Chapter 6 – Example 3

Assume a corporate bond with a $1000 face value matures 5 years and 7 months from today and has an annual coupon rate of 8% paid semiannually. There is a 10% chance that the issuer will default at maturity. If the firm defaults, it will pay 80% of what is promised (final coupon + face value) at maturity. But it will pay all coupons prior to maturity even if it defaults at maturity. Treasuries with the same maturity earn a yield to maturity of 2% and investors in these corporate bonds demand a 3% risk premium over the current rate on Treasuries (thus requiring an expected return of 5%) to compensate for the risk they face (All rates are APRs with semiannual compounding).

Calculate the clean price of the bond.
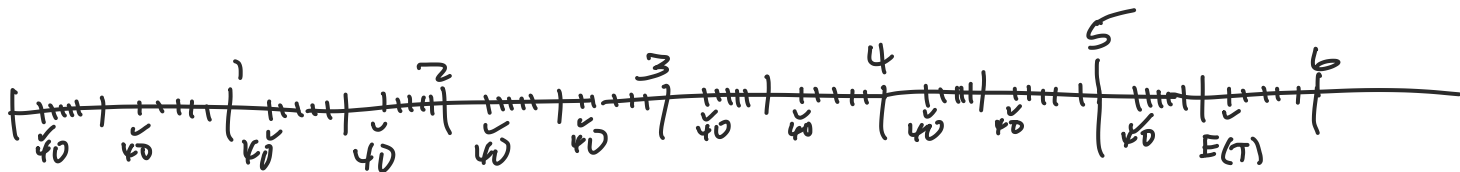
$$y = \frac{.05}{2} = .025$$

$$E(T) = .9 \times 1040 + .1 \times .8 \times 1040 = 1019.20$$

$$V_{-5m} = \left(\frac{40}{.025}\right)\left(1 - \left(\frac{1}{1.025}\right)^{11}\right) + \frac{E(T)}{(1.025)^{12}} = 380.57 + 757.83 = 1138.40$$

$$V_0 = 1138.40(1.025)^{5/6} = 1162.07$$

$$Clean = 1162.07 - \left(\frac{5}{6}\right)(40) = 1128.73$$