Progressive Energy Finance Analytics

Markets, Instruments & Risk Management

Introduction

Executives in the energy business need to be aware of the tremendous volatility of the world energy markets and know how to mitigate the financial risks associated with fluctuating energy prices.

Three aspects of finance are covered in this training course on Advanced Energy Finance Analytics: pricing, asset valuation, and risk management. The goal is to provide participants with a thorough grasp of energy finance. Your understanding of the energy markets will improve after taking this training course, which will also show you how to model and anticipate energy and forward/futures prices.

Through this training course, participants will get an understanding of energy-related derivatives, including the various derivative products and how to use them to create risk management and hedging strategies in the energy markets.

Through this Course N Carry Advanced Energy Finance Analytics training course, participants will gain knowledge of asset valuation, pricing, risk management, and derivatives in the energy markets.

- Acquire the skill of analysing and projecting energy prices using financial models; project prices beyond the liquidity tenor
- Recognise the risks and rewards associated with energy commodity futures and options contracts.
- Control and minimise the energy risk exposure of your company.
- Acquire the knowledge to compute and evaluate energy price volatility.
- Use information from futures and option markets to determine the best production choices and apply real options theory to the valuation of energy assets. ideal conditions for extraction, ideal rate of oil (or gas) extraction from a field; pipelines and storage facilities, power plants, and value oil fields

Objectives

The goals of this Advanced Energy Finance Analytics training programme are to familiarise participants with the fundamentals of energy trading, the mechanisms underlying price formation in the oil and gas sector, and the ways in which energy companies manage their exposure to business risk, particularly price risk.

- Overview of Trading in General (tools, terminology, etc.)
- An Overview of the Energy Markets
- Basics of Risk Management: Goals and Resources
- Appropriate Use of Derivatives in Risk Management for Businesses
- Exchange and OTC Market Distinctions

Training Methodology

Four different approaches will be used to provide this training course:

- Notes presented clearly and with the necessary supporting analytics
- A thorough explanation of the pertinent empirical patterns and stylized facts pertaining to the energy markets
- Three case studies that serve as examples of how risk-management and valuation techniques are used are presented.
- Relevant problem-sets are woven throughout the lectures to provide attendees a chance to put the concepts into practice and see how they are put into practice.

Organizational impacts

The purpose of this executive training programme on Advanced Energy Finance Analytics is to provide participants knowledge about asset assessment, pricing, risk management, and derivatives in the energy markets.

- Analyse and project energy prices using financial models; project prices beyond the liquidity tenor
- Recognise the risks and rewards associated with energy commodity futures and options contracts.
- Control and minimise their companies' exposure to energy risk
- Determine and quantify the energy price volatility.
- Utilise option valuation strategies in the energy sector.
- Utilise structured products to increase company value; comprehend unusual structures specific to oil (e.g., average option) and gas and power (e.g., swing options, weather derivatives); and grasp and use derivative products to reduce the risk associated with energy prices.
- Use information from futures and option markets to determine the best production choices and apply real options theory to the valuation of energy assets. ideal conditions for extraction, ideal rate of oil (or gas) extraction from a field; pipelines and storage facilities, power plants, and value oil fields
- Value-at-Risk in the Energy Sector

Personal Imapct

Among the abilities learned in this training programme are:

- Recognising the common terms used in the field
- Knowing how the price of petrol and oil is formed
- Recognising the connections between the financial and physical oil and gas markets
- Recognising the financial markets' function as effective informational and risk assessors
- Recognising the value and function of swap agreements and futures contracts
- Recognising the fundamentals of hedging, use, and option and derivative-claim value
- Recognising OTC derivatives' structure, reverse engineering, and value

Who should attend?

The Course N Carry Advanced Energy Finance Analytics training course is intended for individuals who work in positions related to financial analysis, risk management, trading, valuation, marketing, or quantitative analysis in the oil and gas exploration, production, and distribution sectors; investment and commercial banking, consulting, and financial services firms operating in the energy sector; and corporations outside the energy sector that have a significant cost exposure to energy prices, such as

These people's job titles are as follows:

- Analysts of Finance
- Researchers or Analysts of Quantitative Data
- Traders of energy who deal in commodities
- Risk administrators who work with commodities
- Investment and commercial bankers who work with commodities
- Consultants working in the commodities sector
- Government and regulatory representatives, particularly those in charge of the energy sector

Course Outline

Day 1

The Current Commodity and Equity Market Situation: The "Message from Markets"

- Assessing Anxiety and Uncertainty in the Equity and Commodity Markets
- The Markets for Crude Oil
- Level and Slope of Futures Markets for Crude Oil
- Effects of Financial, Economic, and Geopolitical Events on the Crude Oil Market's Implied Volatilities
- Seasonality's Effect on Global Natural Gas Markets
- Rates of Future Inflation
- Calculating Future Rates of Inflation
- Energy Costs and the Pressure to Inflate
- Retail Gasoline Prices and the Refining Spread
- The Seasonality Effect on the Domestic Natural Gas Market

- The Futures Contracts for March and April of 2007

Day 2

A Synopsis of Risk Management

- Essentials of Futures and Forwards Contracts: Definition, Payoff Schematic, Arbitrage Pricing
- Future/Forecast Prices and Projected Prices
- Risk-Reduction from an Organisational Angle
- Exchanges of Commodities

Day 3

Pricing of Options

- Rewards and Put-Call Equilibrium
- Black-Scholes Equation
- The "Greeks," or option "Sensitivities," are delta and gamma
- The Binomial Model and the American-Style Option Valuation
- Actual Options in Energy Markets: Oil Fields as the Assessment of an Extraction Option; Power Plants as a Strip of Spark Spread Options

Day 4

Calculating the Energy Market Price Process

- Term Structure of Volatility (TSOV): Historical Volatility
- Calculating Volatility Using Option Market Prices in Energy Markets
- Implied or Historical Volumes?
- Calculating a Mean-Reverting Method
- Defining the "Surface" of Volatility Over Time and Strike
- Process of Jump-Diffusion
- Energy Finance: The Need for Extrapolation: Assessing Long-Term Real Assets and Financial Structured Products; Projecting Crude-Oil and Natural Gas Prices; Projecting the Term Structure of Volatilities (TSOV); Projecting Correlations
- Credit Value-at-Risk (CVAR) and VAR in the Energy Sector

Day 5

Energy Derivative Products: How to Make Money in the Market by Using Proper Structure, Calibration, Valuation, and Hedging

- Structured Products for Commercial Use
- Organising Derivative Products into the Following Categories: Weather Derivatives, Commodity-Linked Bonds, Average Options, Spread Options, Swing Options, and "Swing" Options
- How to Value and Structure Option Collars
- Organising and Assessing Average (Asian) Investments
- An Illustration of Calibration: Using Vanilla Options to Calculate Volatility Value for Average Options Valuation
- Structured Non-Commercial Products

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