The world of finance

Sumon K Bhaumik, Ph.D.
Brunel Business School
Brunel University

Section I

Financial intermediation &
Financial intermediaries

Direct lending

- Search costs
- Verification costs
- Monitoring costs
- Enforcement costs

Financial intermediation

- Market making for financial resources
  - Search costs
- Delegated monitoring
  - Verification costs
  - Monitoring costs
  - Enforcement costs
- Diversification of risk
  - Transformation of size
  - Transformation of maturity
  - Transformation of risk

Financial intermediaries

- Banks
- Investment banks
- Building societies
- Insurance companies and pension funds
- Hedge funds

Banks - 1

- Permission from FSA required to collect deposits

- Liabilities
  - Deposits (about 85%)
    - About a quarter in foreign currency
    - About 45% of sterling deposits repayable on demand
  - Suspense and transmission
  - Share capital, long term debt and reserves

Banks - 2

- Assets
  - Cash ratio requirement
  - Cash balances (less than 1%)
  - Inter-bank loans
  - Treasury bills
  - Advances
    - Nearly half of total assets, and nearly two-thirds of sterling assets
  - Other currency assets
    - About a fifth in the form of advances
  - Miscellaneous assets

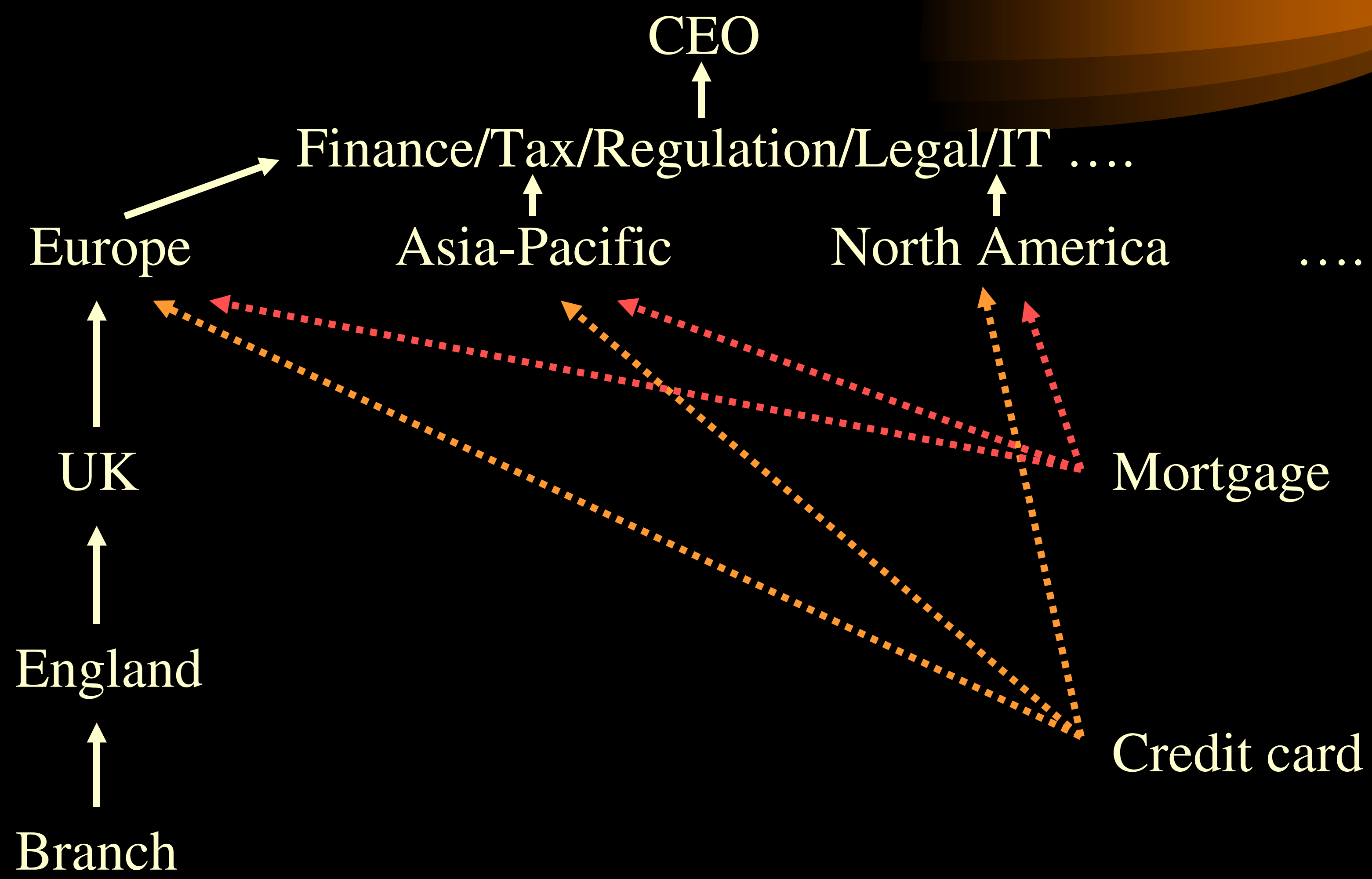
Banks - 3

- Recent developments
  - Competition from virtual banks and non-banks
  - Financial innovation leading to unbundling of payments services
- Consequences and implications:
  - Current accounts to combine portfolio and payment functions
  - Emergence of universal banks

Banks - 4

- Risks associated with banking
  - Liquidity risk
    - Reserve asset management
    - Liability management
  - Asset risk
    - Credit risk
    - Market or price risk
  - Payment risk
    - Clearing House Automated Payment System (CHAPS)
      - Real time gross settlement (CHAPS sterling in 1996 and CHAPS Euro in 1999)
    - Bankers Automated Clearing Services (BACS)

Banks - Organisational structure



Basle norms - 1

- Basle Agreement (1988)
  - Capital adequacy
    - Tier 1: book value of common stock + non-cumulative perpetual preferred stock + published reserves from post-tax retained earnings
    - Tier 2: general loan loss reserves + long-term subordinated debt + cumulative and/or redeemable preferred stock
    - Risk weights ranged from 0% for G-10 sovereign debt to 100% for unsecured non-sovereign and non-G-10 debt
  - Loan loss provisioning

- Revisiting Basle norms (1993)
  - Powers of the supervisor
    - Supervise banks on both on- and off-site basis
    - Supervise banks on a consolidated basis

Basle norms - 2

- Revisiting Basle norms …. Contd.
  - Making assets to market
    - Market risk
      - Use of value-at-risk (VaR) models
      - Capital provisioning for market risk
        - Market risk = VaR/8%
      - Tier 3: short-term subordinated debt (only to cover market risk)

- Revisiting market risk (1998)
  - Choice of using standardised VaR model or supervisor-approved proprietary VaR model
  - Market risk = Max{Previous day's VaR, 3 times average VaR over previous 60 business days)

Basle norms - 3

- Basle II (1999)
  - Capital requirement takes into account operational risk
  - Basic approach:
    - Fixed percentage (15%) of average *positive* gross earnings over previous 3 years
  - Standardised approach:
    - Divide a bank's activities into 8 business lines, e.g., trading and sales, retail banking, asset management
    - Attach a separate risk weight to gross earnings from each line of business, e.g., 15% for commercial banking, 12% for asset management
  - Advanced measurement approach:
    - Available only to banks with sophisticated risk management operations
    - Likely to reduce capital cost

Wholesale & investment banks - 1

- Banking services to large companies and institutions at negotiated rates
  - Minimum deposit £250,000 and minimum loan size £500,000
  - Larger liquidity risk because of inability to depend on law of large numbers
    - Market based borrowing
  - Greater portfolio risk because portfolio is not greatly diversified
    - Asset backed securitisation
- Underwriting new securities
- Advice for mergers and acquisitions

Wholesale & investment banks - 2

- Asset backed securities
  - Introduced in the US in the 1970s
  - First UK deal in 1985
  - UK accounted for £53 billion of ABS in 2002 – 35% of the European market – as compared with £420 billion issues in the US
- Advantages:
  - Reduces capital requirement
  - Facilitates focus on banking activities in which the bank has a comparative advantage

Wholesale & investment banks - 3

- Structure of ABS

Originator ← Borrower

Transfers asset ↓

Trust/SPV

Trustee

Issues securities ↓ Credit enhancement

Underwriter

Distributes securities ↓

Investors

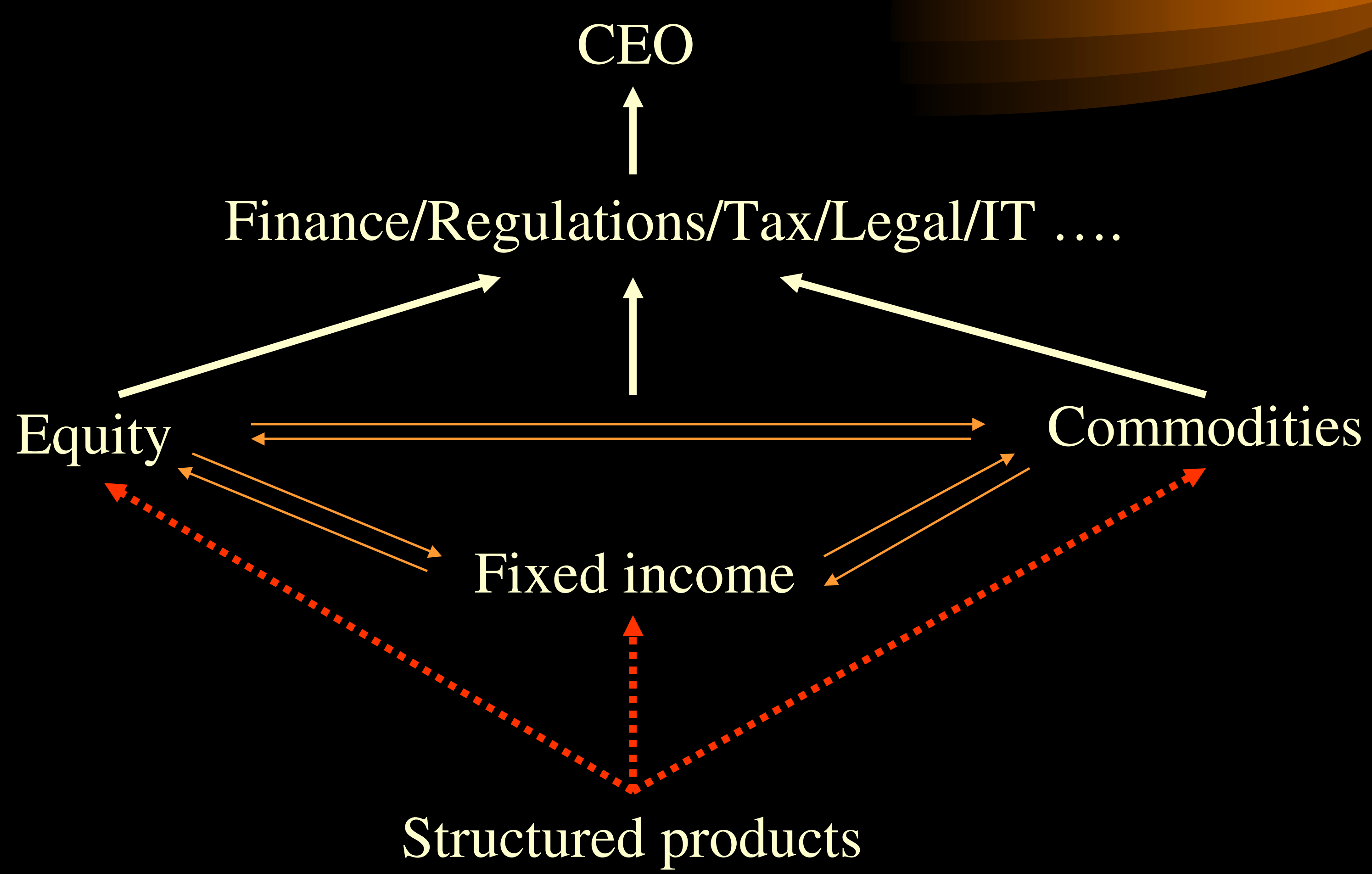
Adapted from Figure 4.1 of Buckle and Thompson (2004)

Wholesale & investment banks - 4

- Types of off-balance sheet businesses
  - Loan commitments
  - Guarantees
  - Swaps and other hedging instruments (until January 2005)
  - Securities underwriting

- Factors influencing off-balance sheet businesses
  - Higher penalty imposed by regulators for asset risk
  - Greater volatility of asset prices
  - Globalisation and greater risk associated with arms length lending

Investment banks - Organisational structure



Building societies - 1

- History
  - Founded in the late 18th century
  - Largely mutual organisations
  - Traditionally offered only mortgages

- Mutual organisations
  - Can build up reserves because there is no obligation to pay dividends
  - Management not subjected to market discipline

Building societies - 2

- Competition from banks
  - *Liabilities*: interest bearing (and free) checking accounts
  - *Assets*: Mortgages

- Building Societies Act of 1986
  - Allowed access to wholesale funds (20% of total liabilities)
  - Allowed a mutual to become a plc after obtaining a permission from Bank of England
    - A building society undergoing a conversion was protected from a takeover bid for 5 years
  - Allowed to operate throughout the European Union

Building societies - 3

- Response from the building societies
  - Interest bearing checking accounts (Nationwide in 1987)
  - ATM facilities through Link network
  - Credit cards
  - Convert to plc status
    - Abbey National in 1989
  - Expansion into estate agency operations
  - Expansion into banking services
    - Acquisition of Girobank in 1990 by National and Provincial Banking Society
  - Merger of business societies with banks
    - Cheltenham and Gloucester with Lloyds Bank in 1994

Building societies - 4

- Provisions of 1994
  - Raised cap on wholesale funds to 40% of liabilities
    - Cap raised further to 50% in 1997
  - Allowed societies to establish subsidiaries to make unsecured loans to businesses
  - Allowed ownership of general insurance business offering housing related insurance products
- Building Societies Act of 1997
  - Everything is allowed unless specifically prohibited
  - Removal of 5-year protection from takeover bids
  - Made societies more accountable to members

Insurance companies - 1

- Pure premium
  - Present value of the expected loss of a claim
    - The interest rate used for discounting should reflect the expected return on investment and a fair return on the insurer's capital, adjusted for taxes
- Premium smoothing
  - Charging a fixed premium over time when the value of the pure premium is changing
- Loss adjustment
  - Process of determining the amount of loss, in the event of a claim

Insurance companies - 2

- Structure
  - Corporation
  - Mutual organisation
  - Lloyds association
  - Reciprocals
- Marketing
  - Independent agents
  - Exclusive agents
  - Direct marketing
  - Insurance brokers

Life companies & pension funds - 1

- Life products
  - Term life policies
  - Whole life and endowment policies
  - Tontines
  - Universal life / Variable life / Universal variable life
  - Annuities
- Problems
  - Policy loans
  - Lower interest rates
  - Investment performance
    - Endowment policies and Equitable Life

Life companies & pension funds - 2

- Life investment portfolio
  - Greater investment in government securities than pension funds
    - Greater proportion of pension funds’ investments in gilts allocated to index-linked bonds
    - Greater exposure to corporate bonds since the early 1990s
  - Smaller exposure to equities than pension funds
  - Smaller exposure to property than pension funds
  - Greater exposure to long term securities than pension funds
    - Maxwell pension scandal

Life companies & pension funds - 3

- Crises in the pensions sector
  - Belling (1992, £2.1 million)
  - Maxwell (1994, £440 million)
- Regulatory response
  - Pensions Act of 1995
    - Statement of Investment Principles (SIP), to be reviewed annually
    - Minimum Funding Requirement (MFR), not to fall short of 100 percent of liabilities
      - Myners review in 2001: shift to a scheme-specific regime
    - Occupational Pensions Regulatory Authority
  - Financial Reporting Standards (FRS) 17
    - Immediate recognition of actuarial gains and losses
    - Marking assets and liabilities to market

Non-health general insurance - 1

- Types of coverage
  - Property
  - Casualty
  - Liability
  - "All risk"
- Types of policies
  - Marine
  - Homeowners
  - Commercial property
  - Automobile
  - Workers compensation
  - Surety bonds
  - Fidelity bonds
  - Mortgage insurance
  - Deposit insurance

Non-health general insurance - 2

- Differences with life insurance
  - Intermediation far less important than insurance
  - Risks much higher
    - Probabilities of loss not actuarial
    - Risk pooling not effective on account of high correlation across risks
  - Portfolio composition
    - Greater exposure to equity (fewer regulations)
    - Greater exposure to tax-free or *municipal* bonds (tax on investment income)
    - Greater preference for liquid securities
    - Higher capital ratio

Non-health general insurance - 3

- Underwriting cycles
  - Alternating *soft* and *hard* markets
    - Alternative market and self insurance
- Regulatory issues
  - Asset portfolio
    - Types
    - Proportion of different types of assets
    - Quality
  - Premium level
  - No-fault insurance
  - Tort reforms
  - Discrimination and “red lining”

Hedge funds - 1

- Background
  - As of 2003, 6000-7000 in number
  - Assets on books US$ 600-650 billion
  - Asset base expected to grow to US$ 1 trillion over the following 5-10 years
  - Growth driven by demand for high returns on the part of pension funds, endowments and foundations

- Definition
  - No legal or universally acceptable definition
  - Refers to an entity that holds a pool of securities but does not register under the Securities Act and the Investment Company Act
  - Adviser reward linked to capital gains and returns

Hedge Funds - 2

- Objective
  - "The investment goals of hedge funds vary among funds, but many hedge funds seek to achieve a positive, absolute return rather than measuring their performance against a securities index or other benchmark." [US SEC Staff Report, September 2003, pp. viii]

- Investment strategy
  - Often highly leveraged
  - Involved in short sales
  - Invests in securities across the board

- Advantage
  - Provides liquidity by way of speculative positions
  - Adds to information in the market by way of research

Hedge Funds - 3

- Regulatory exemptions
  - Exemption from Securities Act
    - Private placement of securities
    - High net worth (or accredited) individuals
      - *Minimum annual income*: US$ 200,000 (US$ 300,000 with spouse)
      - *Minimum net worth*: US$ 1 million for individuals and US$ 5 million for institutions
  - Exemption from "highly sophisticated" individuals
    - Stricter norms than for "accredited" individuals
  - Exemption from Investment Adviser's Act (until 2004)
    - Fewer than 14 clients (each hedge fund is a "client")

Hedge Funds - 4

- New developments
  - Ruling in October 2004 requires hedge fund advisers to register under Investor Adviser's Act
    - All hedge fund advisers to be scrutinized and registration can be denied to anyone with a felony or disciplinary record
    - Chief Compliance Officer to protect investor interest and enforce code of ethics by February 2006
- Continued regulatory exemptions
  - Fees
  - Leverage
  - Pricing of portfolios

Section 2

Financial Securities

Equity - 1

- Types:
  - Common stock
  - Preferred stock
    - Fixed annual payment
    - Cumulate dividends in the event of non-payment
    - Bonds have seniority in case of bankruptcy
    - Dividend payout not tax deductible
    - Callable by issuer: *redeemable*

- Equity valuation models
  - Balance sheet measure
    - Tobin's q
  - Dividend discount model
  - P/E ratio and growth opportunities

Equity - 2

- Stock indices
  - Price weighted average vs. market-value weighted average

Stock	Initial Price	Final Price	Shares (m)	Initial value	Final value
ABC	100	110	20	2,000	2,200
PQR	10	15	10	100	150

Increase in average price = 62.5/55 – 1 = 13.6%

Increase in market value = 2350/2100 – 1 = 11.9%

Stock ABC splits 2:1 (market-value weighted average)

Stock	Initial Price	Final Price	Shares (m)	Initial value	Final value
ABC	50	55	40	2,000	2,200
PQR	10	15	10	100	150

Increase in average price = 35/30 – 1 = 16.6%

Increase in market value = 2350/2100 – 1 = 11.9%

Equity - 3

- Stock indices …. Contd.

  Stock ABC splits 2:1 (price weighted average)

  Sum of post-split stock price = 50 + 10 = 60

  Average of pre-split stock price = 55

  Divisor (*d*): 60/*d* = 55, i.e., *d* = 1.09

  Average of final stock prices = (55 + 15)/1.09 = 64.22

  Increase in average price = 64.22/55 – 1 = 16.7%

  – FTSE 100
    - Introduced in 1982, representing 80 percent of LSE value
    - 100 most highly capitalised companies traded on LSE
      – Reviewed quarterly
    - Base of 1000 as of January 3, 1984
    - Market value weighted

Bonds - 1

- Types
  - By maturity
    - Money market securities
    - Bonds
  - By issuer
    - Government
    - Corporate
  - By interest payment
    - Zero coupon
    - Coupon
      - Fixed rate
      - Floating rate
  - By structure
    - Straight
    - Embedded options
    - Convertible
      - Conversion ratio
    - Asset backed securities
  - By risk category
    - Investment grade
    - Speculative grade
      - Moody’s: Baa
      - S&P: BBB

Bonds - 2

- Brady bonds
  - Named after former US Treasury Secretary Nicholas Brady
  - Introduced in the 1980s with the help of the World Bank and the IMF, to restructure sovereign debt
  - Coupon bearing bonds with fixed, step or floating rates, with maturity ranging between 10 and 30 years
  - Principal and part of interest payments collateralised by US T-bonds and other high grade (AA- and above) securities
    - Collateral maintained at Federal Reserve Bank of New York
    - Rolling interest guarantees
  - Issued as registered or bearer bonds
  - Some bonds have embedded warrants that are triggered by improved capacity of the credit country to repay the loan
    - Oil warrants

Bonds - 3

- Crossover bonds
  - Bonds issued by “fallen angels”
  - Not investment grade
    - Issuer has a troubled future
  - Not junk
    - Issuer may return to good health
    - Have seniority in the event of bankruptcy
  - Problem
    - Valuation

Bonds - 4

- Bond safety
  - Coverage ratio
  - Leverage ratio
  - Liquidity ratio
  - Profitability ratio
  - Cash flow to debt ratio
- Bond indentures
  - Sinking funds
  - Subordination of further debt
  - Dividend restrictions
  - Collateral

Credit rating

Bonds - 5

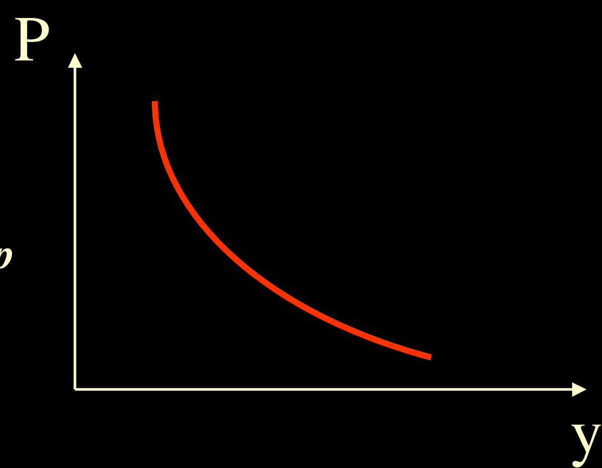
- Pricing
  - Discounted value of future cash flows

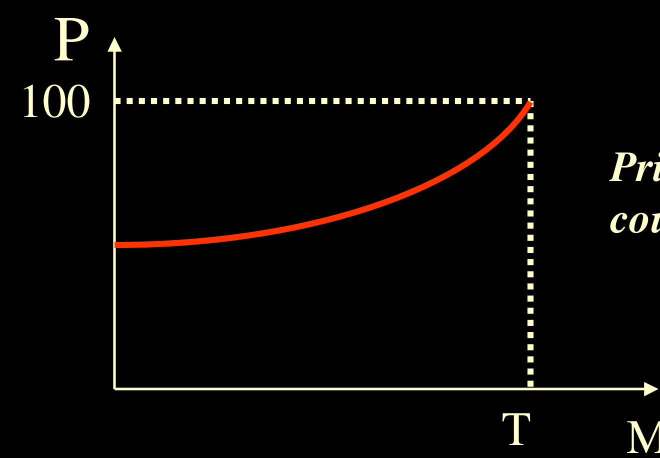
    Algebra:

    $P = C_1/(1+y) + C_2/(1+y)^2 + ... + (C_T+F_T)/(1+y)^T$

    Yield to maturity = y

Price-yield relationship



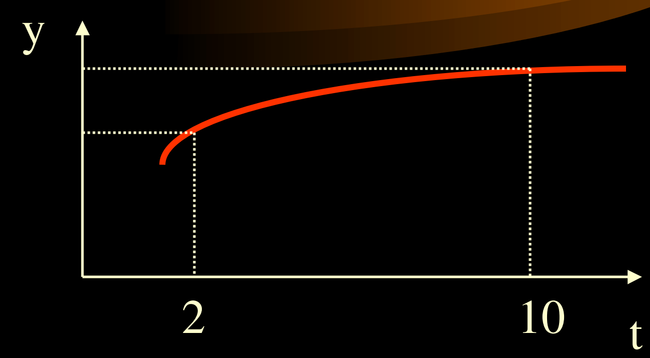


Price of zero coupon bond

Maturity date

Bonds - 6

- Term structure of interest rates
  - Relationship between yields and time to maturity
  - Yield curve

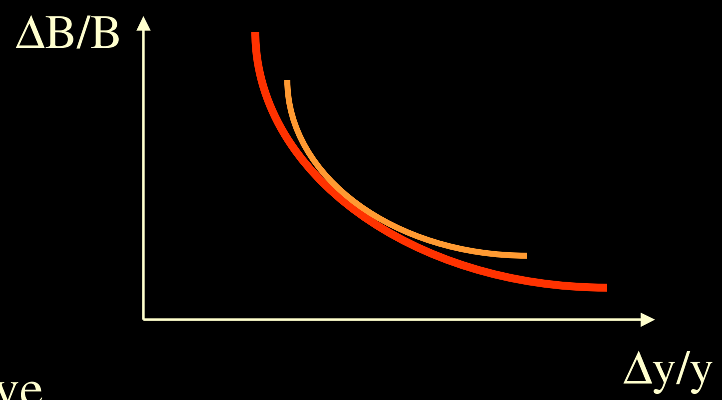


- Holding period return
  - Bonds with identical credit risk should offer identical rates of return over any holding period

- Spot and forward rates
  - *Strategy 1*: Invest in a 3-year ZCB
  - *Strategy 2*: Invest in a 2-year ZCB and reinvest in 1-year ZCB
  - *Outcome*: $(1 + y_3)^3 = (1 + y_2)^2(1 + f_3)$

Bonds - 7

- Interest rate sensitivity of a bond
  - Duration
    - Percentage change in a bond's price given a percentage change in the bond's yield-to-maturity
      - Macaulay's duration
      - Modified duration
  - Convexity
    - Same duration
    - Price changes different for large changes in YTM
  - Non-parallel shift of the yield curve



Bonds - 8

- Important interest rates
  - London inter-bank offer rate (Libor)
  - Euro inter-bank offer rate (Euribor)
  - Euro overnight index average (Eonia)
  - 30-year T-bond yield

- Bond indices
  - Morgan Stanley Capital Indices (MCSI) Fixed Income Index
  - JP Morgan Chase Government Bond Index
  - JP Morgan Chase Emerging Markets Index

Derivatives - 1

- Definition
  - Financial securities whose values are *derived from* the values of some underlying assets
- Purpose
  - Typically to hedge against possible adverse movements in the prices of the underlying assets
- Underlying
  - Financial assets (e.g. stocks, bonds, bank credit)
  - Financial variables (e.g., interest rate, indices)
  - Commodities (e.g., oil, metals, agricultural products)
  - Events (e.g., weather)

Derivatives - 2

- Types:
  - By nature of contract
    - Forwards and futures
    - Options
    - Swaps
  - By nature of trade
    - Exchange traded
    - Over the counter
  - By complexity
    - Vanilla
    - Structured

Forwards and futures - 1

- CBOT Contract
  - ***Commodity***: Soybeans (of certain specification)
  - ***Contract size***: 5000 bushels
  - ***Tick size***: ¼ cents per bushel (US$ 12.50 per contract)
  - ***Price quote***: Cents bushel
  - ***Dates***: Sept, Nov, Jan, Mar, May, July, Aug
  - ***Last trading day***: The business day prior to the 15th calendar day of the contract month
  - ***Delivery date***: Second business day following the last trading day of the contract month
  - ***Trading time***:
    - Open auction – 9.30 am-1.15 pm, Central time, Mon-Fri
    - Electronic – 6.31 pm-6 am, Central time, Fri-Sun
  - ***Daily price limit***: 50 cents per bushel (US$ 2,500 per contract)

Forwards and futures - 2

- Strategies
  - Long
  - Short

- Payoffs
  - Gains and losses
  - Multiples
    - US$ 500 per S&P 500 futures contract
  - Number of contracts
  - Cost of carry
    - Interest rate

- Gains and losses
  - Futures price
    - F_T
  - Spot price on delivery
    - S_T
  - Payoff for long
    - $(S_T – F_T)$
  - Payoff for short
    - $(F_T – S_T)$

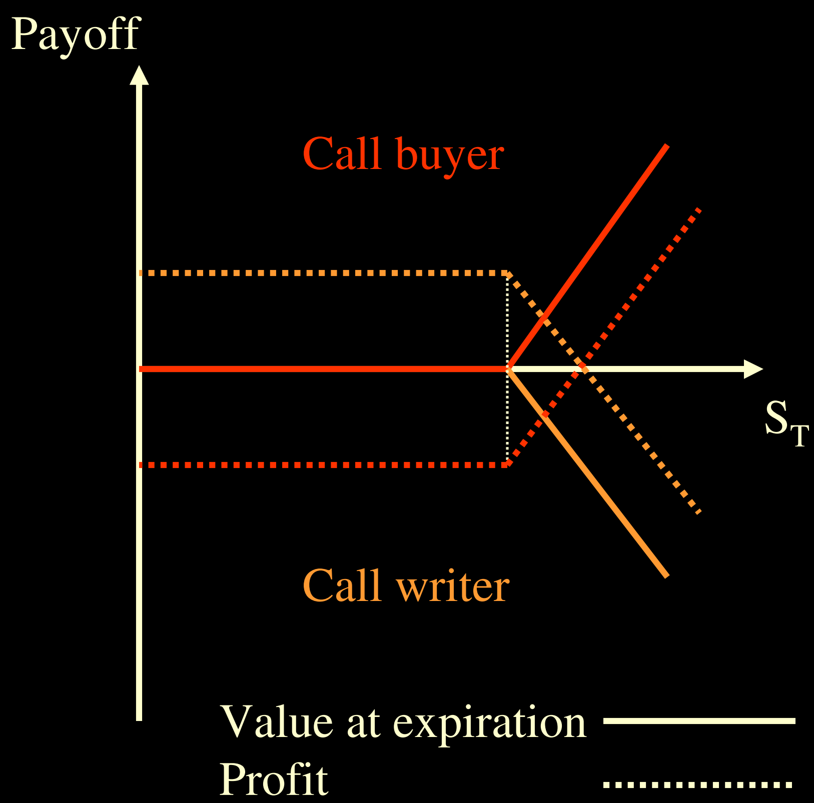
Options - 1

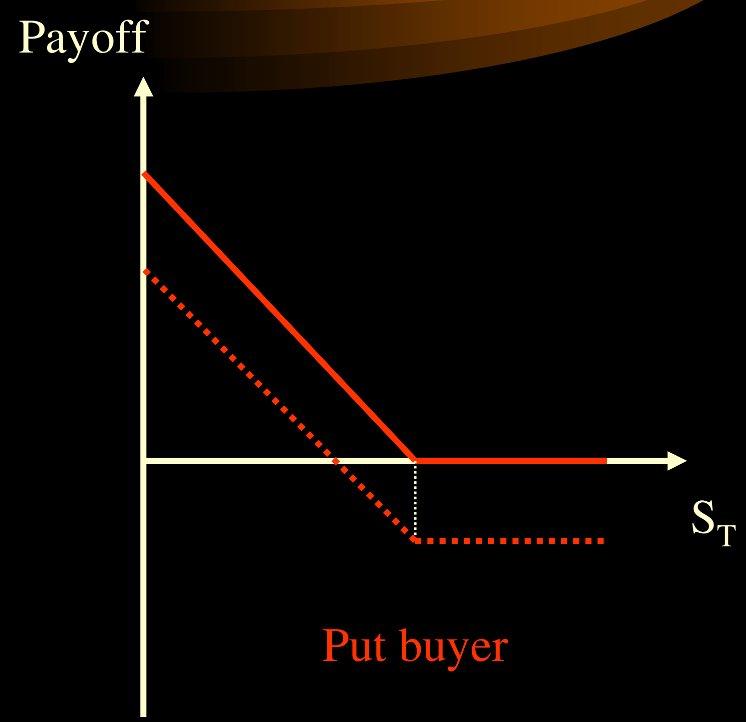
- Thinking about options
  - Buy or write
  - Call or put
    - Naked or covered
  - Simple or complex (e.g., barrier, Asian, digital)
  - American or European
- Contract dimensions
  - Strike date
  - Strike price

Options - 2

- CBOE Contract:
  - ***Underlying***: 1/100 of the DJIA
  - ***Multiplier***: US$ 100
  - ***Premium quote***:
    - Stated in decimals; 1 point refers to US$ 100
    - Minimum tick 0.10 (US$ 10); 0.05 (US$ 5) for options trading below 3.00
  - ***Strike price***:
    - Bracket the index level in minimum increments of 1 point
  - ***Exercise style***: European
  - ***Settlement value***:
    - "Calculated based on the opening prices of the component securities on the business day prior to expiration, usually a Friday. The exercise-settlement amount is equal to the difference between exercise-settlement value and the exercise price of the option, multiplied by $100." [CBOE]

Options - 3



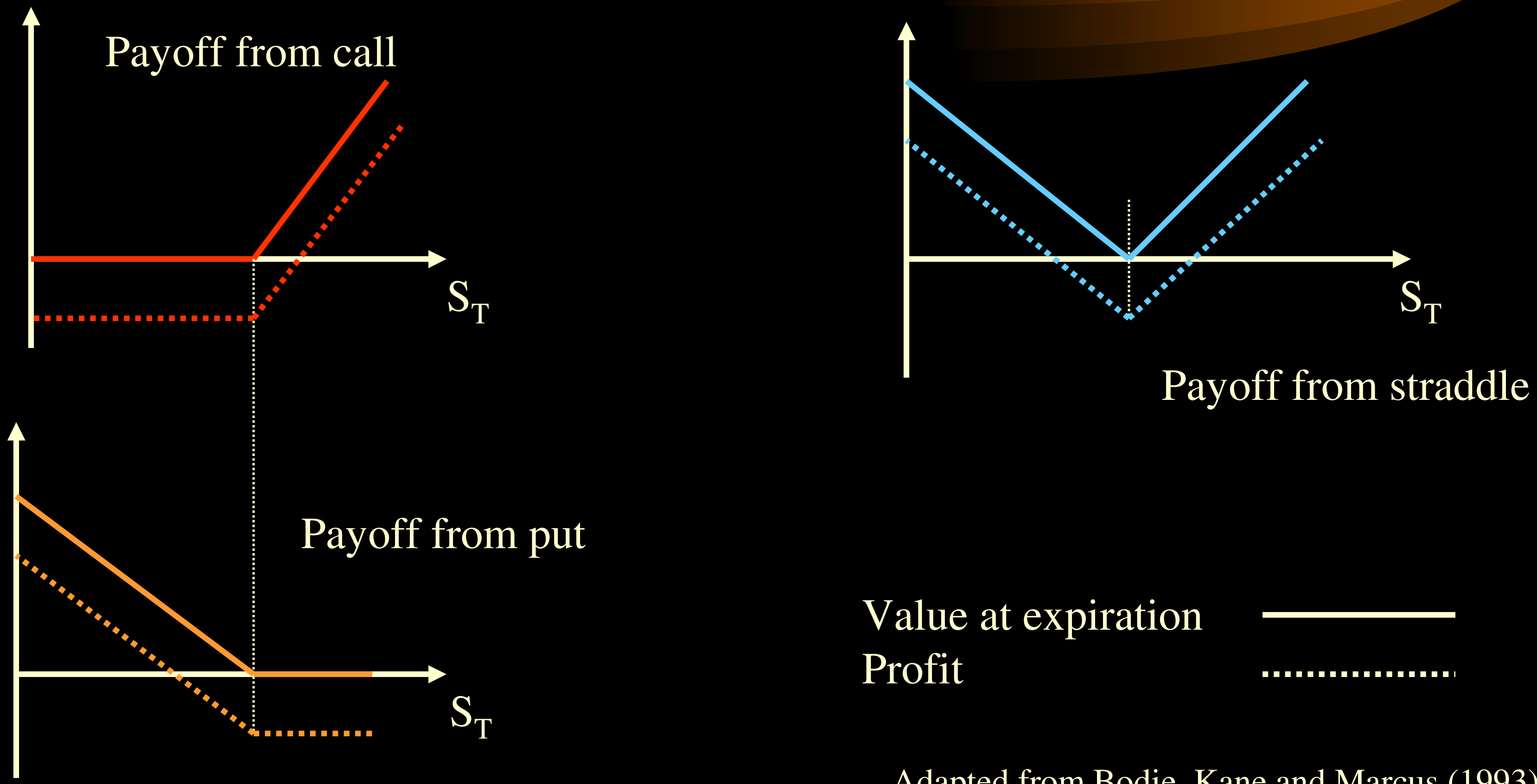


Adapted from Bodie, Kane and Marcus (1993)

Options - 4

- Options strategies
  - Protective put
    - Stop loss order
  - Covered call
  - Straddle
    - A long straddle involves the purchase of both a call and a put on the same asset, each with the same exercise price and expiration date
  - Collar
    - Covering the cost of purchasing a protective put by writing a covered call
  - Spread
    - Two or more calls (or puts) for the same asset with different strike prices or times to maturity

Options - 5



Adapted from Bodie, Kane and Marcus (1993)

Options - 6

- “Greeks”
  - Delta
    - Changes in option prices relation to the underlying futures price
  - Gamma
    - Rate of change of *delta*
  - Lambda
    - Changes in option prices relative to changes in volatility
  - Theta
    - Changes in option prices relative to time to expiration
  - Rho
    - Changes in option prices relative to interest rates

Swaps - 1

- Interest rate swap
  - ***Notional principal***: £ 1,000,000
  - ***Pay***: Libor plus 25 basis points
  - ***Receive***: 6 percent
  - ***Settlement***: Net position
  - ***Alternative***:
    - Retire fixed rate bonds and issue variable rate bonds
    - Trading costs and underwriting costs

- Foreign exchange swap
  - British firm with US$ denominated debt
  - Swaps US$ required for paying creditors for a fixed amount of GB£

Swaps - 2

- Structuring a swap (2004):
  - ***Notional principal***: USD 25 million
  - ***Client pays***: 6-month USD Libor
  - ***Client receives***:
    - {6-month USD Libor + 155 bp} for every day on which 6-month USD Libor is less than the barrier, and zero otherwise
  - ***Barrier***: 7.50 percent
  - ***Duration***: 5 years
  - ***Cancellation clause***:
    - The bank has the sole right to cancel this swap after 1-year, and at every semi-annual fixing thereafter

Credit derivatives - 1

- Purpose
  - Reduce the credit risk exposure of an entity by way of passing on the risk to either one other entity who is in a better position to take the risk, or to a group of entities, each of whom takes a relatively small exposure to this risk
- Reference entity
  - Issuer of the obligation
- Reference obligations
  - The underlying debt obligations of the reference entity

Credit derivatives - 2

- Credit default swaps

annual premiums

Protection Buyer → Protection Seller

Payment when there is credit event

Protection Seller → Protection Buyer

  - Credit event
    - Bankruptcy
    - Failure to pay principal or interest
    - Repudiation or moratorium
    - Restructuring

Credit derivatives - 3

- Credit default swaps …. Contd.
  - Settlement
    - Typically value settlement with option of cash settlement
    - Usually cash settled
  - Risks
    - Credit quality of reference entity
    - Maturity horizon of credit derivative
    - Credit status of protection seller
    - Number and types of credit events included in the contract
    - Nature of payout (cash or value)
    - Other (foreign exchange, interest rate)

Credit derivatives - 4

- Credit default swaps …. Contd.
  - Advantage to protection buyers
    - Hedge against credit risk
    - Synthetic short positions on reference entity's credit quality
    - Diversification of portfolio in the face of over exposure to an industry or a geographic region
    - Regulatory capital
  - Advantage to protection sellers
    - Access credit exposure without incurring relationship costs
    - Access to returns on new asset classes
    - Synthetic long position on reference entity's credit quality
    - Regulatory and valuation arbitrage

Risks

- Credit risk
- Market risk
- Liquidity risk
- Operational risk
  - Processing
  - Settlement
  - Model
- Legal risk
  - Capacity
  - Seniority of claim on collateral
  - Enforceability of contract
- Basis risk

Information sources

- Exchanges
- Data/information vendors
  - Reuters
  - Bloomberg
  - Dunn & Bradstreet
- Credit rating agencies
  - Moody's Investor Services
  - Standard & Poor's
  - Fitch

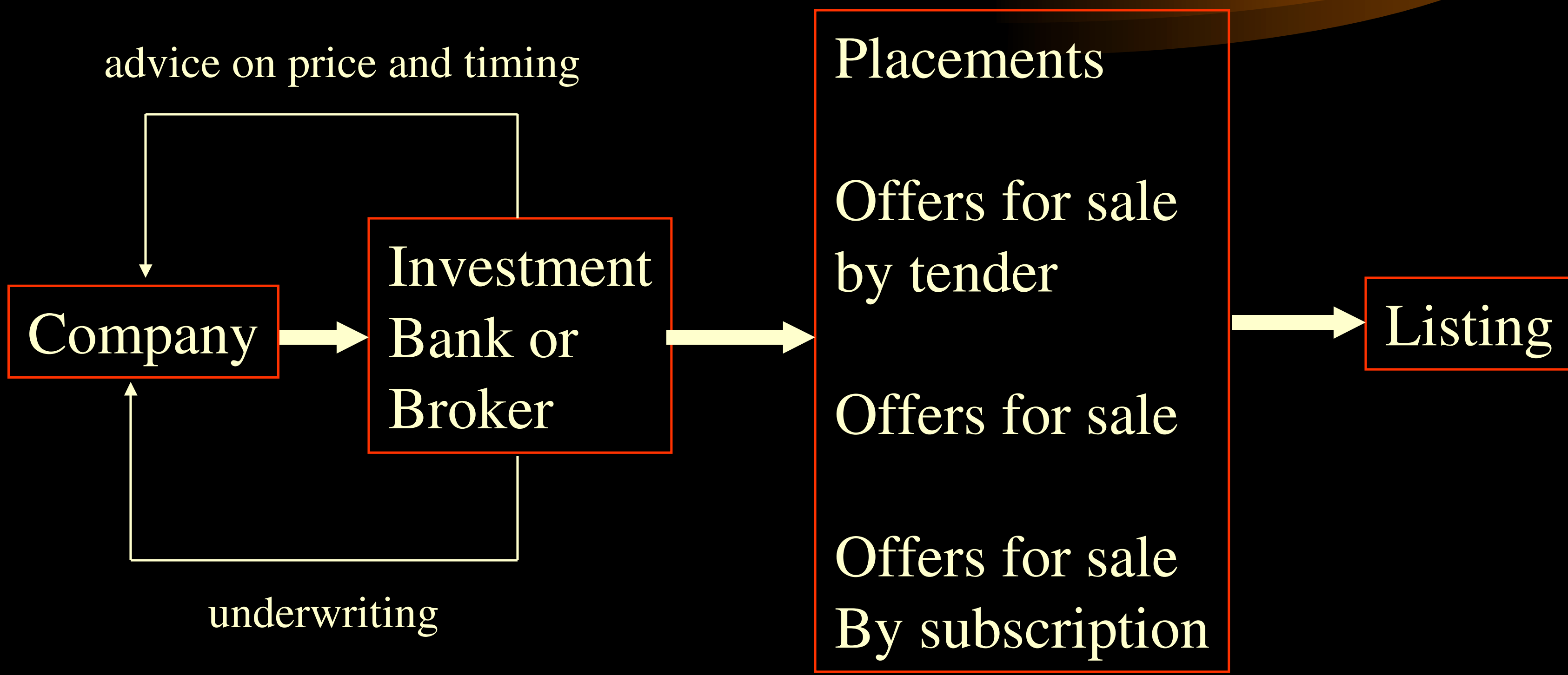
Section 3

Financial Markets

Equity market - 1

- Primary market
  - Listing on LSE
    - Overseen by UK Listing Authority (past of FSA)
    - Requirements
      - 3-year trading record
      - Post-issue value of equity in excess of £700,000
      - 25 percent of shares held publicly
  - Alternative Investment Market (sine June 19, 1995)
    - Replaced the Unlisted Stock Market
    - None of the above requirements apply
    - A nominated adviser who is approved by LSE decides whether a company is suitable for AIM
    - A minimum of one market maker to deal in the shares

Equity market - 2



Equity market - 3

- Rights issues
  - Shareholder approval
    - Company’s Act of 1985
  - Sold to existing shareholders in direct proportion to their existing share holdings
  - Fixed price

- “Big bang” at LSE (1979)
  - Abolition of minimum commissions
  - Permission to act simultaneously as a broker and a market maker
  - Relaxation of rules regarding outside ownership of brokerage firms and market makers

Equity market - 4

- Trade and settlement
  - Quotations
    - Stock Exchange Automated Quotations System (SEAQ)
    - SEAQ International
    - Inter-dealer broker (IDB)
    - Stock Exchange Alternative Trading Service Plus (SEATS Plus)
      - Illiquid shares
      - Order driven, with competing quotes

Equity market - 5

- Trade and settlement …. Contd.
  - Trading system
    - Quote-driven market with market makers
    - Order driven market
      - FTSE 100 shares
      - Stock Exchange Automated Trading System (SETS)
      - Limit order and “at best” order
      - Matched by price and time
  - Settlement
    - T + 3
    - Electronic book keeping by way of CREST

Money market

- Inter-bank market
- Securities market
  - Treasury bills
  - Commercial papers
  - Certificates of deposit
- Gilt repo market
- Bill discounting

Bond market - 1

- Gilt-edged securities
  - Types
    - Treasury bills
    - Bonds
    - Non-market debt
      - National Savings Certificates
  - Management
    - Bank of England until August 1998
    - Debt Management Office since
      - Separation between the issue of securities and ability to affect interest rates
  - Issue
    - Auctions on an “uniform price” basis

Bond market - 2

- Secondary market for gilts
  - Separation of market makers and brokers until October 1986
  - Gilt-edged market makers (GEMM) with dual role since
    - Direct two-way dealing with DMO
    - Access to inter-dealer broker mechanism
    - No need for separate capitalisation since March 1997
- Gilts stripping
  - Treat each coupon payment and repayment of principal as separate zero coupon bonds
  - Remain direct obligation of the UK government
  - Stripping and reconstitution through GEMM

Derivatives market - 1

- Derivatives
  - Over-the-counter (OTC)
  - Exchange traded

- Futures market
  - Parties
    - Brokers (e.g., Futures Commission Merchants)
    - Exchanges
    - Clearing houses
      - Counterparty to every trade at the exchange

Derivatives market - 2

- Futures market …. Contd.
  - Order forms
    - Commodity to be traded
    - Quantity of contracts to be bought and sold
    - Month and year of delivery
    - Exchange on which contract is traded
    - Price at which trade is to be executed
    - Name of customer and account number
    - Date of order
    - Length of time for which order is valid
      - Good for the day (default)
      - Good until cancelled

Derivatives market - 3

- Derivatives market …. Contd.
  - Delivery methods
    - Physical delivery
      - Exchange of futures for physicals (EFP)
    - Offsetting
    - Cash delivery
  - Margins
    - Initial margin
    - Daily mark-to-market
    - Margin call
    - Margin settlement

Information

Books and Web Pages

References

- Bodie, Zvi, Alex Kane and Alan Marcus (1993) *Investments*, 2nd edition, Irwin
- Buckle, Mike and John Thompson (2004) *The UK Financial System*, 4th edition, Manchester University Press
- Davies, Jonathan, James Hewer and Phil Rivett (2001) *A Guide to Credit Derivatives,* PricewaterhouseCoopers
- Edwards, Franklin and Cindy Ma (1992) *Futures and Options*, McGraw-Hill
- Hull, John (1999) *Options, Futures and Other Derivatives*, 3rd edition, Prentice Hall
- Kohn, Meir (1994) *Financial Institutions and Markets*, McGraw-Hill

Google search

- Federal Reserve Bank of Boston
  - Publications/Economic Research/Conferences
- Frank Fabozzi Associates
- NUMA Web
- Office for National Statistics
- Riskglossary.com
- University of Pennsylvania > Wharton School > Financial Institutions Center