Introducing Exchange-Traded Instruments

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Agenda

Introduction to exchanges

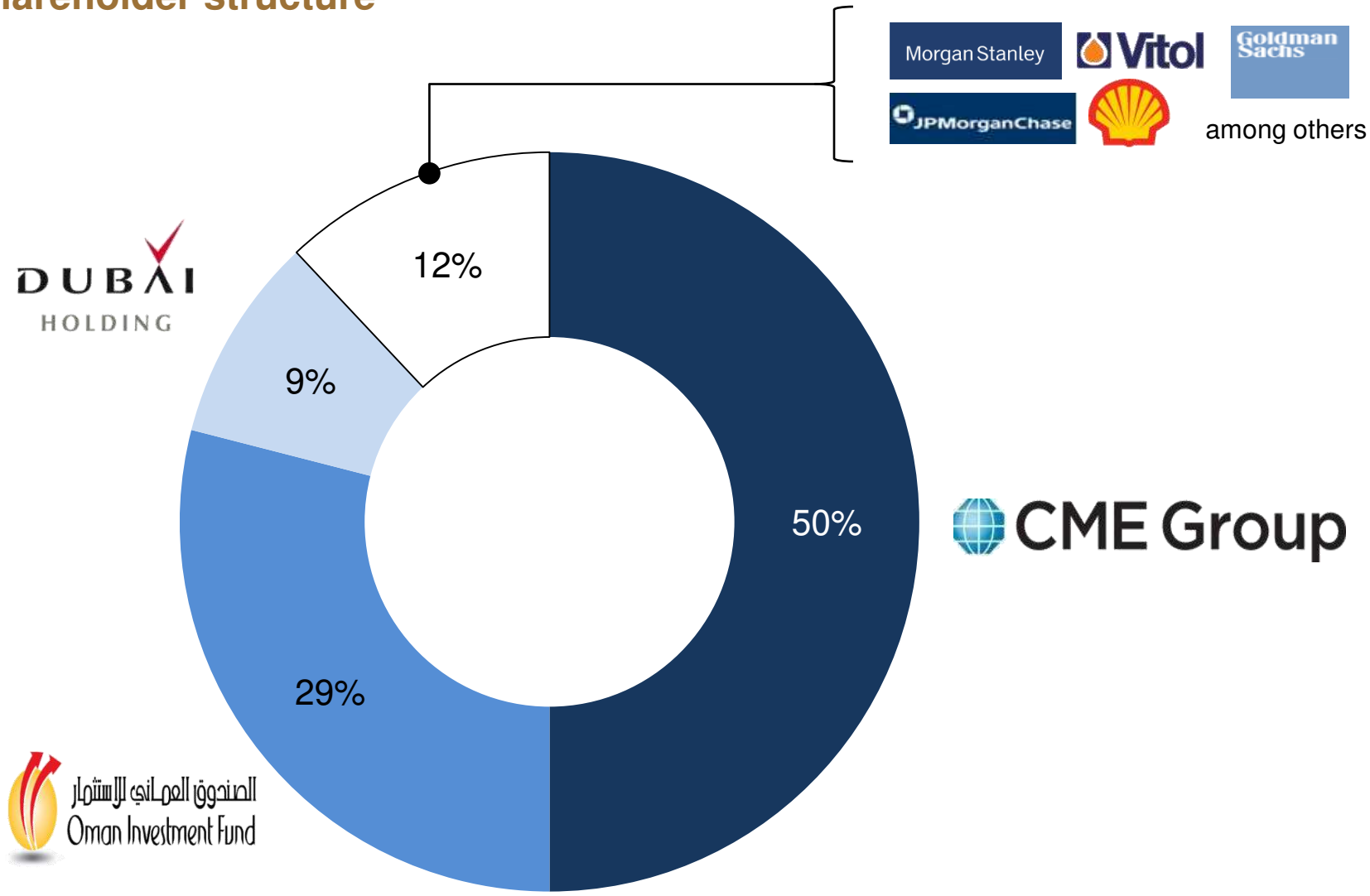
Different hedging tools: Futures vs OTC

Mechanics of Clearing

Conclusion: advice on starting a hedging programme

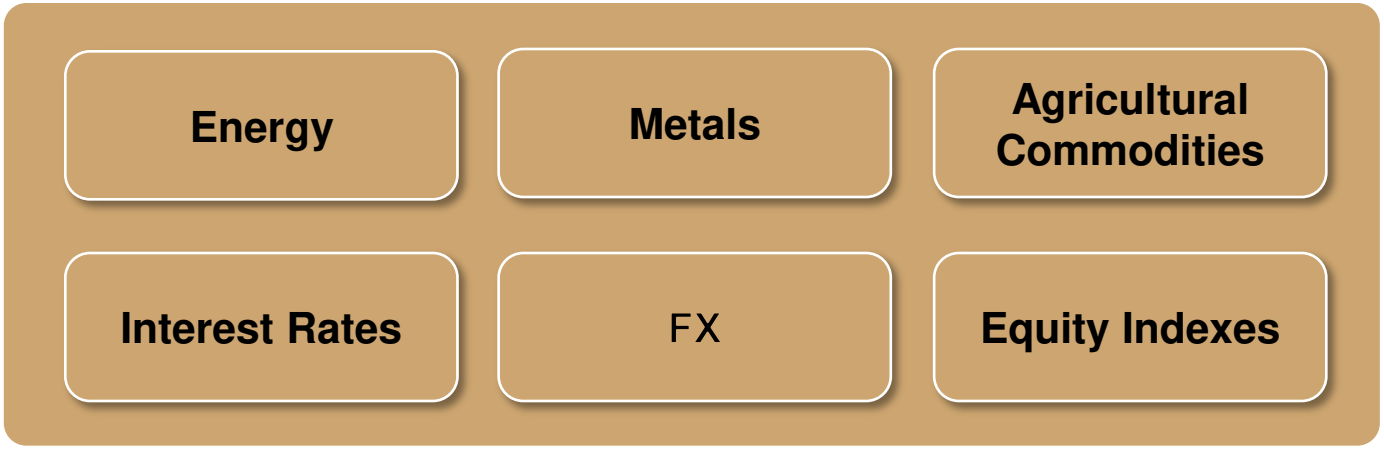
Introducing DME: the newest global energy exchange

Shareholder structure

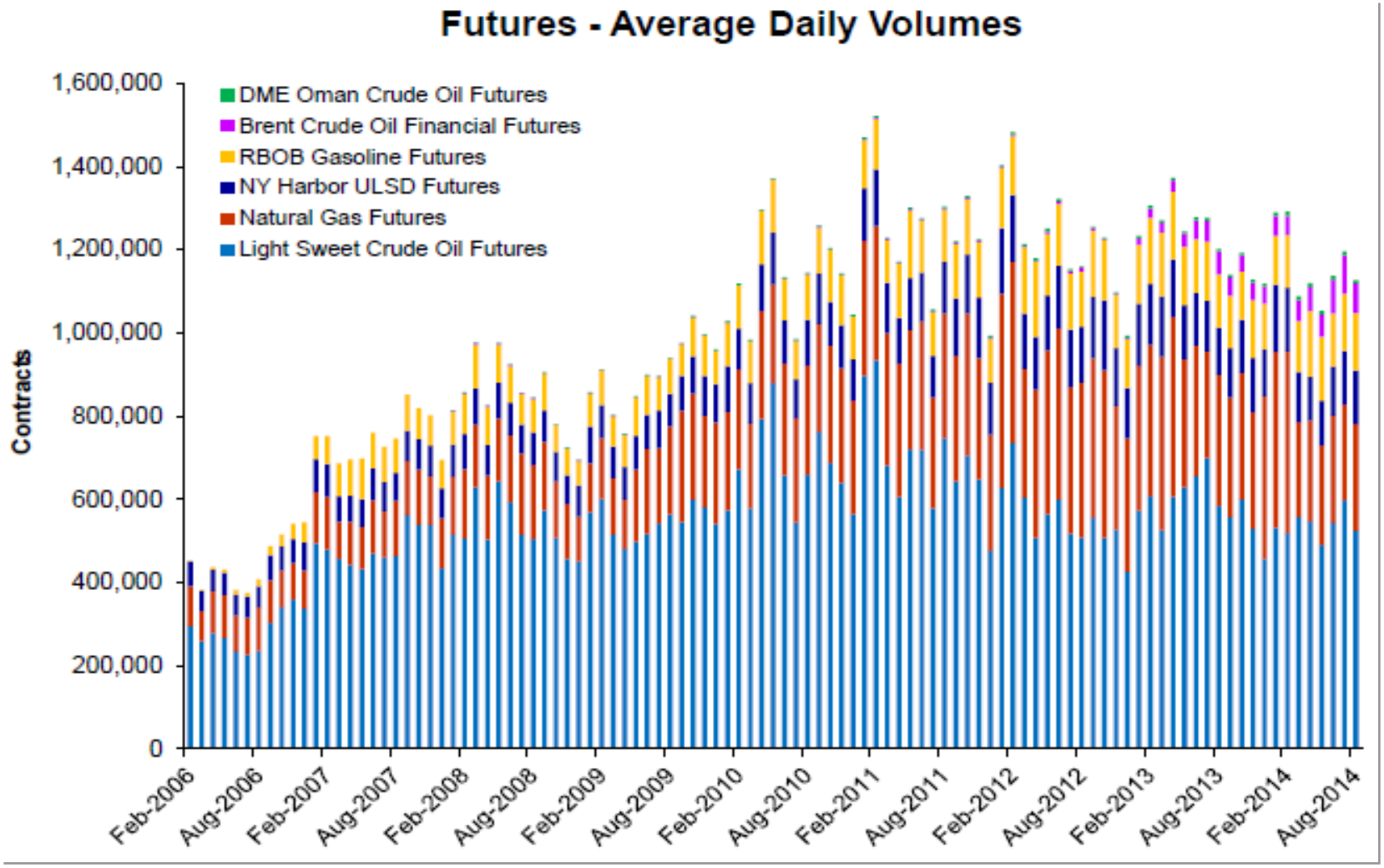


Introduction to our core shareholder, CME Group

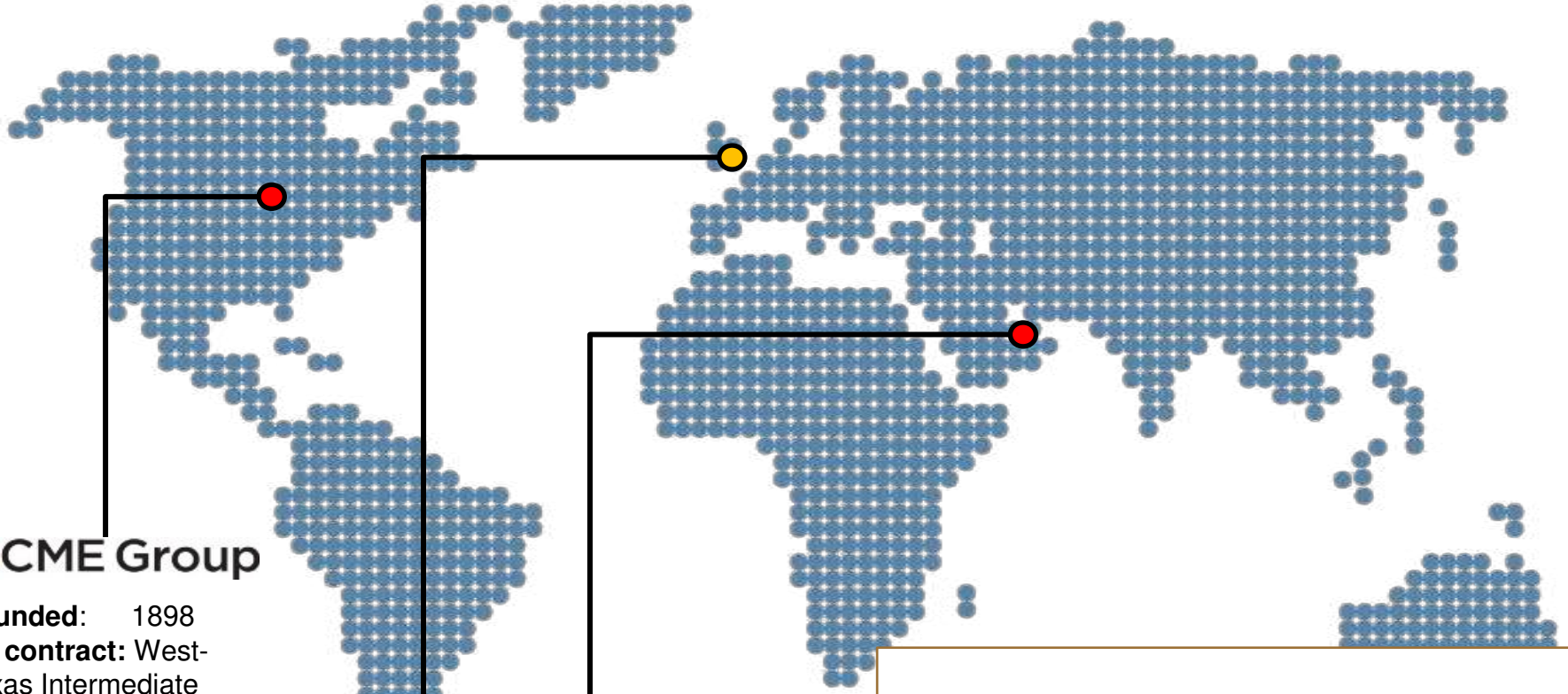
- Largest derivatives exchange in the world.
- Built on the heritage of CME, CBOT , KBOT, NYMEX, GreenX and COMEX.
- CME's Energy business is inherited from NYMEX, which was acquired by CME in 2008 and includes OTC clearing through ClearPort
- The major Nymex products are WTI (CL), Nymex Brent (BZ), Diesel (HO) also known as New York Ultra Low Sulfur Diesel (ULSD), Gasoline (RB), Natural Gas (NG) also known as Henry Hub
- CME Group covers all major asset classes:



The core energy futures contracts on CME & DME



There are three main international energy exchanges



CME Group

Founded: 1898
Oil contract: West-Texas Intermediate (launched 1982)

ICE

Founded: 2000
Oil contract: Brent (launched 1986)

DME

Founded: 2006
Oil contract: DME Oman (launched 2007)

- For the purposes of this presentation, we will focus on hedging on exchanges outside of India
- There are also a number of other international exchanges listing energy futures products but they are unlikely to be used by Indian energy hedgers

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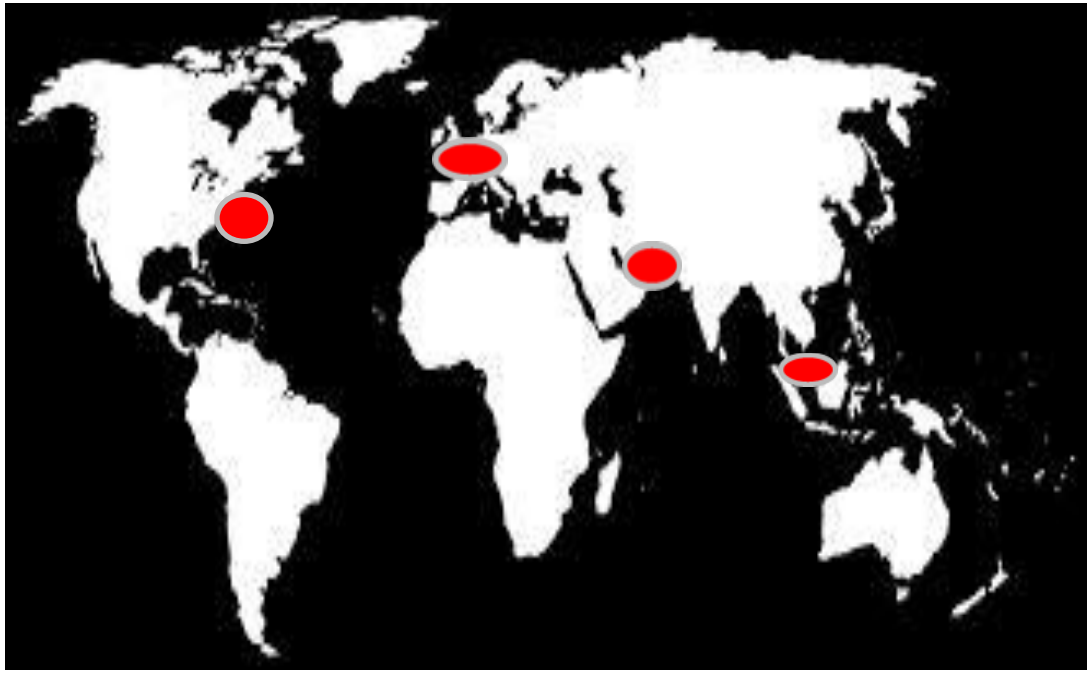
Where can Indian companies go to hedge?

- Key energy hedging markets are the US East Coast; northern Europe (Rotterdam/London); Dubai and Singapore



- There are a dozen traditional futures contracts but there are hundreds of smaller contracts available via brokers

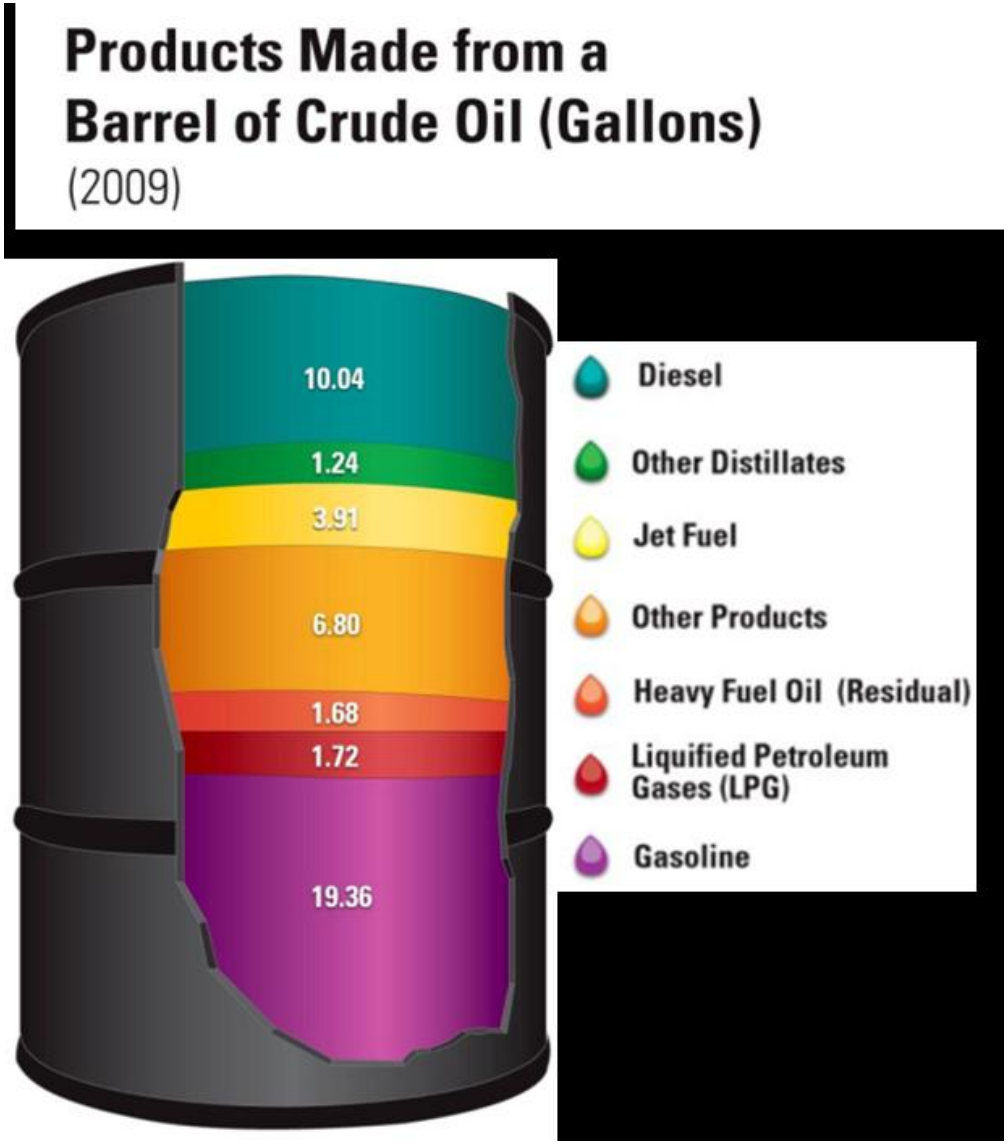
<u>Key decision is accuracy of hedge versus market liquidity</u>

Hedging crude oil prices: use WTI, DME Oman and Brent

Hedging refined product prices with traditional futures: use RBOB, ULSD, Gas oil

Hedging refined products with OTC products: use the brokered markets in Singapore or London/Rotterdam

There is no perfect hedge!



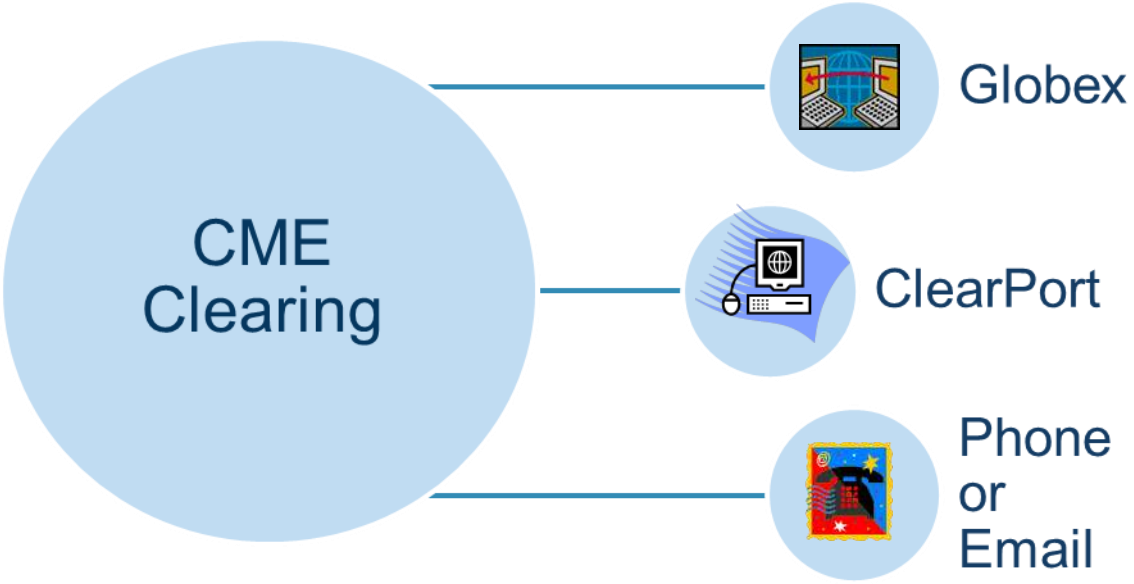
- **Diesel** – can be hedged in USLD or Gasoil futures or in regional brokered swap future markets
- **Jet fuel/kerosene** can be hedged using USLD or Gasoil futures or in regional jet swap future markets
- **Heavy Fuel Oil** – there are no futures markets so can only be hedged in brokered Singapore or Rotterdam swap futures markets
- **LPG** – no futures market so can only be hedged in regional swap futures markets
- **Gasoline** – can be hedged with RBOB futures or in regional swap futures markets

Exchanges versus OTC

- The OTC regional energy swaps futures markets typically trade through brokers whereas traditional futures trade onscreen
- The OTC regional energy swaps futures markets settle against the assessments made by price reporting agencies (Platts, Argus, ICIS) whereas traditional futures like WTI and DME Oman are physically settled
- Price discovery on a futures exchange is regulated whereas price reporting agency assessments are unregulated
- Traditional futures tend to have much higher liquidity but are more standardized; OTC regional energy swaps futures markets tend to have lower volumes but can provide a very specific hedge
- Transaction costs are typically higher for OTC regional energy swaps futures markets than for traditional futures
- Cleared OTC regional energy swaps futures markets have the same guarantees in terms of margin protection and counterparty credit mitigation as traditional futures

Using Clearing to ensure the safety of a brokered regional energy swaps trade

- There are many paths to Clearing
- Traditional energy futures like WTI and DME Oman clear automatically
- Regional derivatives markets, such as those based on Platts, can also be cleared
- Trades are given up for Clearing via ClearPort by the customer or the broker



What is ClearPort?

A comprehensive set of flexible clearing services for the global OTC market:

- To substantially mitigate your counterparty risk
- To provide neutral daily settlement valuations
- To access the advantages of clearing (security, efficiency and liquidity) while still providing the flexibility of trading off-exchange, through brokers or bilaterally.

CME ClearPort provides clearing services across multiple asset classes:

- Launched in 2002 to provide centralized clearing for natural gas
- Since then, product breadth and liquidity has grown to cover all major global Energy products and other CME asset classes.

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Benefits of Clearing

Expand liquidity

- Increase volume with existing accounts by freeing up credit lines
- Dealer access to new counterparties previously unattainable for legal or credit reasons

Mitigate counterparty risk

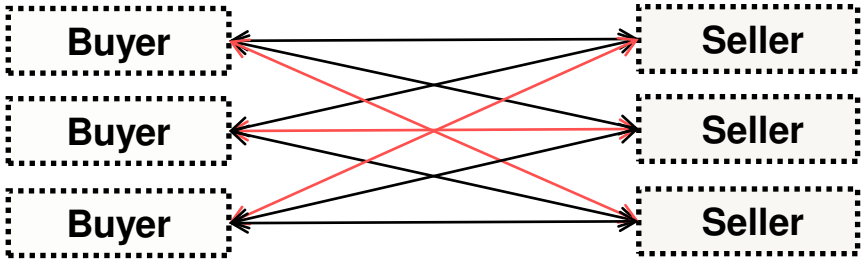
- CCP acts as the central counterparty to all transactions

Reduce operational costs

- Balance Sheet Efficiencies - Exchange-style multilateral offsets of positions dramatically reduce the need to allocate balance sheet to cover bi-lateral counterparty limits
- Margin in a single place (with the Clearing House) rather than a number of margin payments to different suppliers

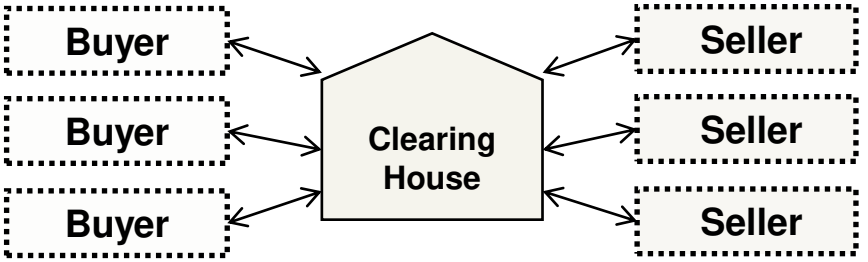
OTC Market vs. Central Counterparty Clearing

Bilateral Market without Central Clearing Counterparty



- Multiple bilateral relationships where buyers and sellers face each other as counterparties
  - Sellers must accept each buyer's credit
  - Buyers send payment directly to each seller
  - Buyers must accept each seller's ability to perform on the contract
- Pricing is differentiated by quality of counterparty
- If either party wants to close out a deal prior to expiry, they must negotiate terms

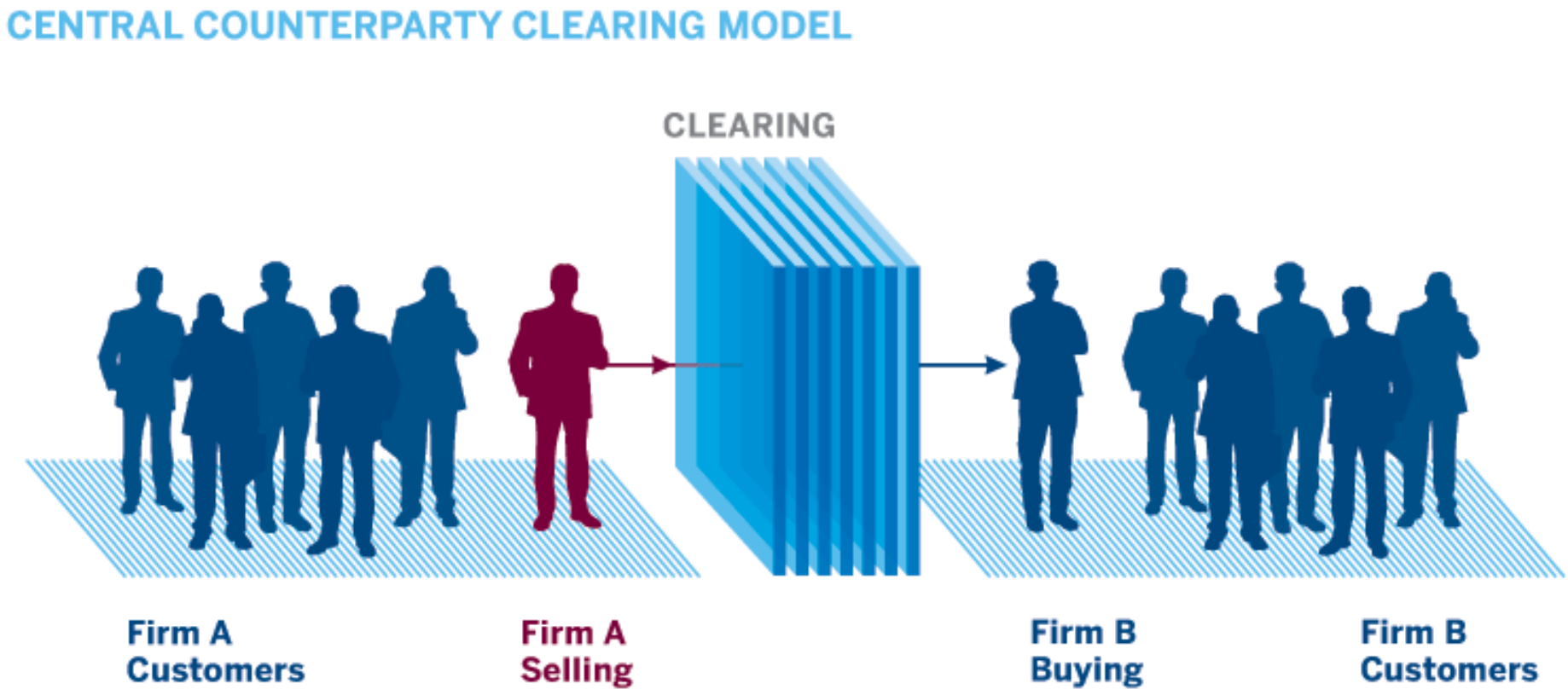
Market with a Central Clearing Counterparty



- Clearing house faces each counterparty directly, becoming the seller to the buyer and buyer to the seller through novation
- Buyer and seller are guaranteed performance by CME Clearing
- Buyer and seller no longer have credit exposure to one another
- Parties closeout transactions with whomever provides the best price

The role of a Clearing House

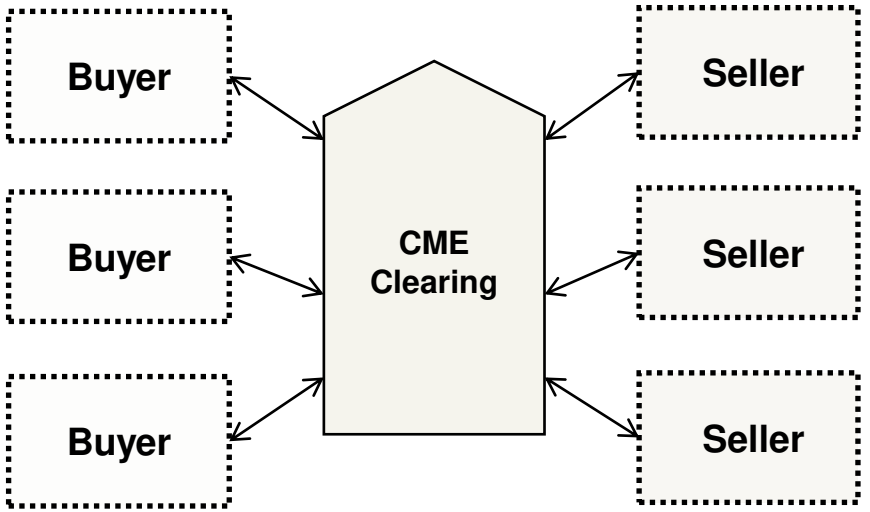
- Clearing removes the risk of counterparty default as the Clearing House becomes buyer to every seller and seller to every buyer
- Clearing ensures that Company A can trade with any other cleared counterpart without needing an ISDA agreement



Central Counter-Party Risk Management

- Information available to CCP that allows a comprehensive view of customer portfolios across all Clearing Members (i.e., improves transparency)
- The CCP monitors both Clearing Members and Customers for risk concerns (e.g., unusual trading, P&L swings, concentration risk, etc.)
- Real-time, 24 hour a day by 6 days a week monitoring of both clearing firm and account level position and exposure levels for all asset classes

CCP Clearing
Risk Management Best Practices



- CCP audits financials of all clearing firms to ensure capital compliance levels
- CCP audits of customer segregation and related requirements to ensure all customer account performance bond requirements are appropriately accounted
- Credit controls that allow clearing firms to limit the OTC positions taken on by any specific account

Clearing Model: Client => Clearing Member => CCP

The basic CCP structure relies on clearing members to directly interface with the central counter-party and further provide access to end clients. Clients are intermediated from the CCP by their clearing members

Clearing House

- Financial safeguards
- Transparent daily margining and settlement
- Real time risk monitoring of all members and accounts

Clearing Member (FCM)

- Collects margin
- Processes mark to market from clients in accordance with CCP Clearing policies & other regulatory requirements
- Customer positions and margin held in separate account from FCM's assets

Energy Company

- Collateral and Positions protected through separate accounts that are separate from FCM assets
- Margins calculated on net portfolio basis

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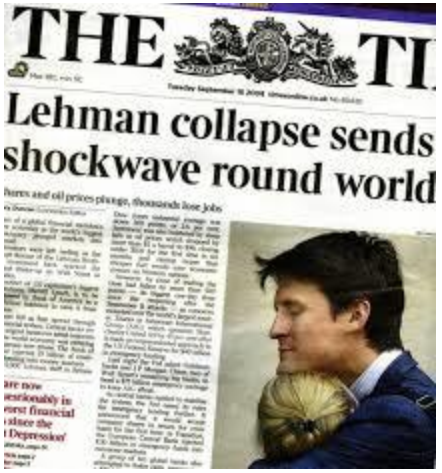
How do hedging programs go wrong?

- Static rather than dynamic hedging
- Hedging using the wrong instruments
- Rogue traders
- Clearing member goes bust
- Market too illiquid for hedges to be successfully unwound
- Lack of management understanding that some hedges may look costly on paper but benefit the physical book
- Hedges become too complex and not fit for purpose
- Traders allot good trades to ‘speculation’ and bad Trades to the hedging book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Lehman collapse sends shockwave round world

Six key questions prior to launch

The first decision needs to be **location** so considerations will include:

- Tax implications
- Ease of funds transfer for margin purposes
- Hedge accounting for gains & losses against physical trades
- Trading infrastructure
- Oversight and control of the trading team
- Relevant operating licences needed for the office

The next decision relates to **staffing** and considerations will include:

- Need to engage a manager who is familiar with hedging programs and will be able to set up the necessary infrastructure for the company
- Considering the hours and overlap of responsibilities, it will be necessary to have at least 2 persons on the team (Head of desk + 1 trader)
- Head of desk will be tasked with designing the trading/hedging program in accordance to company's operations and risk appetite
- He will also be responsible for communications with the physical purchasing / trading teams to ensure proper hedge and risk management

Six key questions prior to launch (2)

The third decision relates to **trading policies and regulation**:

- Trading manual to be compiled by management, trading, risk and operations team
- Trade types – hedge / speculation / inventory / spread
- Trade quota – limits per trader / limits per month
- Trade reporting – flow of daily trade reporting
- Trade matching – process to ensure that trades done by trader is matched with broker statements and open position tallies
- Error trade policies – error correction and reporting

The fourth decision relates to the **opening of accounts and selection of brokers:**

- There needs to be at least 2 clearing accounts – 1 main account and 1 back up
- Determination of which clearing member and which broker to use
- Which products to trade (and on which Exchange)
- Review fees and services provided
- Verify reliability of the clearing member
- Location where margin deposits / funds are parked

Six key questions prior to launch (3)

One more key decision relates to **segregation of responsibilities**:

- Trade, physical, risk and back office operations must be kept separate and have their respective and separate person in charge
- Process to counter check trades by trading team tallies with statements received by risk and back office must be separate and done daily
- Trading accounts and approval of products must be managed by risk team
- Funds for margins must be managed by the back office / finance teams
- Daily trade report must be submitted to management for review
- Paper trades must be considered alongside physical trades in order to determine the overall risk management strategy and effectiveness of the hedge
- Hedge policies and strategies must be reviewed periodically to ensure compliance
- Accounting / Finance department must do independent, periodic checks on the trading accounts and funds used for margin deposit

The final decision relates to policies on **speculation**:

- The paper trading team may have the capability to take speculative positions using physical cargoes as a base. In such cases, the limits and parameters for speculative trades must be clearly and properly defined.

Conclusion

- Hedging using derivatives is a common practice globally and is a key tool in the armoury of any energy business
- There are a variety of hedging instruments available: from the core global futures contracts to very specific OTC contracts
- Exchanges play a key role in aggregating liquidity in a transparent regulated venue
- Clearing removes credit concerns and counterparty risk
- Hedging is not ‘risk free’ and needs to be carefully considered
- There are a number of key questions that firms need to address properly during the set up process
- A professional hedging programme can add tremendous value

Thank you for your attention!

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