

Final Examination Answers

1. The 30-year bond must have had a duration of (approximately) 17 years. Allan Sloan, "A Word of Caution for Investors: Don't Be a Slave to History," *Fortune*, January 15, 2014.
2.
 - a. Don't buy a stock because you hope to sell it soon after for a profit. The purchase should be justified by the cash flow if you never sell.
 - b. The time to buy stocks is when the fears of others have caused prices to collapse; the time not to buy is when the greed of others has caused prices to soar.
 - c. Institutions are generally speculators, not investors. If you want to be an investor, don't imitate institutions.
 - d. Stock splits are nonevents, except for the wasteful transaction costs.
 - e. You should value a stock the same way you value a bond, by discounting the anticipated cash flow.
3. This is seldom a good idea. The mortgage interest is tax-deductible and the IRA returns are tax-deferred. The after-tax return on the IRA is likely to be substantially higher than the after-tax interest rate on the loan.
4. Tobin's $q = 1$ since the market value of the fund's share's is equal to the net asset value per share.
5. In theory, share repurchases are a nonevent, although substituting debt for equity does create a tax shield. A stronger and more relevant effect is that lower interest rates increase the present value of the profits and dividends generated by corporations. (Anthony Mirhaydari, "What Happens When the Fed Stops Propping Up Stocks," *The Fiscal Times*, September 7, 2014.)
6. A reasonable return estimate is $\$4.40/\$20 + g$, where g is the long-run annual rate of growth of energy costs. [*Fortune*, September 6, 2010, p. 17.]
7. If the Fed is certain to do something, it is presumably already embedded in the term structure. Here, if it is certain that the Fed is going to increase interest rates in the future, current long-term rates will be higher than short-term rates.
8.
 - a. The total return from stocks should include dividends.
 - b. He should be using the return on zeros, not the interest rate.
 - c. Looking forward, over a 1-year horizon, 1-year T-bills are risk-free.
9. How could the company be worth the same amount if it has disbursed cash to buy back its shares? Felix Salmon, "Berkshire's weird buyback," *Reuters*, December 12, 2012
10. A firm's profits fluctuate about its average profit. Regression to the mean occurs because firms with observed profits that are far from the mean tend to have average profits that are closer to the mean. Thus, their profits in any other year will be closer to the mean.
11. This is akin to saying that 30-year bonds should be valued by discounting the coupons by a 3-month interest rate if investors plan on holding the bonds for only a few months. This is clearly wrong for bonds and is incorrect for stocks as well.

12. Answer (b) is correct. If $\rho = R$, then there would be no economic value added, and $P = K$. Only (b) and (c) have this property, and (c) ignores profits and the required return. The economic value added each period is the profits ρK minus the cost of capital, RK : $EVA = (\rho - R)K$. Using the present value of a perpetuity, the value of the firm is

$$P = K + \frac{(\rho - R)K}{R}$$

13. Earnings are a means to an end, not the end itself. If the earnings are retained and invested in money-losing projects, they may as well have never been earned in the first place.

14. Beta measures the slope of the linear relationship between the stock return and the market return, and is a measure of the stock's systematic risk. The stock itself could have a very high standard deviation.

15. The monthly payments are given by

$$\$32,000 = \frac{X}{(1+0.125/12)^1} + \frac{X}{(1+0.125/12)^2} \cdots + \frac{X}{(1+0.125/12)^{180}}$$

The solution is $X = \$394.41$. The effective interest rate is given by

$$\$27,000 = \frac{\$394.41}{(1+R/12)^1} + \frac{\$394.41}{(1+R/12)^2} \cdots + \frac{\$394.41}{(1+R/12)^{180}}$$

The solution is $R = 0.1588$, or 15.89%. [letter to "Money Talk, *Los Angeles Times*, July 30, 2000.]

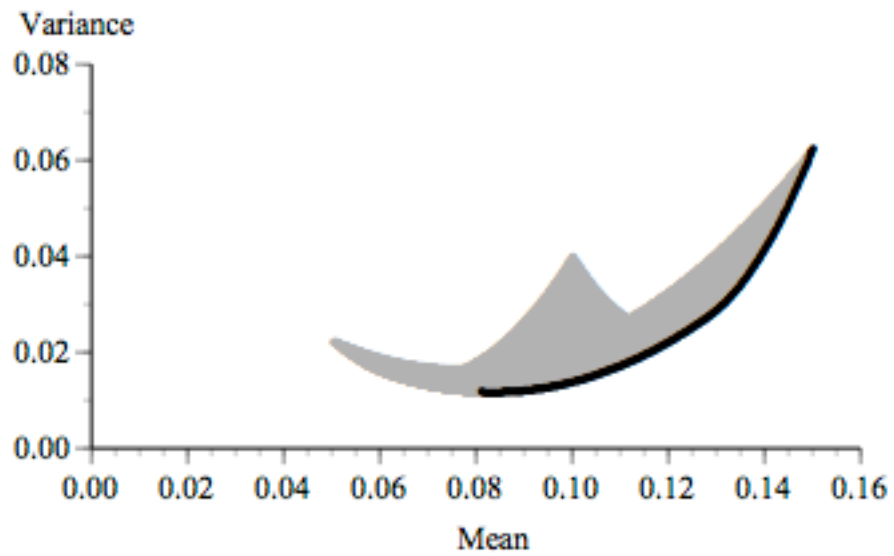
16. The Fool looks at $\$3.52(1.11)^{10} = \10 , but you do not have to wait 10 years to get the \$10. Because getting \$1 each year for 10 years is better than getting \$10 at the end of 10 years, you would pay more than \$3.52 (which is what the Fool concludes, too). At an 11% required return, the present value of \$1 a year for 10 years is \$5.89.

17. Gold generates no income, so it has no intrinsic value. The argument that "it is still under-owned" sounds very much like the greater fool theory. (This interview took place right when gold was at a peak of \$1,900/ounce. The price fell 40% over the next three years. (Scott Cendrowski, "A Value Investor Betting on Gold," *Fortune*, September 26, 2011, 79-80)

18. MacKinnon is using the constant-dividend-growth model, where $R = D/P + g$ with g the growth rate of dividends and prices. Here, $R = 7\%$ (ignoring a risk premium) and $D/P = 2\%$, so that $g = 4\%$ to 5% . Because g is the growth rate of both dividends and prices, the answer is $x = y$.

19. a. The second stock because a growth stock has a longer duration than a no-growth stock.
 b. The second stock because the higher the growth rate, the longer the duration.
 c. equal, because both are no-growth with no maturation date.

20. The Markowitz Frontier is the minimum variance for any mean but it doesn't go left of the minimum variance because for those points on the curve it is possible to have a higher mean for the same variance:



Yes, Tobin's Separation Theorem (that the optimal risky portfolio doesn't depend on preferences) still holds, because this theorem doesn't depend on how the opportunity locus is graphed.