

180.266 Financial Markets and Institutions

Midterm study guide

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The exam will have some questions involving definitions and some involving basic real-world quantities. These will be very much as on the quiz. Terms and quantities are summarized in the next two sections of these notes.

Unlike the quiz, there will be some conceptual question. The study guide sketches the overall perspective and should provide a guide to reviewing the notes, text, and readings.

Bring a calculator, there will be some calculations.

Prior midterms are up on the website and should also provide a reasonable guide. Due to the snow day, we have not done banking in detail yet this year, whereas most years we do so before the midterm. Thus, we will not have the detailed banking questions you see on some of earlier midterms.

If you have a special accommodation, be sure to contact me in advance. We'd like those with extra time to start early. Please email me for details (faustj@jhu.edu).

There is no re-take; excused absences will simply have other grades re-weighted.

You will be allowed the entire class period for the exam. Our intention will be to provide an exam such that the reasonably well-prepared do not feel rushed. However, sometimes this is hard to predict.

The next page is a list of terms and thereafter come some additional study notes.

adverse selection
arbitrage
asset
asymmetric information
bank
bank run
basis point
bond, coupon bond, zero
coupon bond
bond principal value
callable bond
capital gain
capital loss
capital market
collateral
commercial bank
commercial paper
common stock
compound interest
consol or perpetuity
coupon payment
coupon rate

covariance, correlation
current yield on bond
debt
default, default risk
demand deposits
depository institution
direct finance
diversification
dividends (on stock)
equity
equity market
expectations theory of term
structure

expected return
expected value
face value of bond
fallen angel
financial institution
financial instrument
financial market
idiosyncratic risk
illiquid
indirect finance
inflation rate
inflation risk
information costs
insurance
interest rate
interest-rate risk
internal rate of return
interquartile range
inverted yield curve
investment-grade bond
junk bond
law of one price
liability
limited liability laws
liquidity
liquidity premium theory of
the term structure
mean, median, mode
money market
moral hazard
mortgage, 30-year fixed rate
nominal gross domestic
product
nominal interest rate
par value of bond
perpetuity

portfolio
present discounted value, or
simply, present value
principal
probability
pure discount bond
bond rating
rating downgrade
rating upgrade
real interest rate
risk
risk premium
risk sharing
risk-free asset
risk-free rate of return
spot price
standard deviation
stock
stock market
taxable vs. not taxable bond
term structure of interest
rates
theory of efficient markets
transactions costs
unsecured loan
U.S. Treasury bill
U.S. Treasury bond
variance
yield
yield curve
yield to maturity
zero-coupon bond

Real-world data facts

Nominal GDP in the US.

Basic facts about credit market debt of households, firms, and government sector in the U.S.

Basic facts about the term structure

Basic facts about the pattern of interest rates (both risky and risk free) since the Great Depression.

Finally, in describing the pattern of interest rates it is probably best to think about Fisher equation:

$$i = r + \pi^e$$

and one further equation:

$$r = r_{rf} + rrp$$

which states that the real return is the real risk free rate (r_{rf}) plus a real risk premium (rrp).

Together:

$$i = r_{rf} + rrp + \pi^e$$

Using these three terms, we can describe the history of the BAA bond yield as follows: the yield peaked in the depression and in the financial crisis because the rrp was high due to default risk.

The yield peaked around 1980 because the π^e term was high.

The average r^{rf} is pretty low, say, as indicated by the real return under 2 percent on 1-year treasury securities as you computed in the problem set. Risky assets such as stock carry substantial compensation for risk, paying a real yield of, e.g., 10 percent or more on the problem set. Thus, the 'premium' is on the order of 8 percentage points or more.

Basics of the financial system

Financial systems have been developing since the beginning of time.

They serve to make funds flow more efficiently from those with savings to those with productive uses for those funds. Where funds flow more freely, we see wealthier economies.

Funds flow through direct and indirect finance. Two main forms of financing are debt and equity. Direct debt tends to be in the form of bonds. Indirect often takes the form of bank loans.

In my first lecture of term and last lecture before the exam. I covered basics of these flows. Which channel (direct or indirect) and which form (debt-like or equity-like) tend to be more important. Asymmetric information problems such as moral hazard and adverse selection are important in explaining why flows take the form they do.

Key institutions we have emphasized so far are: banks along with deposit insurance, regulation, and oversight of banks, and limited liability laws, along with various types of laws against devious behavior such as fraud.

Financial systems are subject to collapse and crisis because ultimately the 'fixes' for asymmetric information are imperfect and sometimes fail.

Pricing of financial streams

Most financial instruments promise some stream of payments. The present value of the stream is the sum of the present value of the individual payments. The present value of an individual payment is computed by discounting the future value at the appropriate interest rate. The appropriate interest rate will depend on the time until the payment (hence, involving the term structure of interest rates) and any risk characteristics.

We have used many versions of the standard equation $PV = FV / (1+i)^n$. You need to be familiar with all the sorts of computations we've done. In short, given any two of PV, FV, and i, you need to be able to compute the other.

When the future payment is uncertain we write $PV = FV^e / (1+i^e)^n$ where i^e is the appropriate interest rate for the particular risk characteristics of this payment. The CAPM provided us an example of an equation that would give us the appropriate i^e for any risky payment.

You also need to know what duration is and how it is related to the risk of capital gain or loss following interest rate changes. The duration formula will be provided if you need it.

Statistics

You need to know the definition of these concepts for central tendency: mean, median, and mode. If given a set of outcomes and probabilities you need to be able to determine the value of each.

You need to know the definition of the following terms measuring dispersion of outcomes: variance, standard deviation, interquartile range. If you need to compute a variance, you will be given the formula.

You need to know the following terms for measuring how random outcomes of multiple random variables move together: covariance and correlation. If you need to compute a covariance you will be given the formula.

The right answer to the question, 'which measure is best?' is, 'It depends.' You need to be able to give a basic idea of a circumstance in which the mean might be preferred to the median and vice versa. (In short: the mean is greatly affected by extreme values or outliers, but the median less so). Similarly you need to understand a basic story about why you might prefer the interquartile range to the variance (and vice versa). (In short, the variance is greatly affected by extreme values and the interquartile range less so). This topic of 'which measure is best?' is covered in greater depth in the probability and statistics notes I provided.

You need to know what the sign of the covariance and correlation reveal about how the outcomes of two random variables are associated. Moving on to finance, you need to be able to explain why negative covariance of payoffs allows an asset to have a kind of insurance value.

Market prices and the collective implications of individual behavior

In the perfect competition paradigm, the collective implications of buyers and sellers acting in their own best interests push market prices to an 'efficient' place--a place where resulting allocation of goods Pareto efficient.

We depict the functioning of a single market in the standard supply and demand diagram. You need to know how this diagram works. Whether the item in question is a consumer good or a financial asset, you need to know why we generally think the supply and demand curves slope the way they do, what sorts of things would shift the curves in what directions, and what does a given shift mean for the equilibrium quantity supplied and demanded.

When the perfect competition outcome prevails, nobody can 'beat the market' for consumer goods because there are lots of buyers and sellers of identical goods and they all are selling at the 'efficient' price. The analog of this case in asset markets is called efficient markets theory. Efficient markets

theory is essentially a version of the standard perfect competition story adapted to the case where all the items being bought and sold are financial instruments.

Under the assumption of the capital asset pricing model (CAPM) we get the particular equation for the expected return on any asset. You need to know and understand the main CAPM equation for the expected return on a risky asset. Under the assumption of the CAPM, every individual holds the same portfolio of risky assets. The only way individuals differ is in what share of funds they put in the risk free asset versus the market portfolio.

In efficient market theory, either under the CAPM or under more elaborate theories, 'you can't beat the market' in the senses we talked about in class.

It is important to note two things: i) In any reasonable theory, even those that do not make strong claims about efficiency, it will be hard to 'beat the market' using public information. In any market in which lots of folks have an incentive to look for bargains, it will be hard to find bargains. This goes for well-advertised Black Friday sales at department stores, E-bay auctions for popular items, and financial markets. Nothing in the result that 'it is hard to find bargains' implies that prices are 'efficient' in any deep sense.

Thus, even if we cannot be confident that financial market prices are at some efficient level most of the time, most everyone believes that it is hard to 'beat the market' using public information.

A great deal of evidence supports the view that it is very hard to do better than holding the market portfolio. That is, if one takes returns supplied to customers by 'financial managers' who actively try to beat the market, those returns (especially after subtracting the management fee taken by the manager) do not tend to beat much simpler 'market portfolio' strategies.

Still, you can beat the market 4 ways: i) Create new public information. This is a good thing and is well rewarded. The best investment managers do this. ii) Cheat, iii) Luck, iv) Take risk (perhaps in the clever form of 'earthquake insurance strategies'.)

The above was a very condensed summary. You should understand these ideas.