

Second Examination Answers

1. a. The appropriate present value equation is

$$\$1,000 = \frac{\$91.67}{(1 + \text{APR} / 12)^1} + \frac{\$91.67}{(1 + \text{APR} / 12)^2} + \dots + \frac{\$91.67}{(1 + \text{APR} / 12)^{12}}$$

Trial and error (or a computer program) gives a monthly rate of $\text{APR}/12 = 0.014983$ (1.4983%), for an annual rate of $12(1.4983\%) = 17.98\%$.

- b. If the annual percentage rate were really 10%, the monthly payments X would be given by this equation:

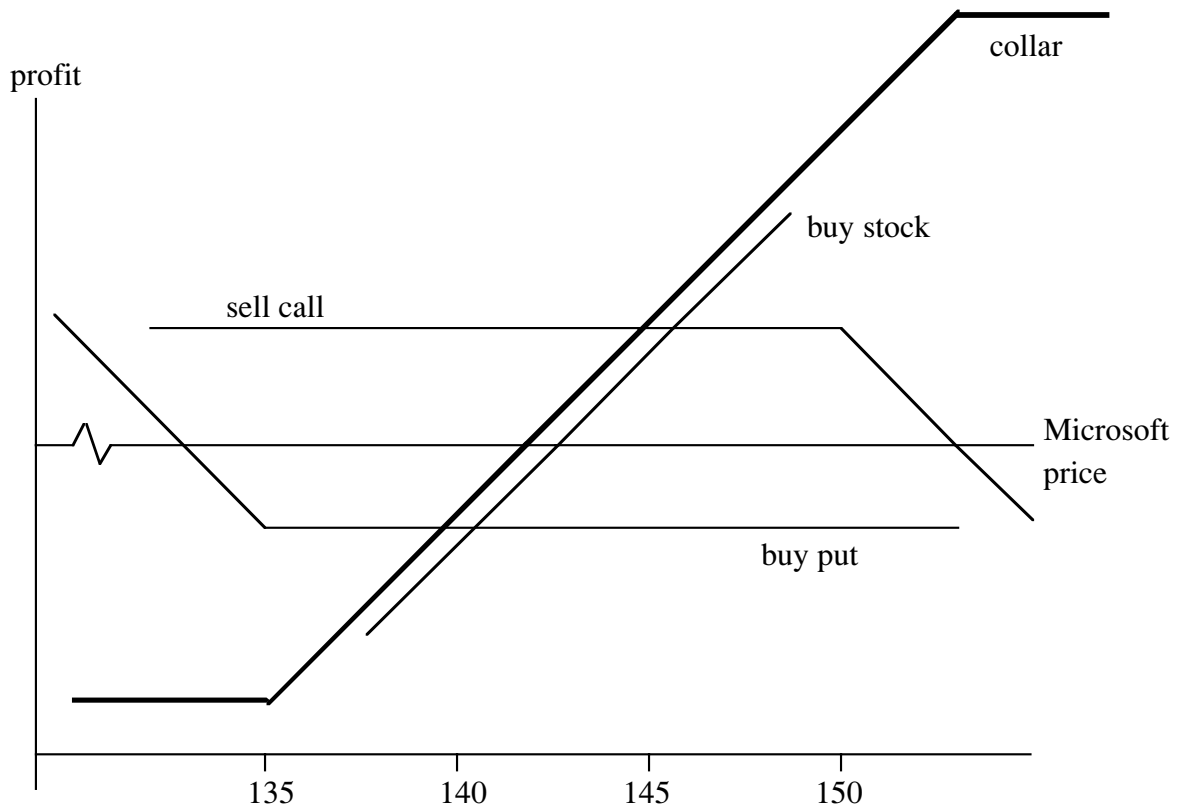
$$\$1,000 = \frac{X}{(1 + 0.10 / 12)^1} + \frac{X}{(1 + 0.10 / 12)^2} + \dots + \frac{X}{(1 + 0.10 / 12)^{12}}$$

The solution is $X = \$87.92$

2. a. The author specified a government bond so that there would be no default risk.
- b. As the author goes on to explain: "Only if the semiannual interest coupon is reinvested at the same interest rate of 8% will the cumulative return equate to +8% annually."
3. Here is the completed table:

	Total Return	Principal Stability	Current Income	Income Growth	Income Stability
Common stocks	1	3	2	1	2
Long-term bonds	2	2	1	2	1
Treasury bills	3	1	NA	NA	3

4. a. When interest rates have declined, bond issuers are likely to exercise their call provisions, and investors will consequently not receive the generous coupons until maturity.
- b. Because high-coupon bonds sell at a premium to maturation value, their yields to maturity will be less than their coupon rate.
5. Unless the firm is going to be liquidated, its market value is the present value of the cash flow to investors, which depends on the profitability of its assets, not what it costs to acquire them.
6. Here is a closeup look:



7. The ratio of the index to the earnings is the P/E ratio. Logically, this depends critically on the anticipated growth rate of earnings and the required rate of return (and hence interest rates).
8. It is true that you would have made a \$25 profit on the stock, as compared to a \$14 profit on the options, but the former is only a 50% return, compared to 233% on the options.
9. Stock prices depend primarily on the anticipated cash flow and the required rates of return used to discount this cash flow. The anticipated cash flow depends on corporate profits; shareholder required rates of return depend on interest rates. Since their cash flow is fixed (except for default risk), bond prices depend only on interest rates. Ceteris paribus, an increase in interest rates will reduce the prices of both bonds and stocks; however, changes in corporate profits only affect stocks.
 - a. Thus when changes in interest rates cause changes in stock prices, bond and stock prices will be positively correlated. When changes in corporate profits cause changes in stock prices, the correlation between bond and stock prices will be virtually zero.
 - b. As explained in the answer to (a), bond and stock prices are either positively correlated or uncorrelated. Thus when R^2 is 0.36, R is +0.6.
 - c. The relatively low correlation between bond and stock prices was used to argue that, for diversification, bonds should be added to a stock portfolio.
10. After the stock goes ex-dividend, the stock's price will drop by the size of the dividend.