volatility to fiscal revenues.

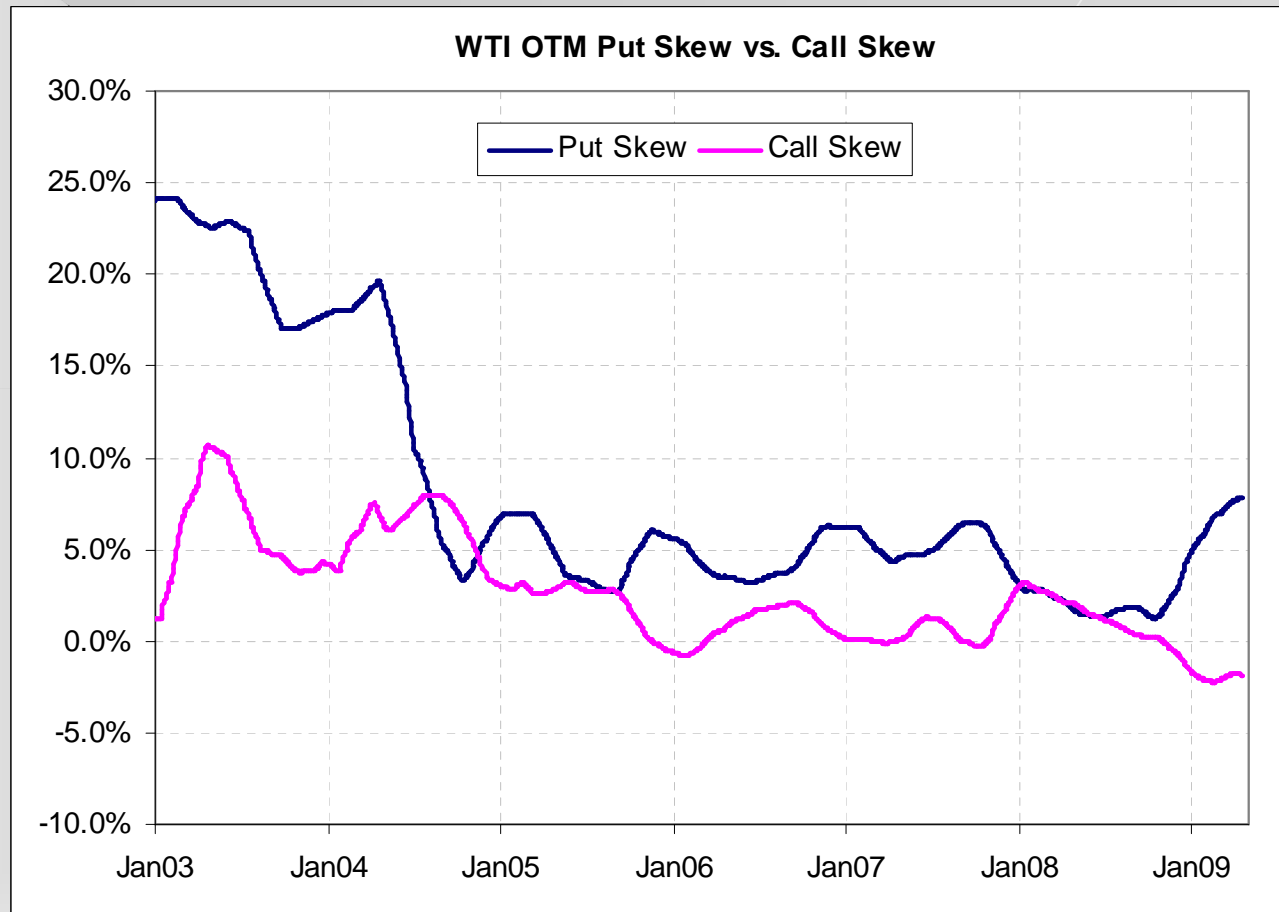
Forecasting, not entirely science yet, but no longer just an art.

Use all available information:

- ◆ Futures forward curves
- ◆ Implied traded volatilities and skew maps
- ◆ Historic pricing data reweighted by age
- ◆ IEA and other economic forecasts bracketed by confidence intervals.

the output is to determine a range of likely oil price averages

Skew maps ?? Just the balance of supply and demand of a given financial product.



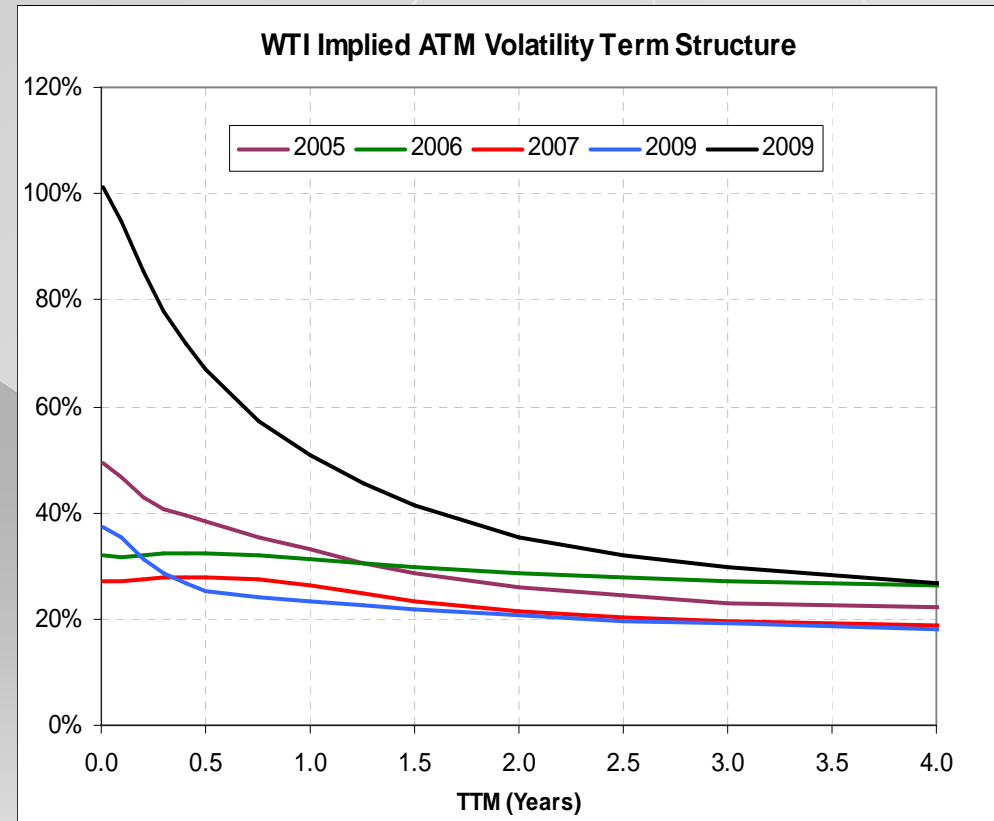
Mexican 2010 budget based on \$59/bbl oil forecast

- ◆ Let's not forget the quality differential to the benchmarks and their own volatility...For example when OPEC cuts production sweet/sour balance gets affected and sour crude discounts usually tighten...
- ◆ Hedge conducted in 2009 for fiscal 2010 budget covers 230 million barrels (100% of net exports) at \$57, a decision that cost just over \$1 billion. PEMEX produced 2.6m barrels per day in 2009, but shipped abroad 1.2m barrels per day.

Extreme Volatility Term-Structure

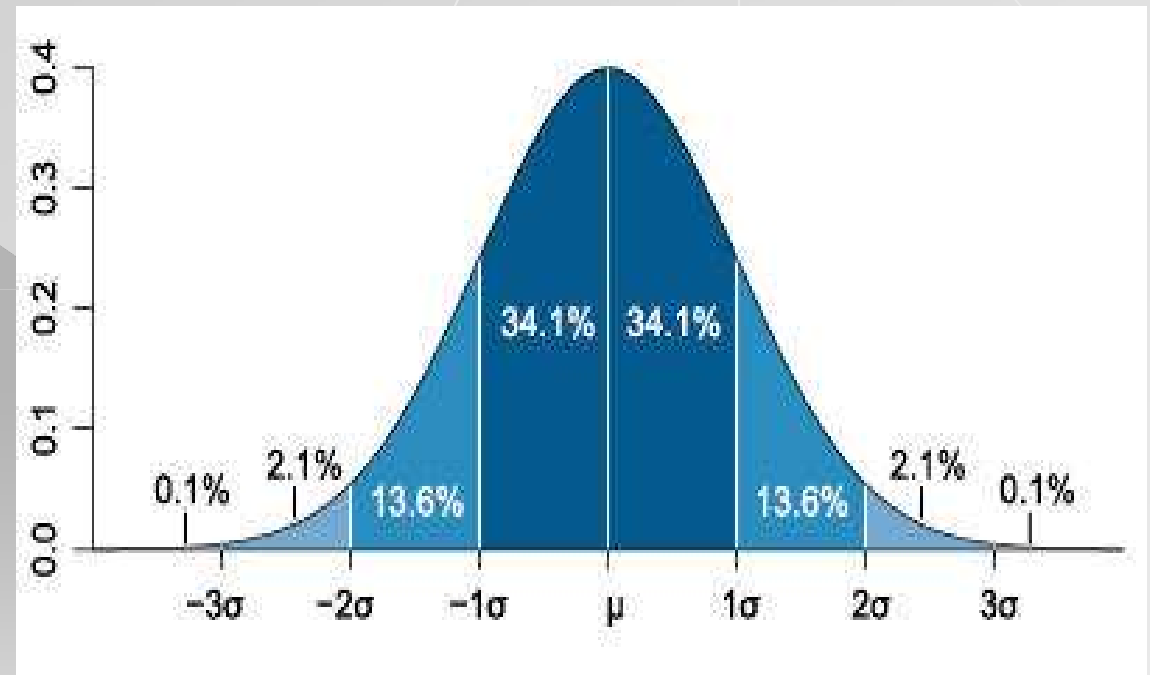
(end of 2008, beginning of 2009)

- ◆ Large sovereign producer hedging program (put buying)
- ◆ Leveraged put sellers forced to cover (put buying)
- ◆ The market is at the shortest gamma point
- ◆ Higher credit costs makes option selling less attractive
- ◆ Futures contango (higher % vol for the lower priced futures)
- ◆ Volatility term-structure is extremely steep



Final Objective

«The objective of hedging is not to directly profit from a fall in the price of oil, but to hedge its exposure as an oil producer»



Remove downside tail risk

3. Market Participants

Market participants and hedging flows

Producers:

- Not diversified / cause backwardation
- Buy puts, some finance by selling calls
- Drive put skew on crude oil

Consumers:

- Catastrophe hedgers / poor credit
- Call buyers of refined products
- Drive call skew on refined products

Derivatives dealers:

Create balanced end-user options market
Absorb basis risks

Refineries/asset owners:

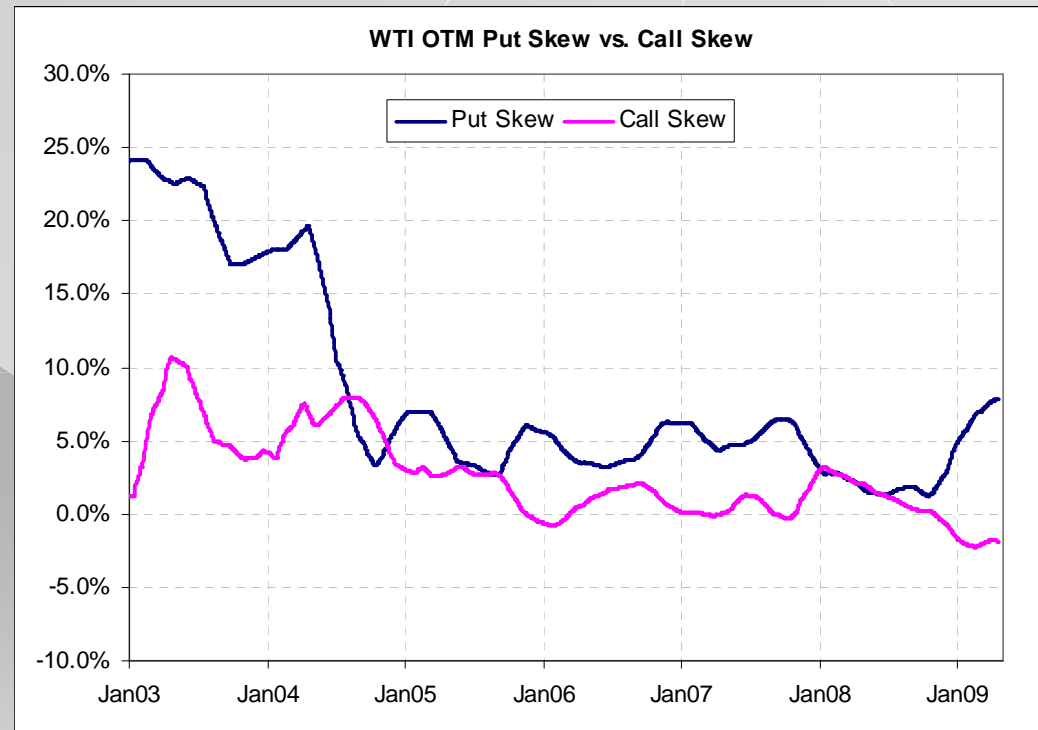
- Own assets ie crack / spread options
- Sell volatility vs. assets
- Balance consumer / producer demand

Funds:

- Equity/inflation/dollar hedgers
- Lottery ticket buyers
- Macro view on volatility valuation

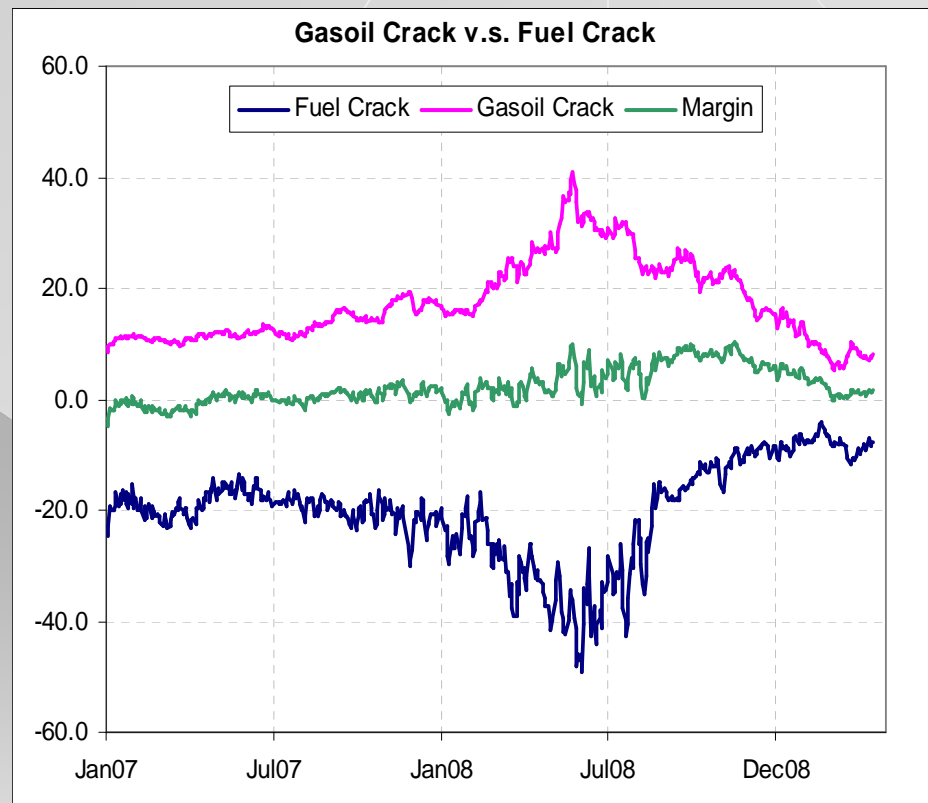
Producers: driving put/call skews

- ◆ Producers hedge less as stock market wants exposure to energy and penalizes hedging
- ◆ Many systematic ratable hedging programs discontinued (heavy losses in 2008)
- ◆ Large acquisitions are hedged, large put strike concentration
- ◆ Put skews decreasing but “sticky-strike” prevails
- ◆ Call strikes are more spread out as fixed floors financed with various caps for costless collars



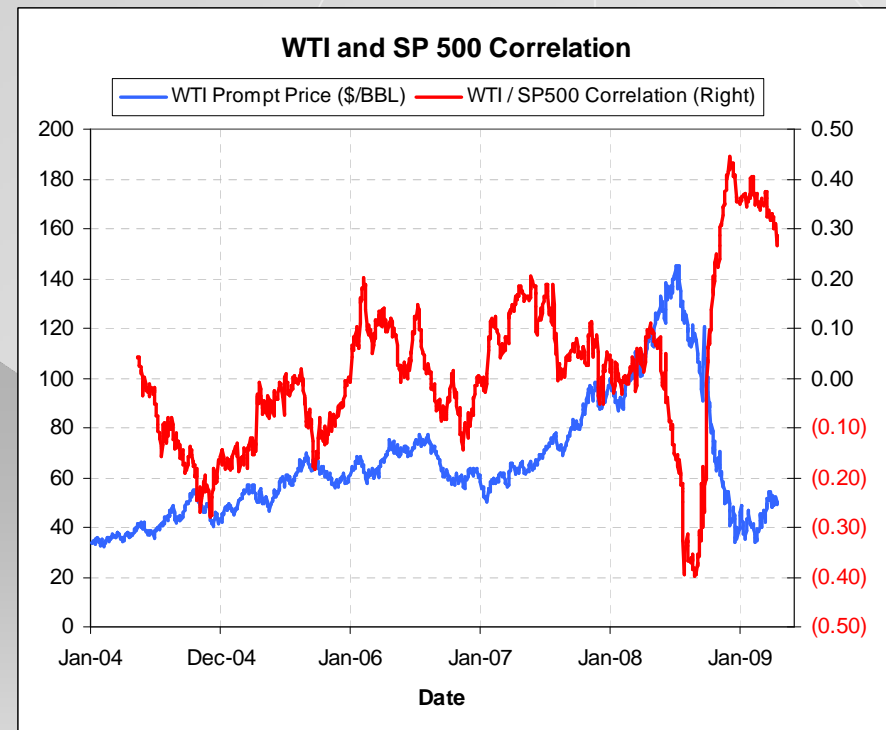
Refineries: whip-sawed by hedging

- ◆ Refinery margin is the difference between the basket of products (jet, heating oil, gasoline, fuel oil) and crude oil
- ◆ Refinery is a call option on the margin
- ◆ High oil prices were driven by distillate prices (heating oil, jet) but overall margins turned negative because of low fuel prices
- ◆ Refineries were overhedged with distillates, stopped selling and some turn into buyers
- ◆ Exacerbated the liquidity crunch last summer
- ◆ The stronger ones became dynamic hedgers



Financial crisis and commodities

- ◆ Perceived negative correlation between oil and financial markets has been the most bullish driver over last few years
- ◆ Recently correlation became positive reducing diversification and forcing investors to exit commodities
- ◆ The risks of tighter government regulation exacerbated the exit in 2008
- ◆ Recently investors started to return
- ◆ Oil became the cheapest hedge against inflation



4. Instruments

Term-settled put options

Put options because these are the options that give you the right to sell at a pre-determined price.

Average price options because Sovereign hedge their average income with a view to protect yearly budget revenues.

Term-settled options are cheaper to buy than monthly averages because a yearly average is less volatile than a monthly average.

5. Documentation and Credit

Documentation and standards



Documentation – importance of standards

- ◆ Most derivatives contracts have standardized features regarding pricing conventions and settlement
- ◆ Protect both parties in the transaction while maintaining uniformity among portfolio of positions
- ◆ International Swaps and Derivatives Association (ISDA) maintains and refines industry standards
 - Index definition
 - Settlement calculations
 - Credit terms
 - Payment instructions

Credit considerations

- ◆ Bilateral transactions involve credit exposure
- ◆ All dealers and most large institutional users of bilateral derivatives maintain a credit evaluation capability to monitor their counterparties
- ◆ Credit exposure managed primarily via stated credit thresholds either in confirmations or in ISDA Credit Support Annexes
- ◆ Cash or securities can be used to guaranty performance on derivative settlement
- ◆ Other clauses may allow parties to close out of transactions if sufficient evidence exists that a counterparty may default

6. Framework

Identify, Analyze and Quantify All Risks

Identify all energy-related risks including market, liquidity, operational, credit and regulatory risks. Once all risks are identified, they can be analyzed, categorized and prioritized. Many risks can be rigorously analyzed via quantitative and statistical analysis, while some risks have to be evaluated through a qualitative approach. Risks that are not properly identified and analyzed cannot be effectively managed or mitigated.

Determine Tolerance for Risk and Develop Hedging & Risk Management Policy

All risks should be addressed through a process that establishes risk management goals and objectives as well as risk tolerance. An energy risk management policy can then be developed to formalize the goals, objectives and risk tolerance, and to clearly define the decision-making process and determine who (individuals and/or committees) executes hedging, trading and related activities.

Develop Hedging Plans and Execution Strategies

All potential execution strategies should be approved and documented. While the energy risk management policy addresses the pre-approved boundaries for managing risk, hedging and execution strategies are the detailed steps for implementing the strategies and complying with hedging and risk management policy.

Implementation

Risk management policies need to be supported by controls and procedures that ensure hedging and trading activities receive an appropriate level of oversight, such as the execution and reporting of trades. Controls and formal procedures can provide transparency that show how risks are being managed, on both a macro and micro level. The controls and procedures can include everything from written procedures to separating front, mid and back office activities to utilizing an energy trading and risk management software system.

Execution of Hedging Strategies

Once the previous steps are in place, the execution of hedging and trading strategies can begin. For most companies, execution and management of hedges should be a dynamic process, as opposed to a static process. As such, hedges should be constantly analyzed and if fits within the company's goals and risk management policy, the positions should be optimized if and/or when market conditions allow.

Monitoring, Analyzing and Reporting Risk

All risks, regardless of whether they are market, liquidity, operational, credit or regulatory, that are being actively managed should be continuously monitored, measured and reported through the company's energy risk management structure. As the company's risk exposure changes, there should be a systematic process for reporting and determining if the hedging policies or strategies need to change or if the existing policy and strategies are correct.

Repeat

While we've only identified six formal steps in the process, the "last" step is the most important: repeating the entire process as often as is necessary, regardless of whether it's as frequent as once a week or as infrequent as annually. While the formal hedging and risk management policy may only be materially changed on a rare occasion, the other six steps should be a constant, circular process, even if said process moves at the speed of a sloth.

Disclaimer

Note: These forecasts/data/analysis are based upon a number of estimates and assumptions. Actual results may vary significantly. No assurance or guarantee is made that these forecasts will be achieved.

Please be advised that the analysis, examples and prices provided above are for illustrative purposes only. Although the information has been compiled by Koch from sources believed to be reliable, these financial forecasts are based upon a number of estimates and assumptions that are subject to significant business, economic, regulatory and competitive uncertainties. Forecasts are inherently subjective and speculative, and actual results and subsequent forecasts may vary significantly from these forecasts. Koch makes no representation, warranty or guarantee as to, and shall not be responsible for the accuracy or completeness of, this information and has no obligation to update any information provided to you. Koch shall not be liable to recipient or any third party for its use of or reliance on the information contained herein. Koch is not acting as your agent or advisor and you are encouraged to seek independent advice, as necessary, prior to entering into any transaction. This information may not be reproduced, distributed or published by any recipient for any purpose.