Economics 870 (2011)

Final Examination preparation.

There will be four (4) questions.

You will be required to know the following topics. Four questions will be taken from the following six topics.

1. **Be able to prove the APT as in Milne Ch.7. As an extension to that result you should be able to specialize it to the CAPM.**

2. **Be able to prove the multiperiod MM theorem with firms as demonstrated in Milne Ch. 9 and 10 – for complete and incomplete markets. Be able to show the arbitrage pricing result, *and* that all agents will be indifferent to the financial changes. Be able to explain how this result underlies all financial arbitrage pricing results – prepare an example different from the Binomial Call option or default free binomial interest rate models to illustrate your argument.**

3. **Be able to derive the multiperiod Binomial call option pricing formula. Show how the formula can be rearranged so that it resembles the Black-Scholes formula except that the Binomial distribution replaces the BS normal distribution. Provide intuition how the Binomial formula converges to the BS formula. You may want to refer to the orthonormal basis idea (see Milne Ch.14.1 and 14.2.)**

4. **Derive the binomial interest rate model and show how you would be able to price and hedge a European call option on an interest rate. Make sure you can explain the Ho-Lee model and the Black, Derman and Toy version of the model. Can these models be extended to multiple risky factors? See Milne Ch.14 section 14.4.**

5. **Explain how you can model default risk for a corporate bond pricing model. Show how you can find a martingale measure for this model; and hedge and price a European derivative on the corporate bond. Be able to explain and model a Credit Default Swap (CDS), and how to hedge and price it – see Jarrow and Turnbull Ch 18 section 18.5.) What can go wrong in hedging a CDS?**

6. **Be able to outline the Acharya and Pederson (2005) model and results on liquidity and asset pricing AP (2005):**
   http://faculty.london.edu/vacharya/assets/documents/AchPed.pdf
   How well does the model fit the data?