

FINA556 - Structured Products and Exotic Options (Fall 2010)

Course objectives

This course discusses the product nature and hedging, pricing and risk management methodologies of the commonly traded exotic financial derivatives, credit derivatives and asset backed securities in the financial markets. Special emphasis will be on exotic forward contracts and swaps, swaptions, credit default swaps, collateralized debt obligations, constant proportional debt obligations, mortgage backed securities, convertible bonds, equity-linked hybrid products. Illustrative case studies of some real products will be provided.

Textbook

“Fundamentals of Futures and Options Markets” by John Hull, seventh edition (2010), Prentice Hall.

Course instructor

Professor Yue Kuen Kwok, Mathematics Department.

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Meeting dates

9:00am – 12:30pm in Room 4619 on the following Saturdays

4 Sep., 11 Sep., 18 Sep., 25 Sep., 2 Oct., 9 Oct., 16 Oct.,

Final examination on 23 Oct.: 10:00am – 12:00noon.

Course content

Overview of basic structured products

- Markets for structured products
 - expression of investor’s view
 - downside floor protection and upside equity participation
- Examples of structured notes and equity-linked products
 - Target redemption notes
 - Maybank notes tied to China’s infrastructure stocks
- Exotic forms of forward contracts
 - snowball feature
 - accumulators

Exotic swaps

- Implied forward rates: Bond forward and forward rate agreement
 - Swap rate curve
- Asset swaps
 - Hedge based pricing
- Short positions in defaultable bonds, total return swaps and equity swaps
 - Repo transactions
 - Uses of total return swaps
- Currency swaps and differential swaps

- First deal between IBM and World bank
- Differential swaps
- Swaptions
 - Call monetization and various trading strategies
 - Valuation of European swaptions
- Credit default swaps
 - Funding cost arbitrage
 - Counterparty risk
 - Credit spread curves and forward probability of default
 - Valuation of the CDS spread
 - Options on credit spread
 - Hedge strategy using fixed-coupon bonds
 - Cash-and-carry arbitrage with par floater
- Constant maturity swaps
 - Product nature and uses
 - Hedging by swaptions

Convertible bonds and variable annuities products

- Convertible bonds
 - Conversion, callable, reset and other features
 - Delayed call phenomena
 - Investors' perspectives on investment on convertible bonds
 - Example: Resorts World
 - Break-even calculations
 - Interest rate sensitivity and duration analysis
 - Dynamic programming in binomial calculations
 - Issuance from the perspectives of corporate treasurers
 - Investors' perspectives on convertibles
 - Busted convertibles
- Structured convertibles
 - Exchangeable convertible bonds
 - Convertible preferred stocks
 - LYONs (Liquid Yield) Options Notes
 - PEPS (Premium Exchangeable Participating Securities)
- Reverse convertibles
 - 24-month callable dual accrual cash or share security on Wal-Mart Stores, Inc and Inter Corp"
- Variable annuities products
 - Participating policies
 - Policy riders
 - Guaranteed annuity options

Asset backed securities and structured credit products

- Mortgage backed securities
 - Mortgage passthrough securities

- Collateralized mortgage obligations
- Prepayment risk in mortgage backed securities
- Structured credit products
 - Synthetic collateralized debt obligations
 - Constant proportional debt obligations

Grading policies

One reading report on a technical paper on Convertible Securities (Premium Exchangeable Participating Securities)	20%
Two sets of homework assignment	2 x 15%
2-hour in-class closed book final examination	50%

Total = 100%

Due dates of assignment

1 st homework	9 Oct.
Reading report	16 Oct.
2 nd homework	23 Oct.

Final examination

23 Oct.