Midterm exam #1

Investments (FIN 323), Fall 2024

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Please print your name on the line below:

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- This test has 30 questions. You have 75 minutes to take the test.
- There are 15 multiple choice questions. These have only one answer. Mark your answer clearly in the box next to the question.
- There are 15 free-answer questions. **Their answer is always a number, a dollar amount, or a percentage return or growth rate.** Write your answer in the line under the question. I will only grade the answer, not the calculations that you did.
- You can bring one page of notes, front and back.
- You should bring a calculator, but it should not have wireless capability.

I. Stock returns, portfolios, and indexes

For questions 1 through 6, use the table below, which describes the share prices, share counts, and dividend payments of two stocks during a year.

Symbol	Starting share count	Ending share count	Starting share price	Dividend per share, paid during the year	Ending share price
TinyCo	100m	150m	$10	$0	$14
BigInc	200m	200m	$20	$2	$18

Question 1: What was the dividend yield of BigInc (as a percentage)?

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For questions 2, 3, and 4, suppose you use $2000 to build an **equal-weighted** portfolio at the start of the year.

Question 2: What is the total return on this portfolio during the year (as a percent)?

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Question 3: What is your *net* trading activity when you rebalance at the end of the year?

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Question 4: What is your *gross* trading activity when you rebalance?

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Question 5: What is the return on a **value-weighted index** of the stocks (as a percent)? Assume (as usual) that this index reflects only capital gains, not dividends.

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Question 6: Suppose the divisor of the value-weighted index is 1000 at the start of the year. What will it be at the end of the year?

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Question 7: In a typical day, approximately what percentage of stocks would you expect to deliver positive returns? Pick the closest number.

- □ A) 25%
- □ B) 50%
- □ C) 75%
- □ D) 90%

Question 8: Which of the following is **not** true about a value-weighted strategy?

- □ A) Every investor could follow it.
- □ B) It forces you to buy stocks whenever their prices increase.
- □ C) It weights stocks according to their total available supply.
- □ D) It requires regular rebalancing.

Question 9: Which of the strategies that we have looked at would you expect to have the highest turnover ratio?

- □ A) An equal-weighted strategy.
- □ B) A value-weighted strategy.
- □ C) A price-weighted strategy.
- □ D) A passive strategy.

Question 10: Why is the return of the Vanguard 500 index fund much higher than the return of the S&P 500 index? (Hint: Look at the next question before answering.)

- □ A) The fund tracks a different set of stocks than the index.
- □ B) The fund weights stocks differently than the index.
- □ C) The fund's return includes the reinvestment of distributions.
- □ D) The fund's return is net of the fees that it charges.

Question 11: Why is the return of the Vanguard 500 index fund slightly lower than the return of the S&P 500 **total return** index?

- □ A) The fund tracks a different set of stocks than the index.
- □ B) The fund weights stocks differently than the index.
- □ C) The fund's return includes the reinvestment of distributions.
- □ D) The fund's return is net of the fees that it charges.

Question 12: Which is true of the “Agg” index, but not true of the S&P 500 index?

- □ A) The index tracks an equal-weighted portfolio.
- □ B) The index tracks the stock market.
- □ C) The index includes the return from reinvesting distributions.
- □ D) The index includes the return from capital gains.

II. Funds and performance measures

Question 13: Blackstone operates a prominent open-end fund that mainly invests in commercial real estate. For over a year, the fund refused or limited investor redemption requests. What *combination* of facts would force the fund to be in this position?

- □ A) Real estate prices and transaction volume were both up.
- □ B) Real estate prices and transaction volume were both down.
- □ C) Real estate prices were down, transaction volume was up.
- □ D) Real estate prices were up, transaction volume was down.

Question 14: All funds make regular distributions to investors of any income they have realized on their investments, such as the capital gains from selling securities. Why?

- □ A) To reduce tracking error with their indexes.
- □ B) To avoid forcing their investors to realize tax events.
- □ C) To meet investor demand for high rates of cash payout.
- □ D) To qualify for exemption from corporate income tax.

Question 15: Which type of fund represents the majority of assets in the United States?

- □ A) Closed-end fund.
- □ B) Mutual fund.
- □ C) Exchange-traded fund.
- □ D) Hedge fund.

Question 16: Which of the following is more important for a mutual fund than an ETF?

- □ A) Maintaining cash balances to meet investor redemptions.
- □ B) Distributing dividends and coupons received on portfolio investments.
- □ C) Informing authorized participants about the fund's holdings.
- □ D) In-kind transactions to create or redeem shares.

Question 17: Suppose the share price of an ETF rises above its NAV, presenting an arbitrage opportunity for an authorized participant (AP). Which of the following things would be part of the AP’s strategy to profit from this difference?

- □ A) Sell shares of the ETF on the exchange where they trade.
- □ B) Buy shares of the ETF on the exchange where they trade.
- □ C) Redeem existing ETF shares back to the fund.
- □ D) Sell the underlying assets in the ETF's creation basket.

For questions 18 and 19: Suppose a fund's balance sheet consists of 1000 shares outstanding, 100 shares of another company's stock, and $500 cash. At the beginning of the year, each share of the other company's stock is worth $20. During the year, this stock pays no dividends. At the end of the year, each share of that stock is worth $30, and the fund still holds the $500 cash. For simplicity, assume the fund charges no fees.

Question 18: What is the fund's NAV per share at the end of the year?

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Question 19: Suppose the fund is a closed-end fund. At the start of the year its share price was equal to its NAV, but by the end of the year it is trading at a 10% discount to NAV. What return did an investor in the fund experience during the year, as a percent?

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Questions 20, 21, and 22 all refer to the same hypothetical fund:

Question 20: Suppose a mutual fund has 100 shares outstanding, each with a NAV per share of $10. Then an investor redeems 20 shares back to the fund. If the fund is able to meet this redemption with cash, what will be the fund's NAV per share afterward?

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Question 21: Now suppose that the fund in the prior question instead meets the redemption by selling shares of stock out of its portfolio. It sells twenty shares of stock in another company that it originally purchased for $5 per share, and the proceeds form this sale are exactly the amount of money needed to meet the redemption. In this case, what will be the fund's NAV per share after the redemption?

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Question 22: Suppose you are another investor in the same fund. You hold your shares of the fund in a taxable account and you do not redeem any of these shares during the year. How will you be affected by the events described in question 21?

- □ A) You will report a taxable distribution of $1.25 per share from the fund.
- □ B) You will report a capital loss of $1 per share.
- □ C) You will not experience any tax events.
- □ D) It depends on how you have elected to receive distributions.

For Questions 23 and 24, here is some information about a hypothetical investment:

- Over 4 years, the cumulative value of $1 invested initially was $1.31.
- The volatility of the excess return during this time was 20% per year.
- The annual Sharpe ratio of the investment in this time was 0.35.
- The risk-free rate was 2% in each of the four years.

(Also notice that both questions 23 and 24 are asking for raw not excess returns.)

Question 23: What was the *geometric* average annual return? (Round to the nearest %).

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Question 24: What was the *arithmetic* average annual return? (Round to the nearest %).

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III. Fundamental investing and mutual fund performance

Question 25: "Performance-chasing" is the behavior of always investing in mutual funds that have recently beaten the market. Remember that we discussed a "cynical" view and a "sympathetic" view of the evidence on mutual fund performance.
What would the "cynical" view say about performance-chasing?

- □ A) It is a good way to earn superior returns to a passive strategy.
- □ B) It will not earn superior returns, because past performance was just luck.
- □ C) It will not earn superior returns, because the funds that beat the market will grow too big to do it again in the next year.
- □ D) It will not deliver superior returns, because the managers who beat the market will leave for other jobs.

Question 26: What would the "sympathetic" view say about performance-chasing?

- □ A) It is a good way to earn superior returns to a passive strategy.
- □ B) It will not earn superior returns, because past performance was just luck.
- □ C) It will not earn superior returns, because the funds that beat the market will grow too big to do it again in the next year.
- □ D) It will not deliver superior returns, because the managers who beat the market will leave for other jobs.

Question 27: Ned Johnson famously critiqued the passive investing industry by saying, “I can't believe that the great mass of investors are going to be satisfied with an ultimate goal of just achieving average returns on their funds.” What concept that we discussed in class highlights a flaw in his thinking?

- □ A) The average investor cannot understand investment performance.
- □ B) The average investor does not want above-average returns.
- □ C) The average investor will always get average returns, no matter what.
- □ D) The average investor with a passive strategy *can* earn superior returns.

Question 28: Suppose a company's stock is trading for $100 per share, and it has 100m shares outstanding. It reports total assets of $1 billion and total liabilities of $500 million. What is its market-to-book ratio?

Question 29: Suppose a company currently trades at a P/E ratio of 25. If its equity cost of capital is $r_E = 10\%$, what annual growth rate is the market pricing for the company's future earnings, according to the dividend discount model?

Question 30: Suppose that on Monday, a company is forecast to pay a dividend of $10 per share during the current year, that dividend is expected to grow at a rate of 4% per year, and the company's equity cost of capital is 12%. Then on Tuesday, interest rates rise such that the equity cost of capital is now 14%, but everything else stays the same. By how many dollars will the company's share price fall on Tuesday?
