

FIN 500R Exam answers

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By nature of the exam, almost none of the answers are unique. In some places, I show examples of alternative correct answers.

Bubbles, Doubling Strategies, and Suicidal Strategies

1. (a) What is a bubble in an asset market?
A bubble is an asset whose price is obviously too high. One formal definition of a bubble is that there is an investment strategy with the same cash flows than the asset (or greater) but a lower cost.
- (b) Do you believe there was a bubble in the US real estate market leading up to the recent financial crisis? Why or why not?
Yes, the evidence presented by Case and Shiller was compelling.
or
No, although the real estate market crashed during the crisis, it would have been reasonable to expect prices would keep going up if the economy had remained healthy. It is easy to say it was a bubble afterwards, but it is much harder to be sure the price is unreasonably high given what people knew at the time.
2. (a) In Karl Shell's simplified version of Samuelson's consumption-loan model, competitive equilibrium is inefficient. What is the nature of the efficiency?
Having everyone consume earlier would be more efficient, and with infinitely many agents we can in effect borrow without repayment. There is no way for the competitive model to coordinate this improvement.
- (b) Introducing an asset with a bubble can produce an equilibrium that fixes the inefficiency. What is the asset and why is it a bubble?
The asset is money, which is a bubble because it pays no cash flows but it has a positive price.

3. (a) What is a suicidal strategy?
A suicidal strategy is a strategy that throws away money by gambling until all the money is gone.
- (b) What is the connection between a suicidal strategy and bubbles?
An asset with a bubble can be viewed as an ordinary asset that is a fair investment plus the value of a suicidal strategy.
4. (a) Heston, Loewenstein, and Willard show that for some parameter values, the CEV model of option pricing has a very strange bubble in what asset?
For some parameter values, there is a bubble in the stock price.
- (b) What would you interpret as evidence for a bubble in practice? Why?
A violation of put-call parity is good evidence of a bubble, since absent a bubble, put-call parity should hold.

Macroeconomics and Asset Pricing

5. (a) Is the real interest rate in the US currently positive or negative?
The real interest rate in the US is negative: short interest rates are close to zero and inflation is around 2 or 3 percent.
- (b) According to RBC models, what does the sign of the real interest rate indicate about expectations of market participants? Do you believe this implication? Why or why not?
In the RBC model, a negative real rate indicates an expectation of falling productivity. This is hard to believe because the economy is doing so poorly now.
or
In the RBC model, a negative real rate indicates an expectation of falling productivity. Even if actual productivity does not fall, future expected productivity in agents' choice problems may seem small because they expect high taxes to pay for the big debt overhang.

Understanding the Financial Crisis

6. (a) According to Gorton and Metrick's review, what is the key antecedent to many banking crises?
a huge build-up in debt
- (b) Did the growth of shadow banking contribute to the crisis? How? Yes, because the shadow banking sector accomodates the build-up of debt. Furthermore, the shadow banking sector does not have deposit insurance and is subject to runs.
7. (a) What is Asset-Backed Commercial Paper (ABCP)?
ABCP is collateralized debt issued by companies.
- (b) In the crisis, there were many runs on ABCP. What does this mean?
Although ABCP is not demandable debt, it is still subject to a run if the company is unable to roll over the debt by issuing new commercial paper. In the crisis, there was a run on ABCP issued by banks, precipitated by the runs on money-market funds.

Pricing Credit Derivatives

8. (a) What is the difference between structural and reduced-form models of credit?
Structural models derive the occurrence of default from assumptions the internal workings of the firm, while reduced-form models make assumptions about default directly.
- (b) What is the comparative advantage of each?
Structural models seem more realistic and allow us to price debt, equity, and credit derivatives consistently. Reduced-form models are easier to apply consistently to a large set of firms, since firms look very different internally.
9. (a) In a reduced-form model of pricing corporate debt, what is the default rate? What is the recovery rate?

The default rate is the probability per unit time the firm fails, and the recovery rate is the fraction (of face or market value) the bondholder receives in the event. of default.

- (b) Is it better to model the recovery rate as a fraction of the market value of debt or as a fraction of the face value of debt? Why?

It is better to model the recovery rate as a fraction of the face value, since the face value is endogenous and the recovery rate doesn't depend on market pricing before the failure.

or

It is better to model the recovery rate as a fraction of the market value, because this makes the valuation simpler and probably does not affect the valuation too much.

10. (a) What is a credit default swap (CDS)?

A credit default swap is a kind of insurance that trades periodic payments for a payment that would make a bondholder whole in the event of a default.

- (b) What is the CDS spread?

The CDS spread is the periodic payment on the CDS, expressed as an annual fraction of the face value of the underlying bond.

Log Optimal Policies: the “Kelley Rule”

11. (a) Over time, the log-optimal strategy (Kelley Rule) eventually outperforms any significantly different strategy. Does this imply this is a good strategy for everyone?

No, it depends on risk preferences. An investor with more aggressive preferences might prefer to lose more often but have a small chance of a really big payoff, while a more cautious investor may prefer a lower overall return most of the time in exchange for more safety on the downside.

- (b) Do you believe the Kelley rule is a reasonable strategy for a typical investor? Why or why not?

Yes, because most people don't know their preferences and this is at least one internally consistent and reasonable strategy.

or

No, evidence has shown that most people are significantly more risk averse than log.

Trading

12. (a) What is the primary statistical tool recommended by Lo, Mamaysky and Wang in their paper on the foundations of technical analysis?
kernel regression
- (b) Are you convinced that the tools they recommend are useful? Why or why not?
Yes, this is a reasonable approach for finding mispricing in the economy.
or
No, and I wish Lo, Mamaysky and Wang had provided more evidence that the tools can actually be used to make money.
13. (a) According to Pagnotta and Philippon's paper "Competing on Speed," does increasing the speed of the market increase welfare?
In their paper the impact is ambiguous; it can provide a benefit in improved liquidity and execution, or it may not be worth the cost.
- (b) In your opinion, do extreme reductions in trading times make the economy better off? Why?
No, it doesn't seem plausible that it matters whether we can trade 100 times per minute or 10,000.
or
Yes, faster trading makes prices more efficient and increases liquidity in the market.

Investing with Transaction Costs

14. (a) Qualitatively, what is the difference between the optimal trading strategy with fixed costs and the optimal trading strategy with variable costs?

With fixed costs, everytime we trade we trade to the same place inside the nontrading region, while with variable costs we only trade to a nearby boundary of the nontrading region.

- (b) Do you think transaction costs are an important consideration for investors or are they secondary to other considerations? Why?

Yes, transaction costs are first-order and the benefits from rebalancing are second-order.

or

No, investors hold positions for the long-run and do not trade much anyway. Besides, transaction costs have fallen a lot in recent years.

Are Financial Markets too Big?

15. (a) Bolton, Santos, and Scheinkman have a model with transparent standard exchanges and opaque OTC markets. In their model, the financial sector is too big and makes too many rents. Why?

Pay is high in the financial sector because of rent-seeking behavior that adds little value to the economy, and this drains talent that would be used more efficiently in other industries.

- (b) Do you believe financial markets are much too big? Why or why not?

Yes, although the Bolton, Santos, and Scheinkman paper does not have any empirical analysis, their basic argument is correct.

or

No, it is no accident that more advanced economies have big financial sectors because that is one source of their growth.

Portfolio Insurance

16. (a) If markets are efficient, is there a problem with putting money with a manager who is trying to time the market but is actually just changing the proportions of risky and riskless assets randomly?
Yes, this strategy is poorly diversified over time, and we would be better off with a manager who invests in the assets in fixed proportions.
- (b) Do you think it is a good idea to put your money with an active manager? Why or why not?
No, on the whole managers do not add value and it is hard to identify a good manager.
or
Yes, they add value, and that is why they are paid so well.

Export-led Growth

17. (a) Song, Storesletten, and Zilibotti argue that China's accumulation of currency reserves is a by-product of which institutional features of the Chinese market?
Low productivity in state-owned enterprises and lack of access to capital markets by smaller more efficient firms implies that domestic investments are unattractive and investments abroad lead to an accumulation of dollars.
- (b) Do you believe that China intentionally kept its currency cheap to stimulate exports, or do you believe this was an unintended by-product of other policies and institutions? Why?
Of course, although while the economy was good other countries who received cheap goods were happy about this.
or
No, this was an intended by-product of the structure of China's economy, as described by Song, Storesletten, and Zilibotti.

Risk Management

18. (a) Name a feature of hedge accounting that makes it difficult to put in place a good economic hedge.
Hedge accounting allows for hedges of prices but not quantities, so a good hedge may not qualify, making earnings more volatile.
- (b) Do you think the push towards market-value accounting will make hedging more attractive? Why or why not?
No, accounting statements are not supposed to include the value of all future cash flows, and the move towards market value accounting may lead to an end of the special treatment of hedges.
19. (a) What is a cash-balance pension plan?
A cash-balance plan is a defined-benefit pension plan in which the pension claims grow at a rate indexed to market interest rates or inflation.
- (b) In your opinion, does investing in the security underlying the crediting rate (e.g. 3-year Treasuries) provide a good hedge for the plan's liabilities? Why or why not?
No, because (as shown by Brown, Dybvig, and Marshall) the yield on a 3-year Treasury is much different from the return on a 3-year Treasury.

Investing for Retirement

20. (a) The base model in Dybvig and Liu has a fixed wage rate. With this assumption, should people work longer in good markets or in bad markets?
People should work longer in bad markets, since these are states in which wealth is more valuable.
- (b) Do you believe it is a good idea to follow the traditional advice that young people should have a relatively aggressive investment portfolio? Why or why not?
Yes, because for young people financial wealth is a small proportion of total wealth so even investing it a very risky asset is still a small fraction of total wealth.

or

No, young people do not have enough wealth to be relevant for retirement. They should focus on maintaining liquidity for emergency expenses and saving for durable purchases such as a car or a down-payment on buying a house.

Cash Management

21. (a) What is cash management in a company?

Cash management is the optimal arrangement of short-term borrowing and lending to meet the cash flows of the business.

- (b) In your opinion, what is an important trade-off in cash management? Why?

An important trade-off is balancing the interest from lending funds against the cost of borrowing if you don't have enough cash. This is important because the large amount of cash implies that the interest can be significant.