Econ 156
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Final Examination Answers

1. All his calculations involve total payments and ignore the time value of money. He might consider whether he could refinance for 22 1/2 years at 9.5%, choosing the size of this new loan to give him the same monthly payments he has now, and see if this new loan covers his unpaid balance plus the closing costs. It would. His current monthly payments are $630.69. He could borrow $67,631.09 at 10% (the high end of the stated range) for 22 1/2 years, with monthly payments of $630.69. The unpaid balance on the current loan is $54,173.34. The $13,457.75 difference between the new loan and the unpaid balance would allow him to pay $3,500 to $4,000 in closing costs and pocket nearly $10,000.

2. For horizons beyond the duration, low interest rates reduce future wealth because the reduced interest on reinvested coupons outweighs the increase in the market value of the bond. This will be true of life insurance companies with horizons of 40 years who buy bonds with durations of 8 years.

3. Equating the present values:

$$157.8 = 8.4 + \frac{8.4}{(1+R)^1} + \frac{8.4}{(1+R)^2} + \ldots + \frac{8.4}{(1+R)^{25}}$$

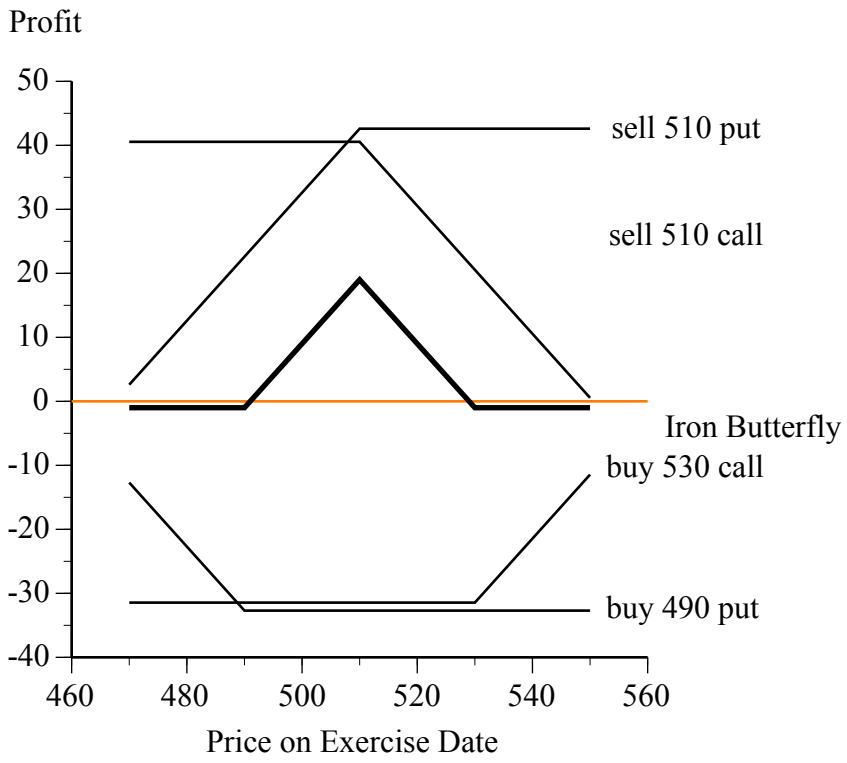
   The solution is R = 0.028 (2.8%)

4. The Dow is a simple average of the prices of the 30 stocks in the Dow. When a high-priced stock like Berkshire Hathaway replaces a lower-priced stock, the divisor must be *increased* to keep the Dow at its level at the time of the substitution. Because the price of Berkshire is orders of magnitude higher than the prices of the other 29 stocks, movements in the Dow would be essentially movements in Berkshire.

5. A fixed-rate mortgage is a wager that that interest rates will not decline (a losing roll), leaving the homeowner with a high-interest mortgage, and expensive prepayment penalties and other expenses to refinance at lower rates.

6. Fundamental analysis tells us that an increase in interest rates raises shareholder required returns, reducing the present value of a given cash flow. Rather than a drop in stock prices causing interest rates to increase, it is more plausible that an increase in interest rates causes stock prices to decline.

7. This strategy is a bet against volatility, with limited downside risk. (The strategy is not as appealing as it seems because the large bid/ask spreads for options make it difficult to buy and sell at the closing prices.



8. The stock exchanges are a secondary market. Unlike depositors withdrawing money from a bank, stockholders who sell their shares do not constitute a run on industries, because businesses are not obligated to redeem these shares.

9. The efficient market hypothesis implies that stock prices should have long ago reflected the fact that the presidential election would occur on November 6, 2012. Investors didn't wake up on November 5, surprised that the election would be the next day. If stock prices increased sharply on November 5, it must have been because of a revised assessment of the probability that each candidate would win.

10. Because of arbitrage, the difference between the current and futures price depends on the cost of carry, the difference between the 1-year T-bill rate and the dividend yield. On December 12, 2012, the T-bill rate was evidently 1.9% lower than the anticipated dividend yield over the coming year.

11. We don't need everyone to have the same information, just enough to arbitrage away any obvious mispricing. On the other hand, stock prices do not necessarily reflect a stock's true value, since stock prices also reflect investors' inexplicable animal spirits.

12. A company can always split its stock, regardless of its profitability. According to the conservation of value, stockholders do not benefit: they have twice as many shares, but each share is worth half as much as previously.

13. a. When observations are drawn from a normal distribution with a mean of 10 and standard deviation of 5, each selection is independent of previous selections and has a .95 probability of being between 10 and 30. Stock prices are different. Tomorrow's price is *not* independent of today's price. If the price on Day 100 is 30, the price on Day 101 is far more likely to be near 30 than near 20.
    b. Statistics-based technical analysis is basically a reaction approach. When the price is high relative to its average price over the past 100 days, it predicts that the price will fall.

14. a. If the Expectations Hypothesis is correct, each zero has the same expected return—since the Expectations Hypothesis assumes that they are priced to give the same expected return.

b. Let the respective interest rates be R_1, R_2, and R_3. A \$1 investment in the 1-year zero will be worth $1 + R_1$ = \$1.01. A \$1 investment in the 2-year zero will be worth $(1 + R_2)^2$ after two years and $\frac{(1+R_2)^2}{1+R_1^{+1}}$ after one year, where R_1^{+1} is the 1-year rate one year from now. If Fama's theory is correct, the 1-year rate one year from now will be 1.0%, the current 1-year rate. So, one year from now, a \$1 investment in the 2-year zero will be worth $\frac{(1+R_2)^2}{1+R_1^{+1}} = \frac{1.018^2}{1.010} = 1.026$. Similarly, one year from now, a \$1 investment in the 3-year zero will be worth $\frac{(1+R_3)^3}{(1+R_2^{+1})^2} = \frac{1.020^3}{1.018^2} = 1.024$. The 2-year zero has the highest expected return.

15. The effective annual returns are:

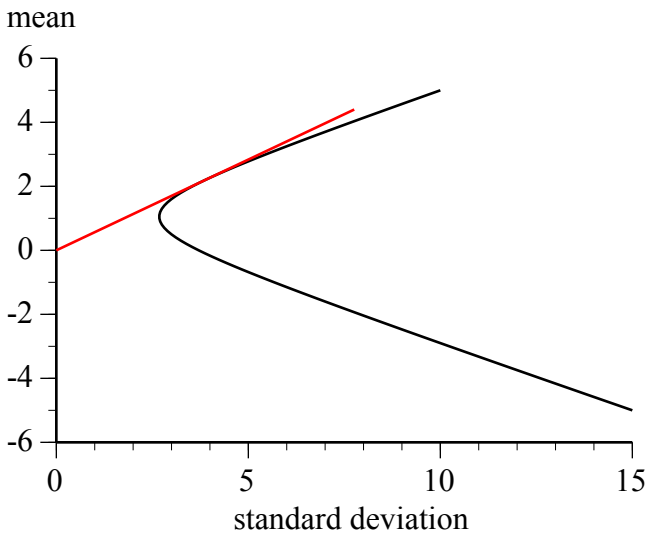
$$(1+0.0925/365)^{365} = 1.0969$$
$$(1+0.0940/4)^{4} = 1.0974$$

The *Journal* was wrong.

16. According to the conservation of value principle, a stock buyback has no effect on a stock's price, while a dividend reduces the price of the stock by the size of the dividend—which would be bad for executives holding stock options.

Here is the complete quotation: "Technology stocks have traditionally stood clear of the trend toward dividends. Tech companies have been reluctant to pay dividends for many reasons. In some cases, companies have expressed a desire to have plenty of cash on hand to acquire companies or make other strategic moves to bolster their business prospects. Another more selfish reason may have to do with tech company compensation, which has historically revolved around stock options. Because dividend payments typically reduce the value of a company's shares, options become less valuable. Therefore, many tech companies have used stock buybacks instead, which focus more on capital appreciation that can bolster stock-option values."

17. Yes if the correlation coefficient is sufficiently negative. For example with a correlation of -0.9:



18. a. She is using the constant-growth dividend discount model:

$$P = \frac{D}{R-g} = \frac{\$800{,}000}{0.15-0.05} = 10(\$800{,}000) = \$8{,}000{,}000$$

The value of 10 for the capitalization rate comes from 1/(R - g) = 1/(0.15 - 0.05) = 10.

b. The current value is not affected if she can sell the property for an amount equal to the present value of the cash flow at the time she sells. Otherwise, the current value would be somewhat higher or lower.

19. a. Net asset value (NAV) is ($100 million)/(5 million) = $20/share. Tobin's q = (market value)/(replacement cost) = $18/$20 = 0.9. The fund's shares sell at a 10% discount from NAV.

b. Because Tobin's q is less than 1, the fund would make its current stockholders better off if it sold some of its stock portfolio and repurchased its own shares. For example, if it sold $18 million of its stock portfolio and used the proceeds to purchase one million of its own shares, NAV would increase to ($82 million)/(4 million) = $20.5

20. The random walk hypothesis says that future stock price changes cannot be predicted from past prices because, otherwise, the stock market would be leaving $100 bills on the sidewalk. There are no $100 bills to be had from predicting population growth.