OPTIONS

RUTGERS SCHOOL OF BUSINESS

MQF PROGRAM

Fall 2015

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This is a graduate level, applications oriented course. Basic knowledge of finance, statistics and derivatives should, therefore, assumed. However, as I realize students have varied backgrounds, I structure the course to be self contained. Hence I provide the class with the prerequisite fundamentals when necessary.

I do not use a book. My lectures serve as the core material. There will be handouts on BlackBoard. (Always consult BlackBoard for important class announcements.) There are a number of good books available:

McMillan, “Options as a Strategic Investment” provides investment and trading strategies.

Hull, “Options, Futures and Other Derivatives” is analytical and concise.

Natenberg, “Option Volatility & Pricing” is intuitive, analytical but it is not quantitative enough.

Sinclair, “Options Trading” presents a nice mix, nut not structured as a textbook

There will be three tests. There is also required homework.

My office hours are Wednesday 1:30 to 3:45 plus Tuesday and Thursday by appointment. Room 1158.

This list of topics is ambitious. We may not be able to cover all, as it depends on students’ backgrounds and preparations. I may also change the order of the presentation.

PART I – FUNDAMENTALS

* The vocabulary and jargon of options; the option contract
* Various option types and their parameters
* American, vs. European styles
* Exchange-traded vs. OTC; performance risk
* Explicit, embedded and implicit options
* Exotics
* Option payoffs
* Analytics of option value at expiration
* Basic option strategies
* Combinations
* Breakevens and breakpoints
* Synthetics
* Spreads
* Digital options
* Options in M&A

PART II – REALTIONSHIPS, VALUATION AND TRADING

* Simple minimum and maximum values
* Fair forward pricing
* Spot vs. forward ATM
* Arbitrage, intrinsic and minimum values
* Put-call parity
* “Butterflies”
* Boxes
* Early exercise of Americans?
* Factors determining an option’s price, intuitively
* IV and TV over the option’s curve
* All the “Greeks”
* Hedge ratios; delta neutrality
* Crucial role of volatility
* “Gamma buyers” vs. “delta buyers”
* Convexity and gamma
* Dynamic hedging: what it costs the dealer to write options
* Buying and selling vol
* Historical vs. implied vs. realized vol
* Barrier options
* Asian-type payoffs
* Relation between binary and ordinary option
* Summary: risks and exposure of options positions

PART III – QUANTITATIVE PERSPECTIVES

* Fundamental dynamic relationship between underlying and derivative
* Black-Scholes result
* Binomial pricing model
* Measuring volatility
* Term structure of volatility
* Annualizing volatility
* Volatility “smile”
* GARCH
* Mean reversion
* Option spread trading

PART IV – APPLICATIONS TO FIXED INCOME AND OTHERS

* Convertible securities
* PIK bonds
* Duration of call option
* Callable bond; cancellable swap
* Swaps and swaptions
* Caps and floors
* Capped and inverse floaters
* Range notes
* Reverse convertibles
* Principal protected notes
* Sampling of structured products
* Accumulation products
* “Over/undervalued” FX via options
* Indirect volatility via FX correlations
* Yield curve via options
* Common stock as implicit option