

# Derivatives Lab

## Session 3

September 12, 2011

1. Suppose the coupon rate for a level coupon bond is the same as the market rate. Show that this bond will be sold at par.
2. Recall that the *yield to maturity* of a level coupon bond is the IRR of its cash flow. Compute the yield to maturity of a 10-year level coupon bond sold at 75% of par with a coupon rate of 10% paid semiannually.
3. Plot the price vs. time to maturity for level coupon bonds with annual coupon rates of 2%, 6%, and 12% paid semiannually. Assume a yield of 6% and a par value of EUR 1 000.
4. Use the `timeit` module to compare the efficiency of Newton's method, the secant method, and Brent's method for computing the IRR of the test case from Lab Session 2. Repeat for  $N = 200$  and  $P = 1\,500\,000$ .