

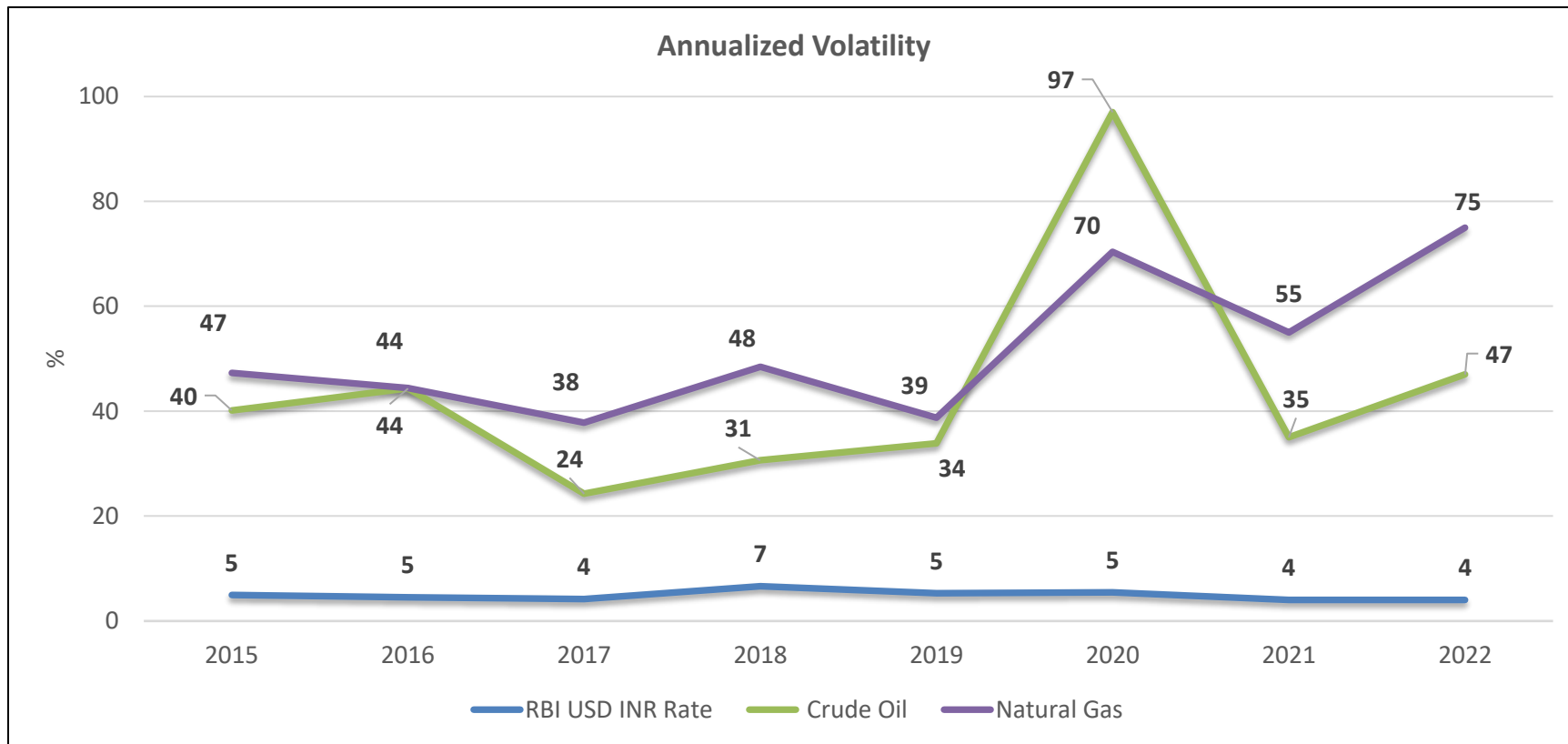
Commodity Market Overview & Energy Price Risk Management

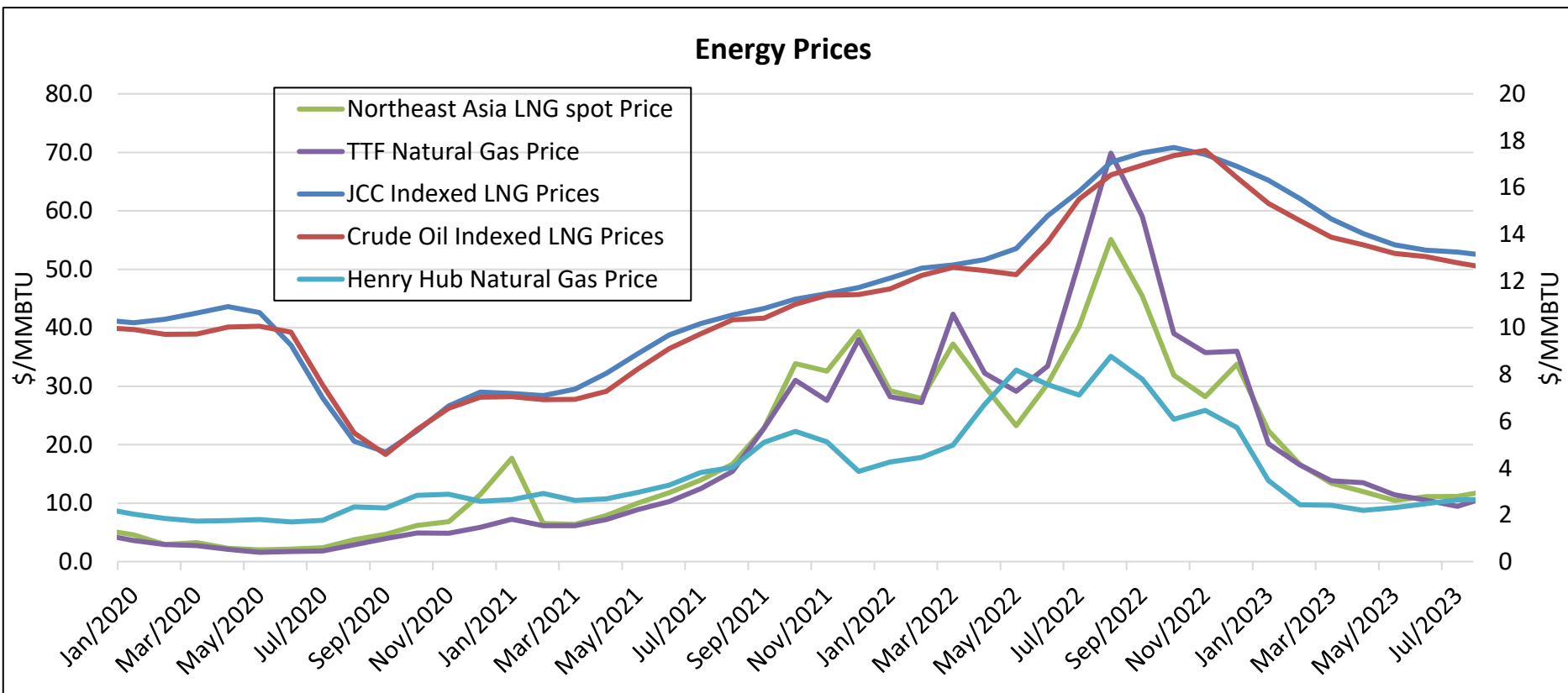


Ruchi Shukla
Head- Products (Energy)
MCX

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- Energy Prices
- Energy Market Fundamentals
- Commodity Derivative Markets - An Overview
- Energy Derivative Contracts
- Energy Price Risk Management
- Hedging Illustrations - Impact on Budgeted Costs & Margins

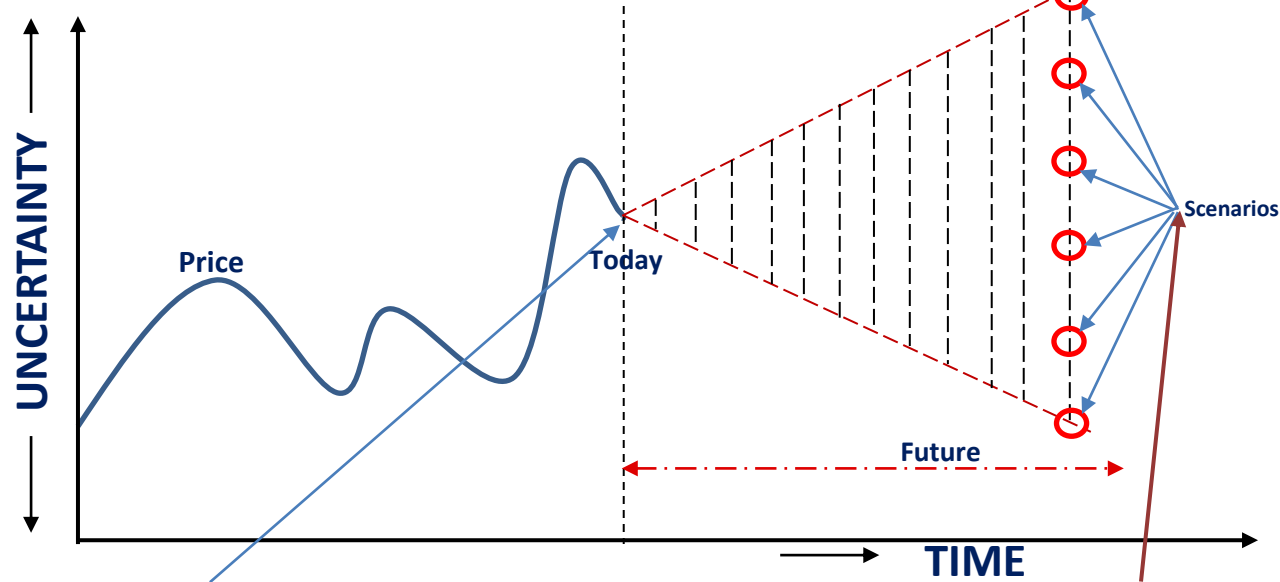




LHS- Northeast Asia LNG Spot price, TTF Natural gas price

RHS- JCC Indexed LNG price, Crude oil indexed LNG prices, Henry Hub Natural gas price

WHAT IS COMMODITY PRICE RISK?



Producer / Manufacturer or any value chain partner / commodity stakeholder at “Today” is not aware what might happen in Future.

There could be favourable / unfavourable scenarios in the time unknown (i.e. Future), hence it is imperative to Hedge “Today” and be locked-in at a desired / current price level.

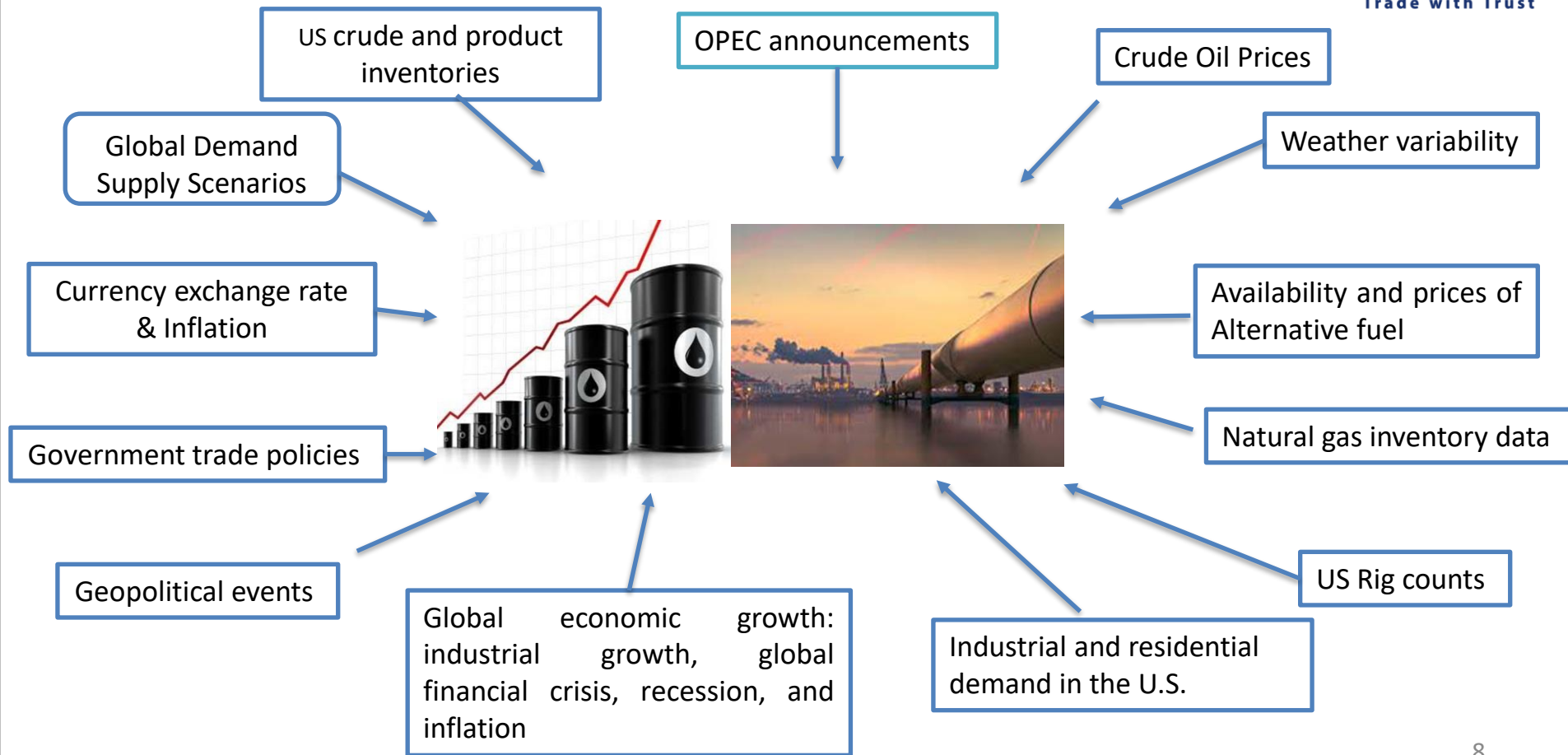
"If we don't hedge jet fuel price risk, we are speculating. It is our fiduciary duty to try and hedge this risk."

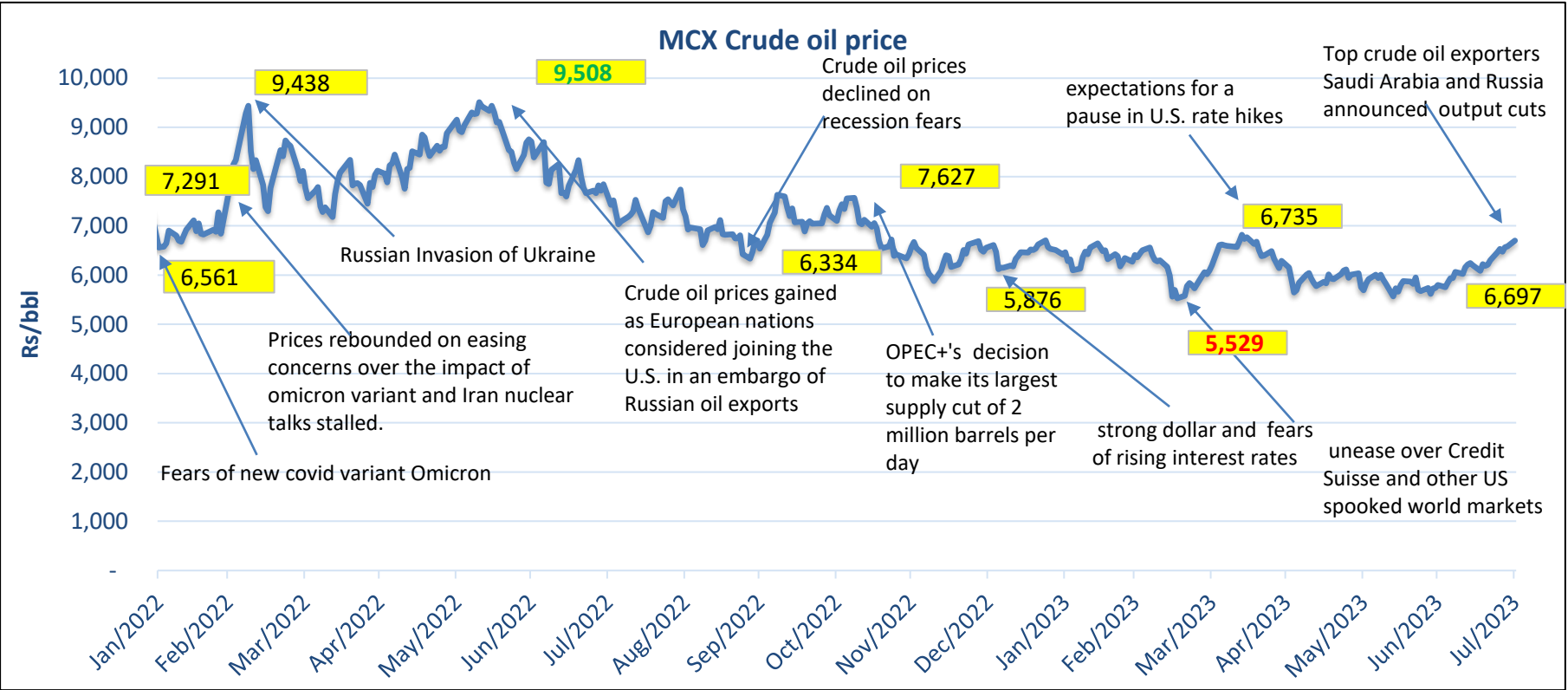
Scott Topping, Director of Corporate Finance for Southwest Airlines

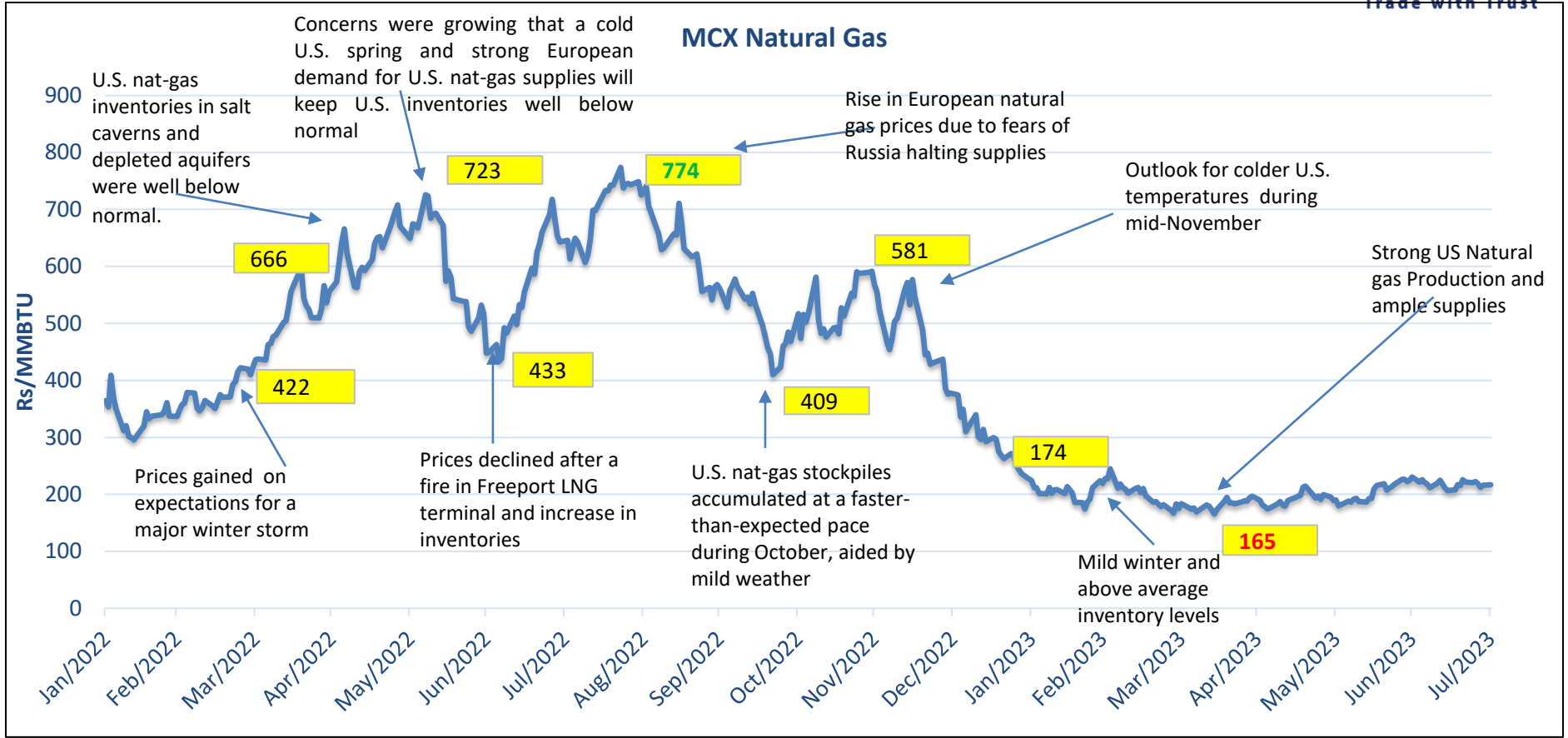
Glass manufacturing companies and their risk exposure to Fuel

Company	Power and Fuel cost (in Rs. Crores) FY 2021-22	Risk Exposure based on Annualized volatility of 40% in fuel prices (in Rs. Crores)
Company 1	466	186
Company 2	48	19
Company 3	47	19

Energy Market Fundamentals







- **Vetropack's** Ukraine glass production plant resulted in a reported loss of \$10.04 million.
- Vetropack' cited the ongoing Ukraine conflict, **increases in energy and production costs**, and sustained high demand for packaging glass as major developments in its financial note.
- Sharp increases in energy and production costs led to major market price adjustments in the packaging glass industry.

Source: Euro Finance



- French glass manufacturer **Duralex** paused production of its La Chapelle-Saint-Mesmin furnace due to high energy costs.
- Had to keep furnace on standby from November 1, 2022 for at least four months due to rising energy costs.
- Manufacturing hit by soaring **price of electricity and gas, which are essential for the glass furnace. Since 2021, the price of electricity has increased 22-fold and the price of gas 18-fold.**

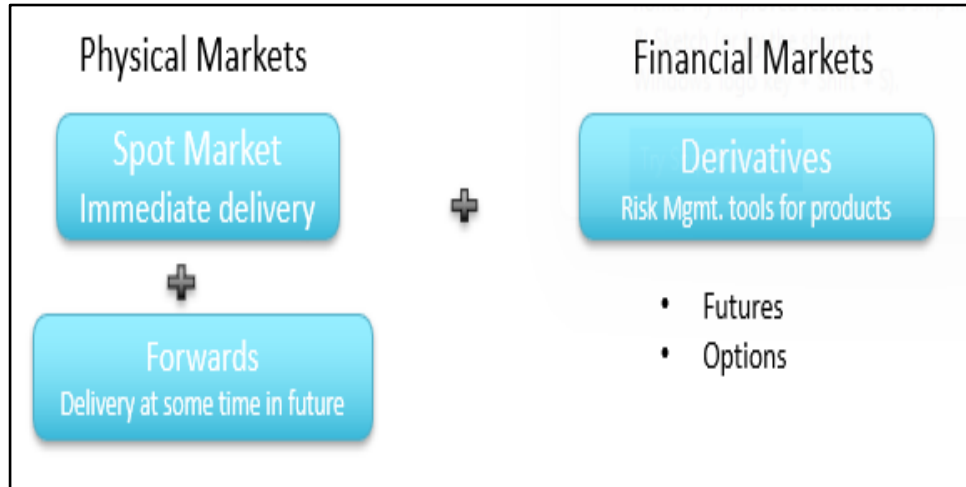
Source: Euro Finance

Saint Gobain hedged around 80% of its natural gas and electricity purchasing needs for 2022 as a whole and around 60% for 2023.

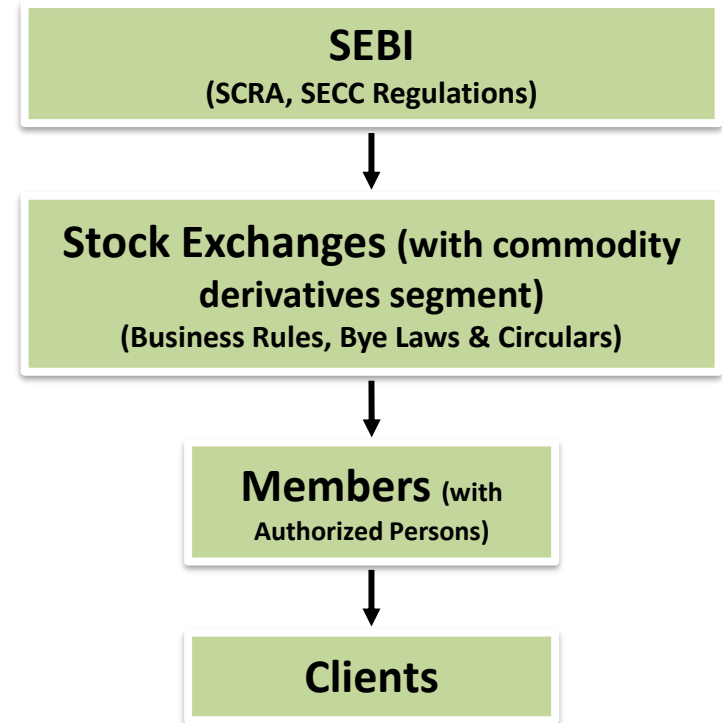
Source: Saint Gobain Press Release

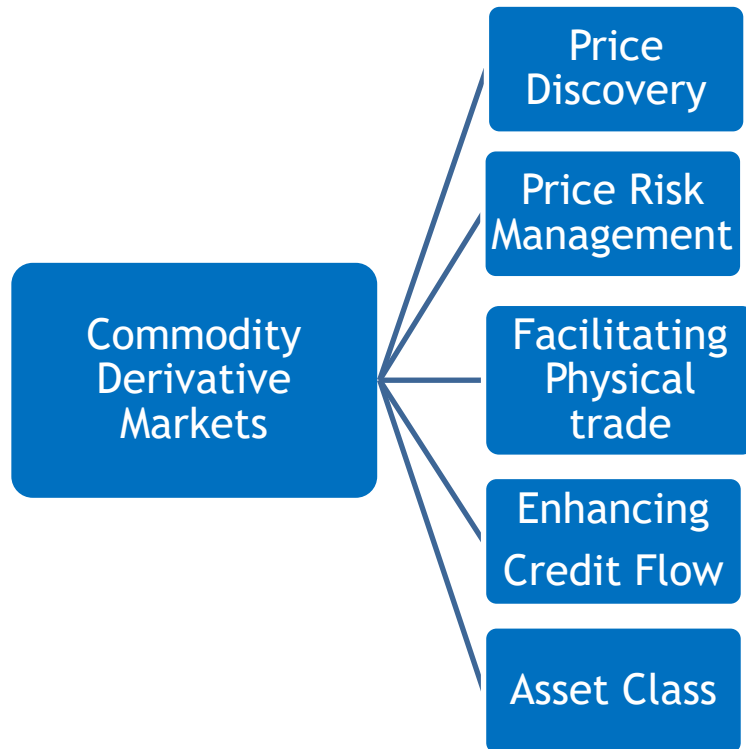
Commodity Derivative Markets - An Overview

COMMODITY MARKET ECOSYSTEM



REGULATORY OVERVIEW





- Standardized contracts traded on recognized exchanges
- Counterparties: holder & exchange
- Contract terms: non-negotiable
- Prices: Publicly available
- Predominantly online markets
- Highly liquid
- Cost: Comparatively much lesser
Average Value Realization is Rs. 222 per crore rupee traded excluding taxes and brokerage

MARGINS AT MCX

- **Initial Margin** - Value At Risk (VaR) based margin across all open positions **SUBJECT** to minimum margin (scaled up by a factor of 3.5 sigma to cover 99.9% confidence level)
- **Extreme Loss Margin** - Levied to cover tail-end scenarios not covered by VaR based margin
- **Additional Margin / Special Margins**
- **Concentration Margin** – Based on Member Level concentration of positions, grossed up at client level

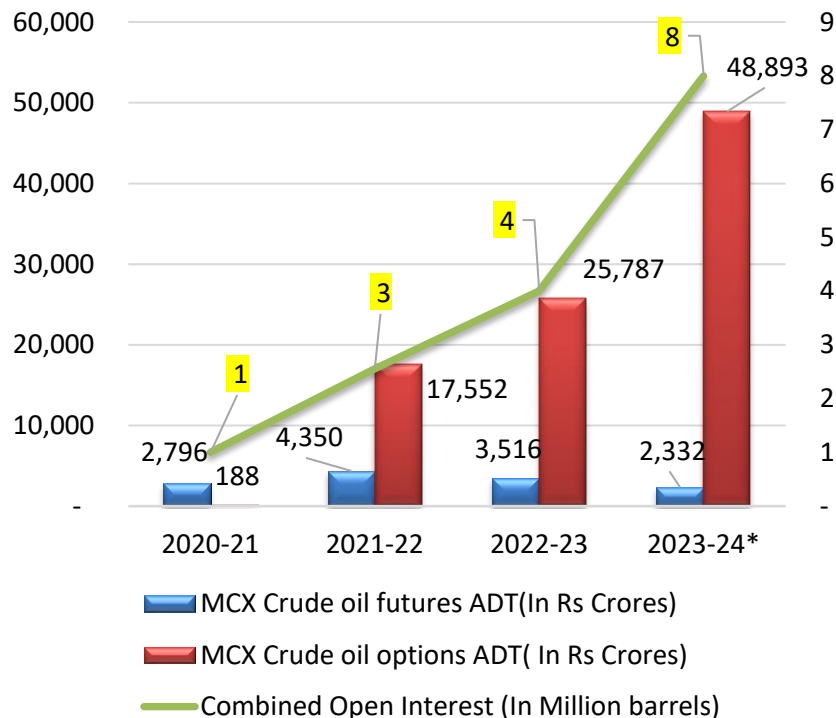
OTHER RISK MITIGATION MEASURES

- **Real time margin utilization & MTM loss monitoring alerts** at 60%, 75%, 90%
- **Risk Reduction Mode (RRM)**
 - Triggered at 90% margin utilization
 - Put in to normal mode with margin utilization at or below 85%
 - Square off mode at 100% margin utilization
- **Online MTM:** Member shifted to square-off mode on 100% utilization
- **Daily Price Limits (DPR)**
- Collaterals accepted - Cash, Cash Equivalent (i.e. Fixed Deposits; maximum equal to cash) & Non Cash Collateral (i.e. G-Sec, Eligible Securities & Warehouse Receipts; maximum equal to cash and cash equivalent)
- Self - Match Prevention Functionality
- System Checks prevent orders from unregistered UCC

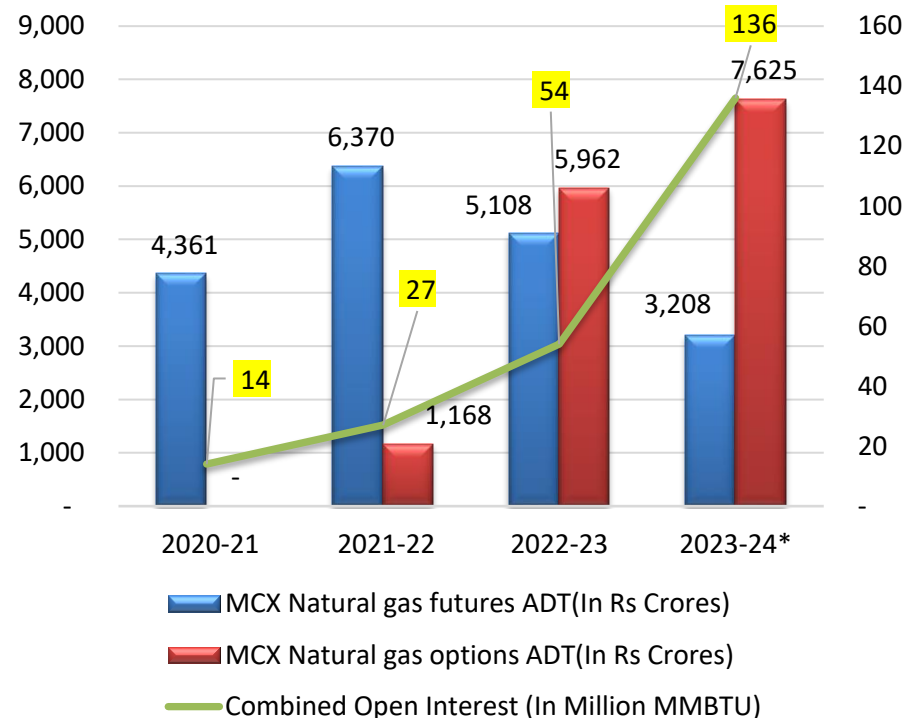
Energy Derivative Contracts

FINANCIAL YEAR-WISE PERFORMANCE OF ENERGY CONTRACTS (FUTURES & OPTIONS)

Average Daily Turnover and Open Interest



Average Daily Turnover and Open Interest

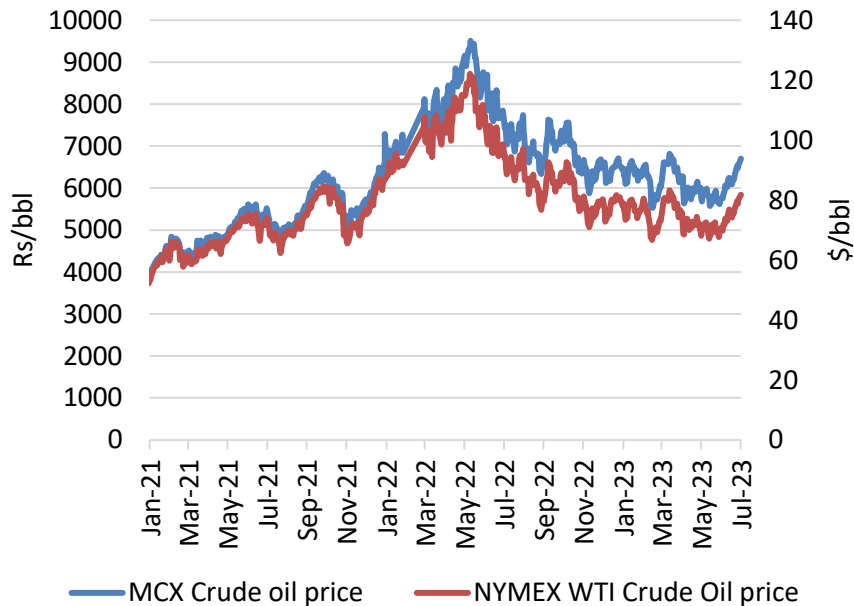


*till July 2023

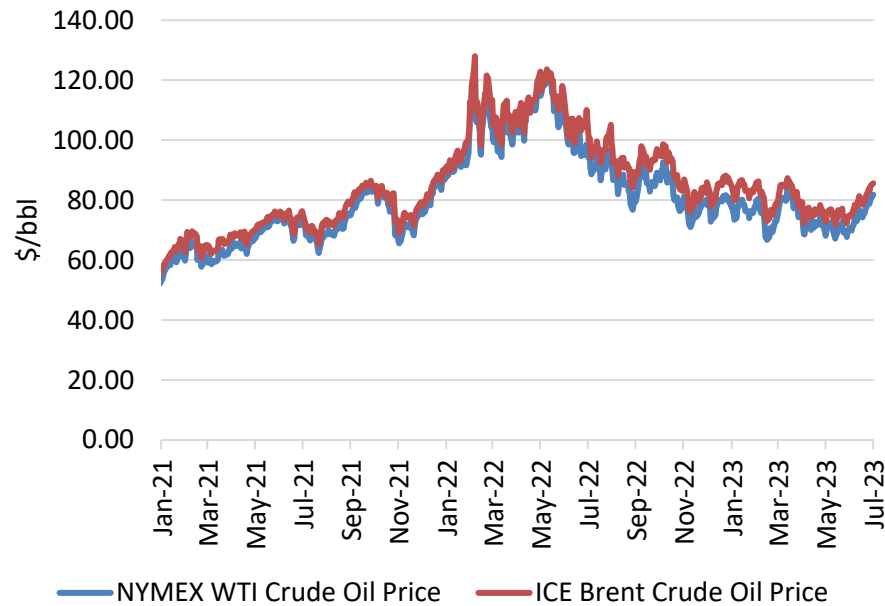
Source: MCX

CRUDE OIL PRICE CORRELATION

Correlation between MCX Crude oil prices and
NYMEX WTI Crude oil price



Correlation between ICE Brent Crude oil and
NYMEX WTI Crude oil price

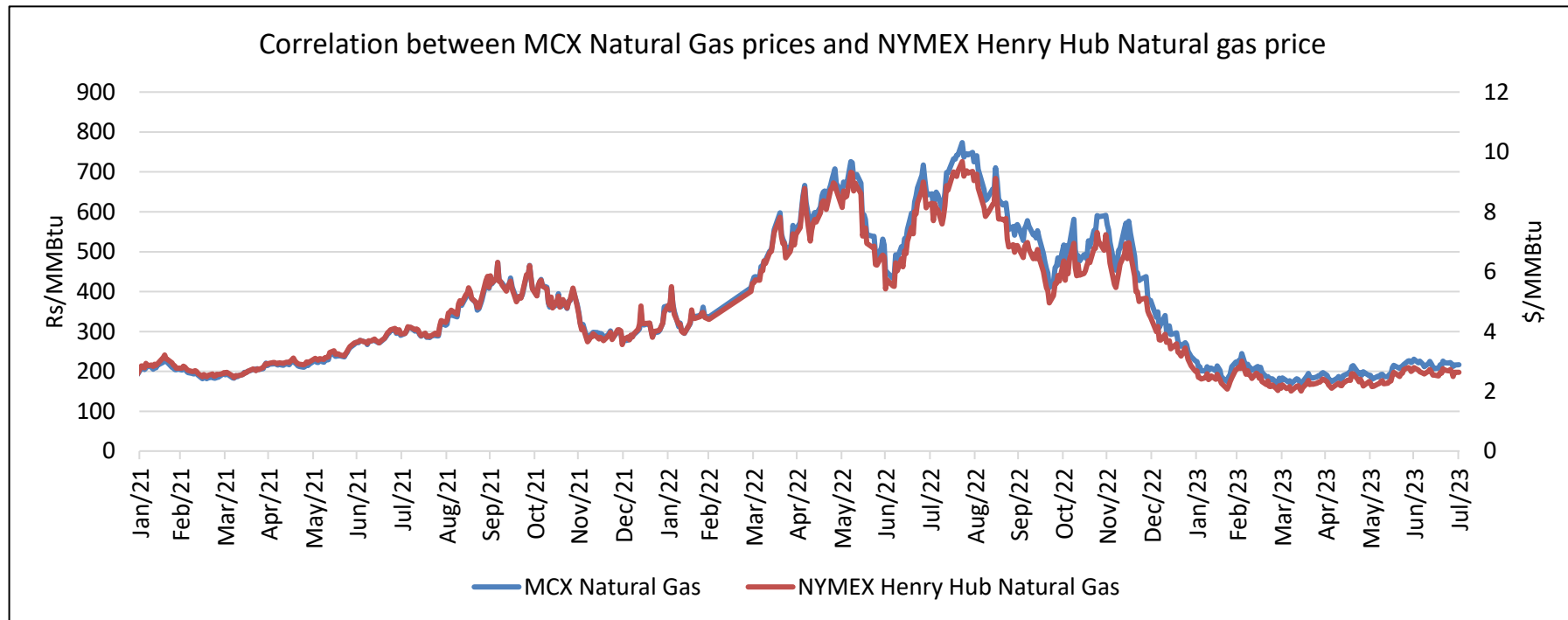


Source: CME & MCX

Correlation between MCX crude oil and NYMEX WTI crude oil is 0.98

Correlation between ICE Brent Crude oil and NYMEX WTI crude oil is 0.98

Source: ICE & MCX



Source: CME & MCX

Correlation between MCX Natural Gas and NYMEX natural gas : 0.99

Parameters	Crude Oil	Crude Oil Mini
Trading Unit	100 Barrels	10 Barrels
Price Quotation	Rs./bbl	
Tick Size	Re. 1	
Price Movement per Tick (in Rs.)	100	10
Initial Margin	Minimum 10% or based on SPAN whichever is higher	
Due Date Rate # A market division of Chicago Mercantile Exchange Inc. ("CME Group")	Due date rate shall be the settlement price, in Indian rupees, of the New York Mercantile Exchange's (NYMEX)# Crude Oil (CL) front month contract on the last trading day of Crude Oil contract. The last available RBI USDINR reference rate will be used for the conversion. The price so arrived will be rounded off to the nearest tick.	Due date rate shall be the settlement price, in Indian rupees, of the New York Mercantile Exchange's (NYMEX)# Crude Oil (CL) front month contract on the last trading day of Crude Oil Mini contract. The last available RBI USDINR reference rate will be used for the conversion. The price so arrived will be rounded off to the nearest tick.

Parameters	Natural Gas	Natural Gas Mini
Trading Unit	1,250 MMBtu	250 MMBtu
Price Quotation	Rs./MMBtu	
Tick Size	10 paisa	
Price Movement per Tick (in Rs.)	125	25
Initial Margin	Minimum 10% or based on SPAN whichever is higher	
Due Date Rate	Due date rate shall be the settlement price, in Indian rupees, of the New York Mercantile Exchange's (NYMEX)# Natural Gas (NG) front month contract on the last trading day of the MCX Natural Gas contract. The last available RBI USDINR reference rate will be used for the conversion. The price so arrived will be rounded off to the nearest tick.	Due date rate shall be the settlement price, in Indian rupees, of the New York Mercantile Exchange's (NYMEX)# Natural Gas (NG) front month contract on the last trading day of the MCX Natural Gas Mini contract. The last available RBI USDINR reference rate will be used for the conversion. The price so arrived will be rounded off to the nearest tick.

A market division of Chicago Mercantile Exchange Inc. ("CME Group")

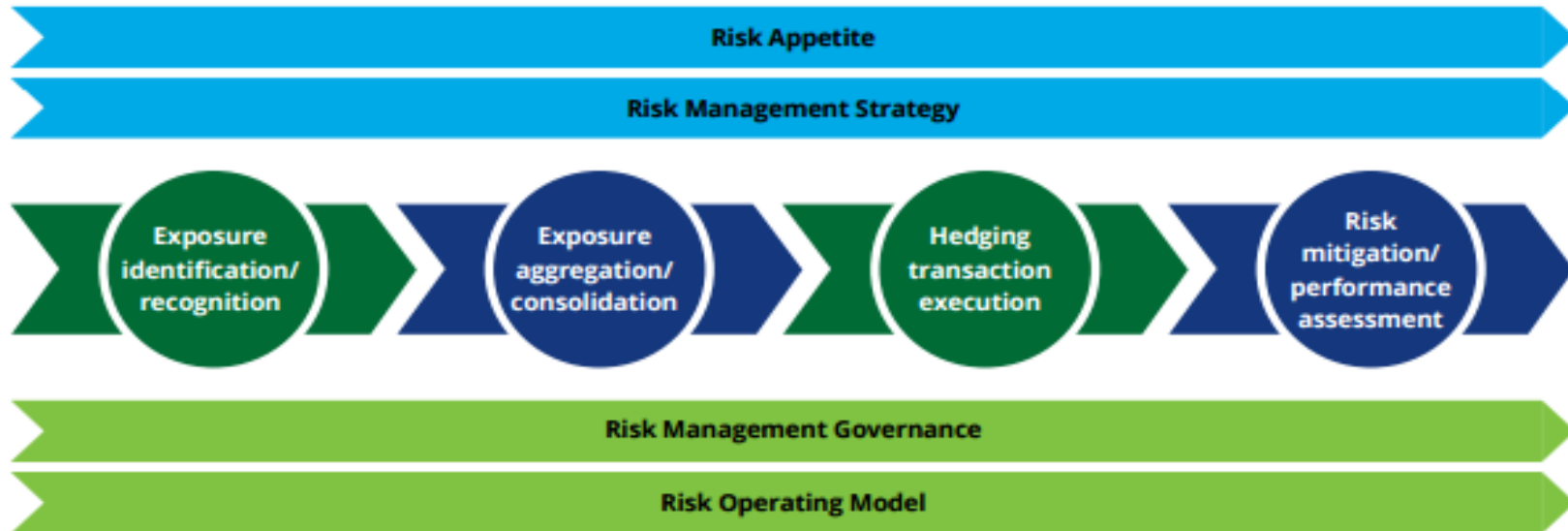
CRUDE OIL & NATURAL GAS OPTIONS CONTRACT SPECIFICATIONS

PARAMETERS	CRUDE OIL - OPTIONS	NATURAL GAS OPTIONS
Trading Unit	1 MCX Crude Oil Futures (100 bbl)	1 MCX Natural Gas Futures (1,250 MMBtu)
Price Quote	Rs / bbl	Rs. / MMBtu
Strikes	25 ITM*, 25 OTM* & 1 ATM * (51 CE & 51 PE)	15 ITM*, 15 OTM* & 1 ATM * (31 CE & 31 PE)
Strike Price Interval	Rs 50	Rs 5
Price Movement per Tick	Rs 0.10	Rs 0.05
Profit & Loss / Tick	Rs 10	Rs 62.5
Settlement Logic	Devolve into MCX Crude oil Futures contract	Devolve into MCX Natural Gas Futures contract
Settlement date	Two business days prior to the Expiry day of the underlying crude oil futures contract	Two business days prior to the Expiry day of the underlying Natural Gas Futures contract

**ITM:In-The-Money, OTM: Out-Of-The-Money, ATM: At-The-Money*

Energy Price Risk Management

Key Components of the Financial Risk Management Lifecycle



- One such step has been **SEBI (Listing Obligations and Disclosure Requirements) Regulations, 2015**, which require the listed companies to disclose the information related to commodity price risk in their Annual Reports, as part of Corporate Governance Report.
- The **Reserve Bank of India** also in its latest issue (December 2022) of its **Financial Stability Report** has, once again, focused on volatile commodity prices as a source of risk in the Indian economy.
- The central bank categorizes this risk in the **'high risk'** category, ranking it the fourth biggest risk (out of 32 identified risks) in the Indian financial system.

Exposure of the listed entity to commodity and commodity risks faced by the entity throughout the year:

- Total exposure of the listed entity to commodities in INR
- Exposure of the listed entity to various commodities:

Commodity Name	Exposure in INR towards the particular commodity	Exposure in Quantity terms towards the particular commodity	% of such exposure hedged through commodity derivatives				
			Domestic market		International market		Total
			OTC	Exchange	OTC	Exchange	

- Commodity risks faced by the listed entity during the year and how they have been managed.

Hedging Illustrations - Impact on budgeted costs & margins

Scenario: Hedging Natural Gas by a Glass Manufacturing Company:

- XYZ Company is involved in manufacturing of Glass Products.
- The company uses natural gas as one of its feedstock to run the furnace, which is a major energy component in glass production.
- The Company has a monthly consumption of 10 Lakh MMBTU of natural gas
- The Company expects natural gas prices to go up and the management has decided that price risk should be managed by taking up derivative position by using Natural Gas Derivative contracts.
- Company calculated the budgeted cost of natural gas based on the spot price as on 1st July 2023 , budgeted cost $(200 \times 10 \text{ lakh MMBtu}) = 20 \text{ Crores}$.
- Anticipating an increase in price , company adopts a hedging strategy, on 1st July 2023 company buys Natural gas Futures and lock in the prices, on 31st July 2023, company square off buy position in natural gas futures and buys natural gas for physical market at the spot Price.

HEDGING EXAMPLE OF A GLASS COMPANY THROUGH NATURAL GAS CONTRACTS (CONTD.)

Glass Manufacturing Company's monthly usage of Natural gas is 10 lakh MMBtu					
Budgeted cost based on the spot price as on 1 st July 2023 , budgeted cost(10 lakh MMBTU*200)= 20 Crore					
Date	Spot Market Price (Rs./MMBtu)	Futures Price (Rs./MMBtu)	Buy Futures	Sell Futures	Spot Market
1 st July 2023	200	199	Buys MCX Natural Gas Futures at Rs. 199/MMBtu		
31 st July 2023	207	208		Sells MCX Natural Gas Futures at Rs. 208/MMBtu	Buy Natural gas from Physical market at Rs. 207/MMBtu Total = 20.7 Crores
Loss incurred due to rise in spot market price from Rs. 200/MMBtu to Rs. 207/MMBtu (10 Lakh MMBtu*200) - (10 Lakh MMBtu*207)= (-)0.70 Crores					
Profit from Hedging= (+)0.90 Crores					
Net Position = (+)0.20 Crores					

- Choose the Member Broker
- Fulfill KYC at Broker level
- Provide initial margin
 - Update yourself on Mark-to-Margin requirements
- Know Exchange rules, regulations and byelaws
- Select the commodity/ product to trade
- Read the Dos and Don'ts
- Know and distinguish among:
 - Brokerage and Transaction Charges
 - Margins, Taxation and Stamp Duty
 - Default Penalties and Arbitration

DO's

- Trade only through **Registered Members** of the Exchange - *visit **Exchange website** to check if the member is registered with Exchange*
- Fill standard '**Know Your Client**' (KYC) form before you commence trading
- **Update your mobile number and/or email id** with your broker & insist your broker to upload the same in the exchange's UCC database.
- Insist on getting a **Unique Client Code (UCC)** and ensure all your trades are done in UCC
- Insist on reading the standard '**Risk Disclosure Document (RDD)**' & '**Rights & Obligation of Investor**'

DON'TS

- Do not be influenced by indicative returns or promises made
- Do not get carried away by luring advertisements, rumors, hot tips
- Do not make payments in cash/take any cash towards margins and settlement
- Do not sign blank DPs while furnishing securities deposits
- Do not pay brokerage in excess of the rates prescribed by the Exchange

WHO IS A RESPONSIBLE INVESTOR..???

- Tracks the physical market
- Tracks the economy – global and local
- Knows his financial limits and risk profile
- Doesn't bet on the market but takes informed decisions
- Doesn't (over-trade) try to recoup losses, it might lead to more losses
- Continuously track his/her positions

THANK YOU

*Let's Manage Our Risks
&
Live Life On The Hedge!*