

BOOK III & IV

TABLE OF CONTENTS

| | |
|--|-----------|
| Book III & IV | 1 |
| CHAPTER 8 IDENTIFYING DRIVERS FOR PROJECTING CRUDE OIL PRICES | 9 |
| The 2009 crude oil price outlook | 9 |
| Data | 9 |
| The Debate..... | 10 |
| Conclusion - The 2009 debate | 13 |
| Revisiting the model –2013..... | 13 |
| Revised Data..... | 13 |
| Actual Outcomes and updated analysis | 14 |
| References: | 18 |
| CHAPTER 9 - GOLD AND THE AUSTRALIAN DOLLAR..... | 20 |
| Gold Prices – Drivers, Trends and Future Prospects..... | 20 |
| Gold Price and Australian Dollar: Relationship Reviewed..... | 21 |
| CHAPTER 10 - RELATIVE VALUE & THE GOLD-SILVER RATIO..... | 24 |
| Relative values..... | 26 |
| Gold's Value – Gold to Silver Ratio..... | 32 |
| Weakness of reserve and safe haven currencies | 32 |
| Gold – Silver Ratio as trading signal? | 35 |
| CHAPTER 11 - CORRELATIONS. CRUDE OIL AND OTHER COMMODITIES..... | 37 |
| West Texas Crude | 38 |
| Fuel Oil | 39 |
| Diesel Fuel | 40 |
| Natural Gas..... | 40 |
| Gold | 41 |
| Silver | 42 |
| Platinum..... | 43 |
| Aluminum..... | 43 |
| Steel..... | 44 |
| Copper | 45 |
| Cotton..... | 45 |
| Corn | 46 |
| Wheat No. 2 | 47 |
| Wheat No. 1 | 48 |
| Coffee | 48 |
| Sugar | 49 |
| Corn Oil | 50 |
| Soybean Oil | 50 |
| Crude Palm Oil..... | 51 |
| CHAPTER 12. CRUDE PALM OIL FUTURES | 53 |
| Data | 53 |
| Price Levels..... | 53 |
| Annualized Volatility and 10 – Day Holding VaR | 54 |
| Volatility Trends..... | 54 |
| Correlations and Scatter Plots | 54 |
| USD –EUR | 55 |
| MYR-USD..... | 55 |

| | |
|---|------------|
| Gold | 55 |
| West Texas Intermediate (WTI) | 56 |
| Wheat No.2 | 56 |
| Corn | 56 |
| CHAPTER 13 - CRUDE OIL AND INFLATION | 57 |
| Components of Price Indices | 57 |
| Consumer Price Index | 58 |
| Wholesale Price Index..... | 61 |
| CHAPTER 14 - HISTORICAL SPREADS IN BOND YIELDS IN THE INDO-PAK SUB-CONTINENT | 63 |
| Data | 63 |
| Bond Yields and Inflation in Pakistan - a first look at real rates | 64 |
| Bond Yields and Inflation in India – a first look at real rates..... | 66 |
| A Comparative Analysis: India and Pakistan | 68 |
| CHAPTER 15 - VOLATILITY TRENDS IN COMMODITY PRICES | 72 |
| COMMODITIES | 72 |
| Annualized Volatility | 72 |
| Trend..... | 73 |
| 3-Sigma Band..... | 76 |
| Commodity Correlations | 77 |
| CHAPTER 16 - ENERGY INSIGHTS | 83 |
| 1. Overview – US..... | 83 |
| 1.1 Natural Gas..... | 83 |
| 1.2 Crude Oil | 85 |
| Relationship between Crude Oil & Natural Gas prices | 88 |
| 2. OVERVIEW – CHINA..... | 89 |
| 2.1 Oil | 90 |
| 2.2 Natural Gas..... | 91 |
| 2.3 Coal | 92 |
| 3. OVERVIEW – INDIA..... | 93 |
| 3.1 Crude Oil | 93 |
| 3.2 Natural Gas..... | 94 |
| 4. OVERVIEW – PAKISTAN | 95 |
| CHAPTER 17 – DERIVATIVES TERMINOLOGY | 99 |
| Forward Contracts | 100 |
| The Investment Bank Intern | 100 |
| Futures Contracts | 100 |
| Options | 101 |
| Maturities and Exercise date | 102 |
| Payoff Profiles | 102 |
| The Payoff profile for a forward contract..... | 103 |
| Payoff profiles for Calls and Puts | 104 |
| Building Blocks and Synthetic Configurations..... | 106 |
| CHAPTER 18 – PRODUCTS & PRICING | 108 |
| 2. Standard Template for Evaluating Derivatives..... | 109 |
| 3. Options..... | 110 |
| Option Price..... | 112 |

| | |
|--|------------|
| European option price | 113 |
| American Option Price | 115 |
| 4. Forward Contracts | 116 |
| Forward Price | 117 |
| 5. Futures Contracts..... | 118 |
| Futures Price | 118 |
| 6. Swaps | 119 |
| Interest Rate Swap (IRS)..... | 119 |
| Currency Swap..... | 119 |
| CHAPTER 19 – VARIATIONS..... | 121 |
| Stock Options | 121 |
| Foreign Currency Options..... | 121 |
| Index Options | 121 |
| Futures Options | 121 |
| Warrants | 122 |
| Employee Stock Options | 122 |
| Convertibles | 122 |
| Interest Rate Options..... | 122 |
| Bond Options..... | 122 |
| Interest Rate Caps/ Floors/ Collars | 123 |
| European Swap Options..... | 124 |
| Exotic Options | 124 |
| Bermuda Option | 124 |
| Quanto Option..... | 124 |
| Composite Option..... | 124 |
| Digital or Binary or “All or nothing” options..... | 125 |
| Barrier Options | 125 |
| Asian Options | 125 |
| Average Strike Options..... | 125 |
| Look back Options | 126 |
| Compound Options..... | 126 |
| Chooser (As you like it) Options..... | 127 |
| Exchange Options | 127 |
| Forward Start Options..... | 127 |
| Basket Options | 127 |
| Shout Options..... | 127 |
| 2. Forwards | 128 |
| Synthetic Forward Contract..... | 128 |
| Forward Rate Agreement..... | 128 |
| 3. Futures | 128 |
| Stock Index Futures..... | 128 |
| Futures Contracts on Currencies..... | 128 |
| Futures Contracts on Commodities..... | 129 |
| Interest Rate Futures | 129 |
| Treasury Bond Futures..... | 129 |
| Treasury Note Futures | 129 |
| 5-year Treasury Note Futures..... | 129 |
| Treasury Bill Futures | 129 |
| Eurodollar Futures | 129 |

| | |
|---|------------|
| 4. Swaps | 130 |
| Fixed for fixed currency swap | 130 |
| Floating for floating currency swap | 130 |
| Cross-currency interest rate swap | 130 |
| Step-up Swaps | 130 |
| Amortizing Swaps | 130 |
| Basis Rate Swap | 131 |
| Forward or Deferred Swaps..... | 131 |
| Compounding Swaps..... | 131 |
| LIBOR-in- Arrears Swap | 131 |
| Constant Maturity Swap..... | 131 |
| Constant Maturity Treasury Swap | 131 |
| Differential Swap or Quanto..... | 131 |
| Variance or Volatility Swap..... | 132 |
| Equity Swap..... | 132 |
| Commodity Swap..... | 132 |
| Asset Swap | 132 |
| Accrual Swap | 132 |
| Cancellable Swap | 133 |
| Extendable Swap | 133 |
| CHAPTER 20 - DERIVATIVE PRICING | 134 |
| Relative Pricing & Risk Neutral Probabilities..... | 134 |
| Binomial Option Pricing..... | 134 |
| Spreadsheet Implementation of two-dimensional Binomial Tree..... | 137 |
| European Call Option | 137 |
| European Put Option | 139 |
| American Call Option | 139 |
| American Put Option..... | 140 |
| Capped Calls with Automatic Exercise | 141 |
| Down-and-out call options | 142 |
| Down-and-in call options | 143 |
| Pricing European call options using Monte Carlo simulation..... | 145 |
| Pricing Exotic Options using Monte Carlo Simulation | 149 |
| Vanilla Call, Put Options and exotic Asian & Look back cousins..... | 150 |
| Option Pricing – Pricing Barrier & Chooser Options..... | 152 |
| Pricing Ladder Options | 154 |
| CHAPTER 21 - ADVANCED FIXED INCOME SECURITIES | 157 |
| Cash flows | 157 |
| Discounting Cash flows | 157 |
| Spot Rates | 157 |
| Forward Rates | 157 |
| Short rates..... | 158 |
| Yield to Maturity..... | 159 |
| Term structure of interest rates | 159 |
| Forward Rate Agreements..... | 160 |
| Forward Contracts | 160 |
| Swaps..... | 161 |
| Pricing Interest Rate Swaps | 161 |
| Defining the Par Term Structure | 164 |

| | |
|--|------------|
| Deriving the Zero Curve | 166 |
| Deriving the Forward Curve..... | 167 |
| Pricing Coupon Swaps or Fixed for Floating Swaps | 168 |
| Pricing Basis Swaps or Floating for Floating Swaps | 171 |
| Pricing Cross Currency Swaps | 171 |
| Fixed for Fixed Currency Swap..... | 171 |
| Floating for Floating Currency Swap | 174 |
| Amortizing Floating for Floating Currency Swap..... | 175 |
| Caps and Floors | 176 |
| Cap..... | 176 |
| Floor..... | 177 |
| Cap-Floor Parity..... | 177 |
| Accrual Swaps..... | 178 |
| Method 2 | 179 |
| Value of regular swap | 179 |
| Method 1- Additional Value to fixed rate payer, i.e. sum of values of series of binary call options..... | 179 |
| Method 2- PV of fixed (paying) leg is the value of a series of binary put options. | 180 |
| Range Accrual Note..... | 181 |
| Commodity Linked Note..... | 182 |
| ANNEXURE A - HOW TO DETERMINE SPOT RATES AND FORWARD RATES & YIELD TO MATURITY..... | 185 |
| How to determine Forward Rates from Spot Rates | 185 |
| How to determine Spot Rates from Forward Rates | 185 |
| How to calculate the Yield to Maturity (YTM) of a bond | 187 |
| Trial and error process for calculating YTM of a bond..... | 187 |
| EXCEL's Goal Seek method for calculating YTM of a bond..... | 189 |
| CHAPTER 22 - THE TREASURY FUNCTION..... | 191 |
| TRADE FLOWS (FX DESK) | 191 |
| The Treasury Function Operations..... | 191 |
| Front Office Function | 191 |
| User Roles | 192 |
| Money Market Desk Activities..... | 192 |
| Foreign Exchange Desk Activities..... | 192 |
| Capital Market (CM) Desk Activities..... | 193 |
| Middle Office Function..... | 193 |
| User Roles | 193 |
| Activities..... | 193 |
| Back Office Function | 194 |
| User Roles | 194 |
| Activities..... | 194 |
| Basic Treasury Administrator Functions | 194 |
| Related Terminologies | 195 |
| Four eyes..... | 195 |
| Ticket Approval..... | 195 |
| Ticket Verification..... | 195 |
| Ticket Authorization..... | 196 |
| Confirmation | 196 |
| Society for Worldwide Interbank Financial Telecommunications (SWIFT) | 197 |
| Settlement..... | 197 |
| Price discovery..... | 197 |

| | |
|---|------------|
| Proprietary Trading..... | 197 |
| Operational Risk | 198 |
| CHAPTER 22 - ADVANCED PRODUCTS..... | 199 |
| Cross Currency Swaps | 199 |
| Participating Forwards | 199 |
| Equity Linked Notes | 199 |
| Capital Protected / Capital Guaranteed Notes..... | 201 |
| Commodity Linked Notes..... | 202 |
| Range Accruals | 203 |
| Switchable..... | 203 |
| IRD (INTEREST RATE DIFFERENTIAL) TRADES..... | 204 |
| Swap basis..... | 204 |
| Note basis..... | 204 |
| Quanto..... | 205 |
| Cumulative Cap..... | 207 |
| Steepener/ Flattener Note | 207 |
| Inverted Curve Instrument | 208 |
| Ranges..... | 209 |
| CREDIT PRODUCTS | 210 |
| Credit Default Swaps..... | 210 |
| Total Return Swaps..... | 213 |
| Collateralized Debt Obligation (CDO)..... | 214 |