COMMODITY HEDGING

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(Reported by Parama Dharmawardene)

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Held at the Peoples Bank Auditorium
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1. NEWS HEADLINES

1.1. IMF's Chief Economist – Simon Johnson

- ``I would emphasize that there are serious risks ahead"
- ``The smoke has not yet cleared from the financial-market turmoil"

1.2. World Economic Outlook

The IMF lowered its projection for the global expansion next year to 4.8 percent from an estimate of 5.2 percent in July. A weaker outlook for the US- forecast to 1.9 percent, from 2.8 percent

1.3. Euro Zone - 13 Nation Outlook

Due to uncertain prospects for domestic demand, the growth estimated for the Euro-Region reduced to 2.1 percent, from 2.5 percent.

1.4. Growth in China

China to expand by 10 percent in 2008, half a percentage point less than the July prediction. The 11.5 percent pace this year made China for the first time the largest contributor to global growth

1.5. India and Russia Growth Potential

Indian GDP will increase by 8.4 percent next year, unchanged from the July projection, after an 8.9 percent expansion in 2007. Russia, propelled by exports of oil, natural gas and other commodities, will grow 6.5 percent in 2008, compared with the previous 6.8 percent estimate and 7 percent this year

2. WHAT IS RISK MANAGEMENT

- Exposure by choice, not by chance
- Risk by choice, not by chance
- Clean bet, not confused bet
- Bet with your head, not over your head
- Manage risk, not eliminate risk
- No risk, no reward

3. MANAGING RISK

- **I**dentify the Risk
- Measure the Risk
- Use appropriate Hedging Instrument

4. PRINCIPLES OF RISK MANAGEMENT

- Identify Risk EXPOSURE
- Decide DESIRABLE level of return; and Acceptable types and levels of risk
- Establish operational arrangement for MONITORING and CONTROLLING risk
- Manage risk/return – TRANSFORMING the risk/return by CREATING acceptable risks

5. TYPES OF HEDGING

- Fixed or Floating Swaps
- Participation Swaps
- Spread Swaps
- Caps
- Floors and Collars
- Hybrid Strategies

6. SPECIFIC TERMS OF OPTION CONTRACTS

- **Call Option** The right, but not the obligation, to buy a fixed quantity of a commodity, for a predetermined price, at a specific date in the future. A **Call Option** ensures a maximum price at which the commodity can be purchased.
- **Put Option** The right, but not the obligation, to sell a fixed quantity of a commodity, for a predetermined price, at a specific date in the future**.** A **Put Option** ensures a minimum price at which the commodity can be sold.
- **Premium** The price the **Option Buyer** pays and the seller receives for the **Option.**
- **Strike Price** The predetermined price at which the commodity can be purchased or sold, if the **Option** is exercised.

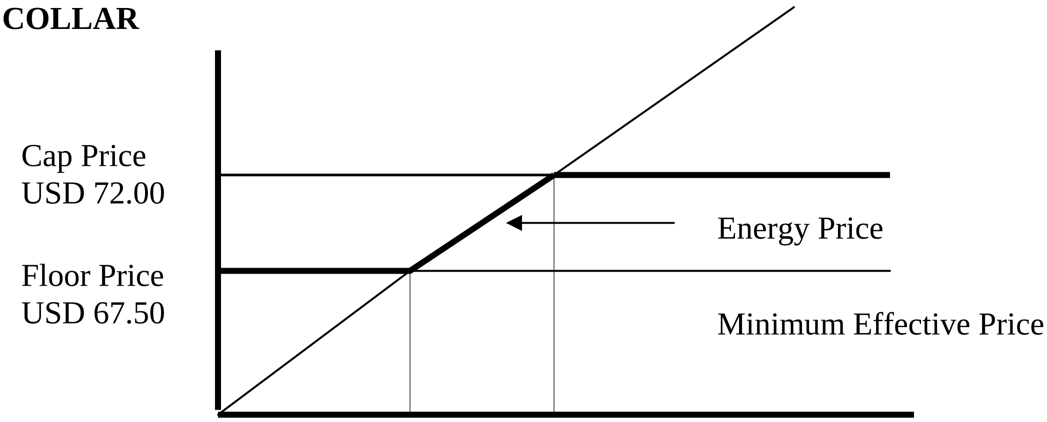
7. SPECIFIC TERMS OF CONTRACTS

- **Cap** ensures a maximum purchase price for several future periods.
- **Floor** ensures a minimum sales price for several future periods.
- **Collar** ensures a minimum possible purchase price is equal to a floor price and the maximum possible purchase price is equal to a cap price by keeping the prices within a range,

8. ENERGY HEDGING

8.1. Crude Oil Hedging

COLLAR



8.1.1. Crude Oil Swap

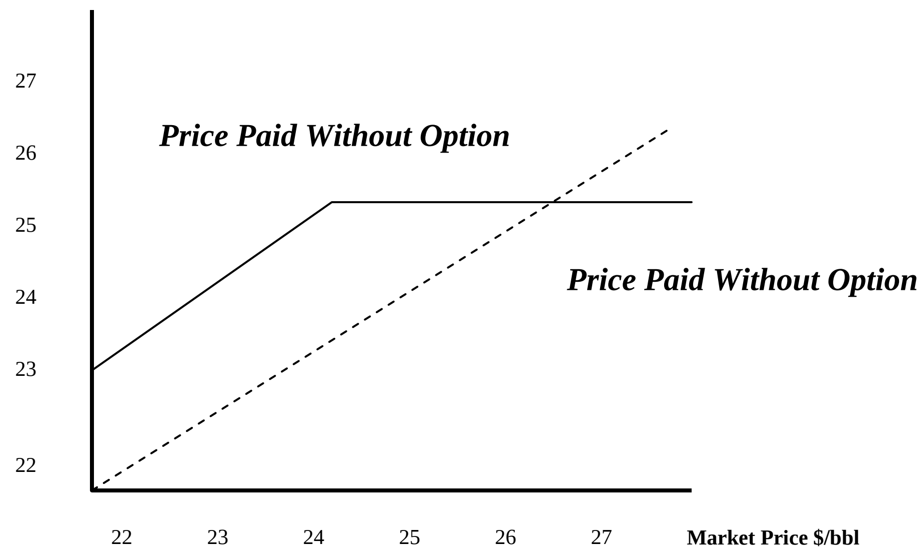
- Description : Fixed For Floating Crude Oil Swap Contract
- Contract Maturity : One Year
- Fixed Price Payer : The Refinery
- Floating Price Payer : ABC Trading Corp
- Settlement Type : Financial
- Settlement Date : Five business days after the last day of the pricing period, for a total of 12 settlement dates
- Pricing Period : Twelve full calendar months from July 2000 through June 2001
- Reference Quantity : 100,000 barrels per month
- Reference Price : The daily official settlement price of the prompt NYMEXWATI Future contract in $/bb1
- Floating Price : The arithmetic average of the Reference Price during the Pricing Period rounded to the nearest $0.01per bbl
- Floating Payment : Floating Price * Reference Quantity
- Fixed Price : $85.00 per barrel
- Fixed Payment : Fixed Price * Reference Quantity
- Documentation : ABC Company Standard Swap Agreement
- Credit Arrangement : To be determined

WTI Monthly Average Price	85.00	86.50	88.00	90.00	91.50
SWAP Cash Flows					
Swap Fixed Payment (Paid)	-88.00	-88.00	-88.00	-88.00	-88.00
Floating Payment (RCVD)	85.00	86.50	88.00	90.00	91.50
Swap Result	-3.00	-1.50	0.00	2.00	3.50

8.1.2. Crude Cap Contract

- Description : Financial Crude Cap Contract
- Contract Maturity : One Year
- Fixed Price Payer : ABC Co
- Floating Price Payer : XYZ Trading Corp.
- Settlement Type : Financial
- Settlement Date : Last business day of each calendar, for a total of 12 settlement dates
- Pricing Period : Twelve full calendar months
- Reference Quantity : 100,000 barrels per month
- Reference Price : The daily official settlement price of the prompt NYMEXWATI Future contract in $/bb1
- Floating Price : The arithmetic average of the Reference Price during the Pricing Period rounded to the nearest $0.01per bbl
- Floating Payment : Floating Price * Reference Quantity
- Cap Strike Price : $88.00 per barrel
- Cap Premium : $ 1.25 per barrel
- Cap Payment : No payment due unless the floating price is higher than the cap strike price. If due the payment is calculated as: (Floating Price - Cap strike Price) * Reference Quantity
- Payment Date : Five business days following the Settlement Date.
- Documentation : ABC Co
- Credit Arrangement : To be determined

Price Paid By Hedger ($/Barrel



8.1.3. Participation Swap

- Description :Financial Crude Oil 50% Participation Swap Contract
- Contract Maturity : One Year
- Fixed Price Payer : The End User
- Floating Price Payer : Sempra Energy Trading Corp.
- Settlement Type : Financial
- Settlement Date : Five business days after the last day of the Pricing Period calendar, for a total of 12 settlement dates
- Pricing Periods : Each full calendar months corresponding to the Settlement Date at the end of the month
- Reference Quantity : 100,000 barrels per month
- Reference Price : The daily official settlement price of the prompt NYMEXWATI Future contract in $/bb1
- Floating Price : The arithmetic average of the Reference Price during the Pricing Period rounded to the nearest $0.01per bbl
- Floating Payment : Floating Price * Reference Quantity
- Cap Strike Price : $23.00 per barrel
- Fixed Payment : (Floating Price * Reference Quantity) – Participation Credit
- Participation Credit : No credit is due unless the floating price is lower than the fixed price. If due, the credit is calculated as: (Fixed Price - Floating Price) * Reference Quantity * 0.50
- Payment Date : Five business days following the Settlement Date.
- Documentation : Sempra Energy Trading Corp Standard Swap Agreement
- Credit Arrangement : To be determined

9. ALUMINIUM HEDGING STRATEGY

9.1. Strategy 1 – Zero Cost Option

- Cable manufacturing company buys an aluminium call option with a strike price of USD 2,600 per metric ton

- Cable manufacturing company sells an aluminium Put Option with a strike price of USD 2,500 per metric ton.

- If aluminium is at an average price of $ 2,650 on the fixing date, the cable's maximum purchase price is capped and they would purchase aluminium at the strike price of $ 2,600

- On the other hand, should aluminium prices move down to an average price of $ 2,400, the cable company will purchase its aluminium at a floor price of $ 2,500

- If aluminium remains between $ 2,500 - $ 2,600 then the cable manufacturing company will purchase its aluminium at the prevailing market price within this band

9.2. Single Range Deposit

Notional Amount	USD 500,000/-
Tenor	3 Months
Enhanced Yield	8.00%
Guaranteed Yield	3.00%
Range	1.3430 – 1.4150 (EUR / USD)

If EUR/USD NEVER touches either barrier of the RANGE during the contract period,
ABC will receive the interest at Enhanced Yield of 8.00%
else,
ABC will receive the interest at Guaranteed Yield of 3.00%

9.3. Double Range Deposit

Notional Amount	USD 500,000/-
Tenor	3 Months
Enhanced Yield	8.00%
Guaranteed Yield	3.00%
Primary Range (EUP/USD)	1.3575 – 1.4050
Secondary Upper Range	1.3700 – 1.4300
Secondary Lower Range	1.3365 – 1.3850

If ANY of the following events has occurred during the contract period
(a) EUR/USD NEVER touches either barrier of the PRIMARY RANGE during the contract period (1.3575 – 1.4050)
OR
(b) EUR/USD touches 1.3575 but subsequently NEVER touches either barrier of the SECONDARY LOWER RANGE during the contract period,
OR
(c) EUR/USD touches 1.4050 but subsequently NEVER touches either barrier of the SECONDARY UPPER RANGE during the contract period,

ABC will receive the interest at Enhanced Yield of 8.00%

In all other cases,
ABC will receive the interest at Guaranteed Yield of 3.00%

9.4. Range Accrual Deposits

Notional Amount	USD 500,000/-
Tenor	3 Months
Enhanced Yield	8.00%
Guaranteed Yield	3.00%
Range (EUR/USD)	1.3625 – 1.3850

ABC will receive interest at the Enhanced Yield of 8.00% for each day the EUR/USD rate fixes WITHIN RANGE and at the Guaranteed Yield of 3.00% for each day that the EUR/USD rate fixes out side the RANGE.

The accrual will accrue interest to ABC even on holidays where the rate applicable will be that of the previous working day.

9.5. Dual Currency Deposits .

The DCD involves placing a deposit in one currency (base currency) with the possibility that the principal sum will be repaid by the bank in a second currency if the spot exchange rate between the currencies is above (up variant) or below (down variant) a certain rate (conversion rate) at expiry. Market movements in the exchange rate before and after expiry date are not of consequence.

Base Currency	USD
Amount	USD 500,000/-
Tenor	3 Months
Enhanced Yield	7.50%
Conversion Rate	1.3650
Second Currency	EUR

If EUR/USD spot is below 1.3650 at expiry date, ABC will receive the capital plus interest calculated at enhanced rate, converted to second currency at the conversion rate of 1.3650

10. GAP ANALYSIS COMPARISON

Names	Position Gap Asset Sensitive Asset replacing before liabilities	Negative Gap Liability Sensitive Liabilities before pricing assets
Position	Short-term assets funded with long-term liabilities	Long-term assets funded with short-term liabilities
Effect of Interest Charges	An increase in interest rates lead to increase in NII An decrease in interest rates lead to decrease in NII	An increase in interest rates lead to reduction in NII An decrease in interest rates lead to increase in NII

11. FORWARD RATE AGREEMENT (FRA)

11.1. Definition of Forward Rate Agreement (FRA)

A FRA can be defined as an agreement made between any two parties seeking to protect themselves against a future interest rate movement, for a specific period by fixing the future interest rate for a specific principal sum in a specific currency and requires that the settlement is effected between the parties in accordance with an established formula. For the purpose of the FRA there is no commitment made by either party to lend or borrow a specific principal sum.

11.2 Structuring of a FRA

6 x 12 months for a notional amount of Rs. 100 mn

A company arranges a Commercial Paper program for 1 year, for a Face Value of Rs.100 million on a floating rate basis @ 6 month TB + 2%. The company Treasurer wishes to hedge the 6 month TB rate for the balance period at the prevailing rate by using a FRA.

11.3. Pricing of a FRA

Asset 6 months

Liability 1 year

$$\boxed{B.E.R = \frac{(12.25 \times 365) - (12 \times 182)}{\left[\frac{(12 \times 182)}{36500} + 1\right] \times (365 - 182)}}$$ **= 11.79%**

Borrowed Amount Rs 100 mn

Sale of a 6x12 month FRA @12.25%

TB Rates
3 Month - 11.9%
6 Month - 12%
1 Year - 12.25%

Margin = 0.46%

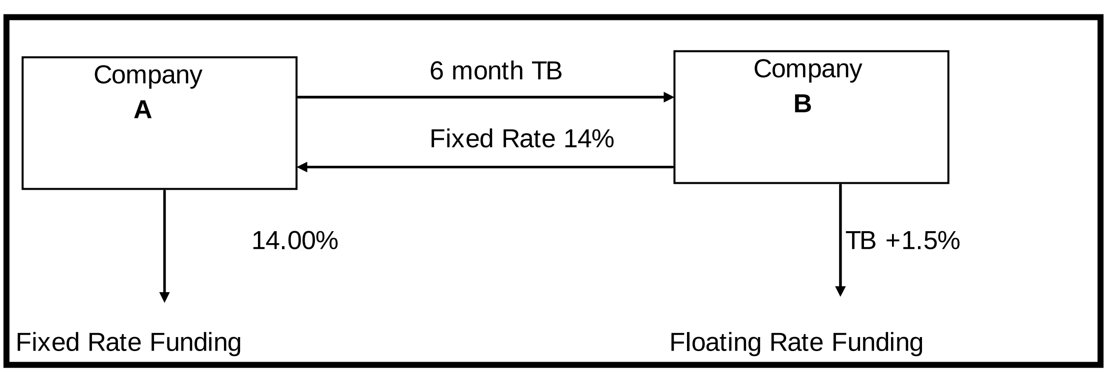
12. INTEREST RATE SWAP

An **Interest Rate Swap** (IRS) is an agreement between two parties (e.g.; A bank and a company) to exchange payments calculated by reference to fixed and floating interest rates on an agreed notional principal amount over a future period. The **IRS** allows a company effectively to alter the interest basis of an asset or liability, but does not affect the nature or status of that asset or liability. There is no agreement to exchange the notional principal amounts.

13. INTEREST RATE RISK

	Company A	**Company B**	**Dif**
Credit Rating	AAA	BBB	
Cost of raising direct Fixed rate funding	14% s.a	16% s.a	2.00%
Cost of raising direct Floating rate funding	6 month TB + 1%	6 month TB + 1.5%	0.50%

	Company A	**Company B**
Fixed rate funds raised	(14%) s.a	
Floating funds raised		(TB +1.50)
Swap		
A pay B Floating	(TB)	TB
B pay A fixed	14% s.a	(14%) s.a
Cost of Funds	**TB**	**15.50%**
Comparative cost of Eqv. Direct funding	TB + 1%	16.00%
Savings	**100 Basis points**	**50 basis points**



14. INTEREST RATE OPTIONS

An **Interest Rate Op**tion (IRO) gives its buyer the right, but not the obligation, to fix the rate of interest on a loan or deposit for a predetermined amount and agreed period on a specific forward date.

Interest Rate Cap

Interest Rate Floor

Interest Rate Collar

15. CALL OPTION

Call Option gives ABC the right but not the obligation to buy a currency (eg. USD) against another (eg. LKR), at a specific rate on a specific date.

The price ABC, has to pay to buy the option is called the Call **Option Premium**

ABC Buys a USD Call/LKR Put Option to buy USD 1 Million with a Strike Price of 113.00, expiring in 1 month by paying a premium of USD 4000/- to the Bank.

If USD/LKR rate goes above 113.00 on expiry date, ABC can exercise the option and buy USD @ 113.00 from the Bank

16. PUT OPTION

Put Option gives ABC the right but not the obligation to sell a currency (eg. USD) against another (eg. LKR), at a specific rate on a specific date.

The price ABC, has to pay to buy the option is called the **Put Option Premium**

ABC Buys a USD Put/LKR Call Option to sell USD 1 Million with a Strike Price of 113.00, expiring in 1 month by paying a premium of USD 4500/- to Bank.

If USD/LKR rate goes below 113.00 on expiry date, ABC can exercise the option and sell USD @ 113.00 to Bank

17. ZERO COST OPTION

An option strategy whereby the cost of purchasing an option is totally offset by the premium generated from the sale of an option or set of options.

18. PAR FORWARD

This is a contract which is used to manage a series of future currency cash flows.

A single forward price is agreed upon today for a series of cash flows on set of future dates.

Bank agrees to buy/sell USD 1 Million each on last working day of every month for 6 months @ 113.00

19. USE OF DERIVATIVES

The market and the instruments go hand-in-hand

- **Hedging**
- **Arbitrage**
- **Trading**

No market can be developed without hedging instruments.