

Final Examination Answers

1. a. The present value of five annual lease payments, at a 10% required return, is

$$V = \$200,000 + \frac{\$200,000}{(1+R)^1} + \frac{\$200,000}{(1+R)^2} + \frac{\$200,000}{(1+R)^3} + \frac{\$200,000}{(1+R)^4}$$

For $R = 0.10$, the present value is \$833,973, which is more expensive than purchasing.

- b. A higher required return reduces the present value of the lease payments, making leasing more appealing. For $R = 0.12$, the present value works out to be \$807,470—leasing is more appealing but still more expensive than buying.
2. No taxes are paid while an investment is inside an IRA, and there is no distinction between municipal bonds and other bonds when funds are withdrawn from an IRA. So, you want the highest possible returns, which are for corporate and federal bonds, not municipal bonds.
3. The market would *not* be efficient if experts agreed that stock prices will soon rise or fall by a considerable amount, because then stocks would be clearly mispriced. [John Crudele, “Even the Experts Disagree on the Market’s Direction,” Los Angeles Times, April 30, 1989.]
4. With backtesting, it is always possible to find strategies that fit past data remarkably well; the real test is how it does with fresh data. [Jason Zweig, When Your Investing Robot Has a Mind of Its Own, Wall Street Journal, May 18, 2018.]
5. In theory, stock splits are nonevents.
6. a. The plaintiff wanted to use a low interest rate, the Treasury bond rate; the defendant wanted to use a high interest rate, the Baa rate.
b. Since condominium developments are riskier than Treasury bonds, the projected cash flow should be discounted by a higher interest rate, perhaps even higher than Baa corporate bonds.
7. An upward sloping term structure is consistent with a financial market consensus that interest rates will rise. If you think that interest rates will decline (or, at least, not increase as much as implied by the term structure), then you should buy bonds with long durations, since the falling interest rates will increase bond prices and a bond’s duration is a gauge of the sensitivity of its price to interest rates.
8. CAPM assumes that investors use mean-variance analysis and measure risk by the standard deviation. The beta coefficient measures how much individual investments contribute to the overall portfolio standard deviation.
9. The cost of carry, the lost interest from buying gold now, depends on Treasury bill rates and storage costs. Since this is positive, gold futures should cost more than gold and this spread widens as Treasury bill rates increase.

10. Your wealth at the end of each year is

$$W_1 = \$10,000$$

$$W_2 = \$10,000(1+r) + \$10,000(1+g)$$

$$W_3 = \$10,000(1+r)^2 + \$10,000(1+g)(1+r) + \$10,000(1+g)^2$$

⋮

$$W_{20} = \$10,000(1+r)^{19} + \$10,000(1+g)(1+r)^{18} + \dots + \$10,000(1+g)^{19}$$

We can convert this to a present value by dividing by $(1+r)^{20}$, and then convert it back to a future value:

$$\frac{W_{20}}{(1+r)^{20}} = \$10,000 \left(\frac{1}{1+r} \right) \left(1 + \frac{1+g}{1+r} + \left(\frac{1+g}{1+r} \right)^2 + \dots + \left(\frac{1+g}{1+r} \right)^{19} \right)$$

$$= \left(\frac{\$10,000}{r-g} \right) \left(1 - \left(\frac{1+g}{1+r} \right)^{20} \right)$$

$$W_{20} = \left(\frac{\$10,000}{r-g} \right) \left((1+r)^{20} - (1+g)^{20} \right)$$

For $g = 0.05$, $W_{20} = \$814,840$ for $r = 0.10$ and $\$1,371,324$ for $r = 0.15$.

11. Most likely, this additional debt was a tax shield.
12. If the liquidity preference hypothesis is true, then long-term rates will be somewhat higher than implied by the expectations hypothesis. For a flat term structure, with long-term rates equal to short-term rates, investors would have to expect interest rates in the future to be lower than they are today.
13. It may be difficult to beat the market because market prices are buffeted by unpredictable news events and animal spirits, even though market prices are far from intrinsic value.
[Ibbotson, Roger G., Idzorek, Thomas M., Kaplan, Paul D., and Xiong, James X. 2018 Popularity: A Bridge between Classical and Behavioral Finance, CFA Institute Research Foundation, p. 4.]
14. a. Same (identical in all respects except leverage)
b. B, more leverage
c. B, more leverage
d. B, more systematic risk
15. Using the constant-dividend-growth model's equation $R = D/P + g$, for two stocks to have comparable returns when one has a higher anticipated dividend growth rate, the other must be priced to have a higher dividend yield. (It is true that firms that pay high dividends have less money to retain for financing growth; but the dividend yield D/P reflects not just the level of dividends D , but the price P determined in the stock market. A firm with a high D need not have a high D/P .) [Louis Rukeyser, How to Make Money in Wall Street, Garden City, New York: Doubleday, 1974, p. 46.]
16. If the Modigliani-Miller theorem is true, the investment decision is independent of the method of financing; but required returns on debt and equity still depend on interest rates. For instance, the Modigliani-Miller theorem implies that the total value of a levered firm would be the same if it were unlevered. Thus a firm can judge an investment project by asking whether shareholders would value it at more than its cost—whether, if it were equity financed, the firm could sell enough stock to pay for the cost of the project. These considerations depend critically on shareholders' required rates of return, which are strongly influenced by interest rates and, hence, monetary policy.

17. Maybe the 2002 stock prices of wide-moat companies were too high, especially if their performance regressed to the mean.
18. [John R. Dorfman, “Decline in Rates Reduces Interest in ‘Zero’ Issues,” The Wall Street Journal, March 18, 1987.]
- Yes; otherwise, the rate of return would not be positive.
 - The market values fluctuate with interest rates (more so than coupon-bonds of equal maturity).
 - With no cash flow before maturity, a zero has a duration equal to its maturity; coupon-paying bonds have shorter durations than their maturity—and duration gauges the sensitivity of market value to interest rate changes.
 - There is inflation risk and also opportunity-loss risk, in that, if interest rates increase, one could have done better rolling over short-term bonds than holding on to a zero.
 - The term structure may reflect this anticipated increase in interest rates. In fact, if others expect interest rates to increase by a larger amount than you do, the upward sloping term structure will be so steep that you might anticipate making more money buying a long-term zero than rolling over short-term bonds. For example, if one-year Treasury-bills pay 8% and 30-year zeros pay 12% and you expect Treasury bill rates to increase to 10% over the next 30 years, the 30-year zero is a much better investment.
19. Data-mined backtesting is unreliable and this argument is the fallacious law of averages. [Marotta, Stefanie, Horizons looks to revamp Canada’s first AI ETF after performance in first year a 'complete disappointment,' The Globe and Mail, October 2019.]
20. a. Yes; stock prices should rise in the long run along with corporate dividends, earnings, and assets.
b. No; because a regular seasonal pattern could be exploited profitably. Who will buy in July if we are confident that prices will fall in August?