Final exam in New Facts in Finance, part 2 (1st trial)
Friday, May 14th, 2010 Extras: Calculator, exam time: 5 hours
Maximum score is 100 points. Minimum required to pass is 50p. Avoid essay question answers beyond one page. Answers in English and Swedish OK. Note: Formulas sheet purposely omitted.

1. Outline the main steps involved in calculating the price of interest rate options using no-arbitrage based models of interest rate trees. **(20p)**

2. Discuss the differences between real world probabilities and risk neutral probabilities of default. **(10p)**

3. Define briefly following interest rate related terms/names/abbreviations **(2p/sub-question, 10p max.)**

a) Swaption
b) Swap spread
c) FRA
d) CDO
e) Binary CDS

4. A credit default swap requires semi-annual payment at the rate of 60 basis points per year. The principal is $300 million and the credit default swap is settled in cash. A default occurs after 4 years and 2 months, and the calculation agent estimates that the price of the cheapest deliverable bond is 40% of its face value shortly after the default.

a) List the cash flows and their timing for the seller of the credit default swap.

b) Do the same for the buyer. (total **20p**)

5. A three-year corporate bond has annual coupon of 4.2% p.a. and yield-to-maturity 4.5% p.a. (continuously compounded). The risk-free rate is 2% p.a. (continuously compounded). Suppose defaults can occur only every half years (i.e. at t=0.5,1.5,2.5). If default occurs recovery rate on the bond is 40%. Estimate the probability of default per year with two alternative methods. You may assume that default probability remains constant over the life of the corporate bond, and that all future forward rates are flat at current spot rate levels. **(25p)**

6. Nokia and Apple have been offered following rates per annum on a $100 million 5-year loan:

	Fixed rate	Floating rate
Nokia	8.0%	LIBOR + 0.2%
Apple	9.1%	LIBOR + 0.4%

Nokia requires a floating-rate loan. Apple requires a fixed rate loan. Design an interest rate swap that will net a bank, acting as an intermediary, 0.2% per annum and that will appear equally attractive to both companies. Illustrate graphically the swap construction! **(15p)**

Good luck!